

Long Beach Island Consolidated School District Curriculum Guide

Grade: K	Content Area: Science
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Introduction:

Students in Kindergarten science will complete five units that include engineering and design, forces and motion, plants and animals, how the sun provides heat to the earth, and common weather patterns as well as extreme changes in weather. All science units follow the NJ Student Learning Objectives. Student progress will be measured in a variety of methods.

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Original Adoption: October 23, 2018
Revised On: July 1, 2019
Revised By: C. McBride, C. Sheplin

Recommended Pacing Guide	
Unit 1: Engineering and Design	20 Days
Unit 2: Forces and Motion	25 Days
Unit 3: Plants and Animals	25 Days
Unit 4: Sun Warms Earth	25 Days
Unit 5: Weather	20 Days

Unit 1: Engineering and Design	Duration: 20 Days
Standards/Learning Targets	
<p>New Jersey Student Learning Standards: K-2-ETS1-1. 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-ETS1-2. 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.</p>	
Performance Expectation	
<p>K-2- ETS1-1- 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.</p>	
Science and Engineering Practices	Disciplinary Core Ideas

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<p>Asking Questions and Defining Problems-</p> <ul style="list-style-type: none"> ● Ask questions based on observations to find more information about the natural and/or designed world(s). ● Define a simple problem that can be solved through the development of a new or improved object or tool. 	<p>ETS1.A: Defining and Delimiting Engineering Problems-</p> <ul style="list-style-type: none"> ● 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.
Crosscutting Concepts	Learning Objectives
<p>Systems and Systems Models Engineering and Society</p>	<ul style="list-style-type: none"> ● Students ask questions and make observations to gather information about a situation that people want to change. Students' questions, observations, and information gathering are focused on: <ul style="list-style-type: none"> ○ A given situation that people wish to change. ○ Why people want the situation to change. ○ The desired outcome of changing the situation. ● Students' questions are based on observations and information gathered about scientific phenomena that are important to the situation. ● Students use the information they have gathered, including the answers to their questions, observations they have made, and scientific information, to describe the situation people want to change in terms of a simple problem that can be solved with the development of a new or improved object or tool. ● With guidance, students describe

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	<p>the desired features of the tool or object that would solve the problem, based on scientific information, materials available, and potential related benefits to people and other living things.</p>
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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	Disciplinary Core Ideas
<p>Analyzing and Interpreting Data Analyzing data in K–2 builds on prior experiences and progresses to collecting, recording, and sharing observations.</p> <ul style="list-style-type: none"> ● Analyze data from tests of an object or tool to determine if it works as intended. 	<p>ETS1.C: Optimizing the Design Solution</p> <ul style="list-style-type: none"> ● Because there is always more than one possible solution to a problem, it is useful to compare and test designs.
Crosscutting Concepts	Learning Objectives
<p>Systems and System Models Patterns Cause and Effect</p>	<ul style="list-style-type: none"> ● With guidance, students use graphical displays (e.g., tables, pictographs, line plots) to organize given data from tests of two objects, including data about the features and relative performance of each solution. ● Students use their organization of the data to find patterns in the data, including: <ul style="list-style-type: none"> ○ How each of the objects performed, relative to: <ul style="list-style-type: none"> ■ The other object. ■ The intended performance ○ How various features of the objects relate to their performance ● Students use the patterns they found in object performance to describe: <ul style="list-style-type: none"> ○ The way each object will solve the problem ○ The strengths and weaknesses

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- of each design.
- Which object is better suited to the desired function, if both solve the problem.

Primary Interdisciplinary Connections:

- **ELA:**
 - Reading
 - RI.K.2. With prompting and support, identify the main topic and retell key details of a text.
 - Writing
 - 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.8. With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question.
 - Speaking and Listening
 - SL.K.5. Add drawings or other visual displays to descriptions as desired to provide additional detail.
- **Math**
 - Math Practices
 - MP.2 Reason abstractly and quantitatively.
 - MP.4 Model with mathematics.
 - MP.5 Use appropriate tools strategically.
 - Measurement & Data
 - MD.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.
 - MD.3 Classify objects into given categories; count the numbers of objects in each category and sort the categories by count.3

Technology Standards:

<https://www.state.nj.us/education/aps/cccs/science/mc/StudentUseofTechnologyinScienceUnitsandLessons.pdf>

<https://www.state.nj.us/education/cccs/2014/tech/>

8.1 Educational Technology: All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.

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A. Technology Operations and Concepts: Students demonstrate a sound understanding of technology concepts, systems and operations

- **8.1.2.A.4** Demonstrate developmentally appropriate navigation skills in virtual environments (i.e. games)

B. Creativity and Innovation: Students demonstrate creative thinking, construct knowledge and develop innovative products and process using technology.

C. Communication and Collaboration: Students use digital media and environments to communicate and work collaboratively, including at a distance, to support individual learning and contribute to the learning of others.

- **8.1.2.C.1** Engage in a variety of developmentally appropriate learning activities with students in other classes, schools, or countries using various media formats such as online collaborative tools, and social media

D. Digital Citizenship: Students understand human, cultural, and societal issues related to technology and practice legal and ethical behavior.

E: Research and Information Fluency: Students apply digital tools to gather, evaluate, and use information.

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

Additional activities:

Interactive games; keyboarding practice when typing compositions; related videos & websites; use of online leveled readers.

21st Century Themes: All students will develop an understanding of the nature and impact of technology, engineering, technological design, and the designed world, as they relate to the individual, global society and the universe. The 21st century life and career skills enable students to make informed decisions that prepare them to engage as active citizens in a dynamic global society and to successfully meet the challenges and opportunities of the 21st century global workplace.

21st Century Life and Career Standards:

<https://www.state.nj.us/education/cccs/2014/career/92.pdf>

9.2.4.A.1 Identify reasons why people work, different types of work, and how work can help a person achieve personal and professional goals.

9.2.4.A.2 Identify various life roles and civic and work-related activities in the school, home, and community

21st Century Career Ready Practices:

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<https://www.state.nj.us/education/cccs/2014/career/CareerReadyPractices.pdf>

CRP1. Act as a responsible and contributing citizen and employee

Evidence of Student Learning

Formative Tasks:

- Interactive worktext, Graphic Organizers & Guided Note Taking
- Directed Reading
- Cooperative Group Learning, designing and analyzing solutions
- Homework
- Journal Entries
- Lesson quizzes
- Language “Smarts” writing assignments
- Define a simple problem that can be solved through the development of a new or improved 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

Alternative Assessments

- Performance Assessments
- Presentation rubric
- Peer assessment
- Student created models
- Verbal responses/illustrations

Summative Assessments:

- Unit Tests
- Performance Tasks
- Unit projects
- Labs and engineering based projects

Benchmark Assessments:

- Pre-unit assessment
- Baseline SGO
- Mid-year SGO
- End of year SGO

Knowledge & Skills

Enduring Understandings:

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

Essential Questions:

- How does sketching or creating a model to illustrate its shape help solve a given problem?

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<ul style="list-style-type: none"> ● 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. 	<ul style="list-style-type: none"> ● How does testing a model determine its strengths and weaknesses in solving a given problem? ● How are asking questions, gathering information, and making observation helpful when thinking about problems?
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Core Instructional & Supplemental Materials

<p>Suggested Activities/Resources: Houghton Mifflin Harcourt <i>Science Dimensions</i></p> <ul style="list-style-type: none"> ● Lesson 1: What Does an Engineer Do?" (including hands-on lab ● Lesson 2: "How Can We Use a Design Process?" (including hands- ● You Solve It ● Performance Task ● Illustrations ● Thinking processes that include claims, evidence and reasoning, ● Rethinking and reflection prompts ● Oregon Coast STEM Hub http://oregoncoaststem.oregonstate.edu/educators/resources/curriculum ● Skype in the Classroom https://education.microsoft.com/skype-in-the-classroom/overview ● Skype a Scientist https://www.skypeascientist.com/ ● NASA JPL Engineering ● Kennedy Space Center https://www.kennedyspacecenter.com/camps-and-education/kennedy-online-outreach-and-learning ● https://betterlesson.com/lesson/637784/simple-machines-inventions?from=c_c_lesson ● https://betterlesson.com/lesson/644795/a-place-in-the-shade-an-engineering-challenge ● Mystery Science 	<p>Varied Levels of Text:</p> <ul style="list-style-type: none"> ● <i>Rosie Revere Engineer</i> ● "The Most Magnificent Thing" by A. Spires ● "Marvelous Mattie: How Margaret E. Knight Became an Inventor" by E. McCully ● "Coppernickel The Invention" by W. van Reek ● "Hello Ruby: Adventures in Coding" by L. Liukas ● "If I Built a Car" by C. Van Dusen ● "Papa's Mechanical Fish" by C. Fleming ● "What Do You Do With an Idea?" by K. Yamada ● <i>Handbook of Models</i> ● Houghton Mifflin Harcourt <i>Science Dimensions</i> Leveled Readers
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- https://docs.google.com/document/d/10LrpNR_-A5nLYNpRkCMUOMXOlgIhZ8AYmol9RaMORs/edit#

Accommodations/Modifications

English Language Learners:

- Use word wall
- Use labeled pictures of academic skill
- Use tactile objects to relate to key ideas.
- Chunk/limit information
- Speak slowly and carefully
- Limit number of questions
- Partner with a strong English speaking partner
- Provide extended time
- Modify assignments

Special Education/504 Plans/Students with Disabilities:

- Follow specific IEP/504 accommodations and modifications
- Provide extended time
- Modify assignments
- Label pictures of engineering and design vocabulary/concepts
- Pre-teach concepts
- Differentiate assignments
- Allow alternate assignments and assessment
- Listen to audio recordings instead of reading text
- Learn content from audio books, movies, videos and digital media instead of reading print version
- Work with fewer items per page or line and/or materials in a larger print size
- Have a designated reader
- Hear instructions orally
- Provide multiple choices to represent their understandings (e.g. multisensory techniques-auditory/visual aids; pictures, illustrations, graphs, charts, data tables, multimedia, modeling).
- Dictate answers to a scribe
- Capture responses on an audio recorder
- Work or take a test in a different setting, such as a quiet room with few distractions
- Sit in optimal location (for example, near the teacher)
- Use special lighting or acoustics

Students at Risk of Failure:

- Small group instruction
- Structure lessons that are authentic
- Provide frequent breaks
- Model how assignments should look
- Incorporate social/emotional discussions

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- Encourage and monitor positive peer collaboration
- Provide academic resources for both home and school use
- Provide incentives to increase motivation and collaboration

Economically Disadvantaged:

- Provide clear, achievable expectation, do not lower academic requirements for them.
- Build a safe and nurturing atmosphere
- Perspective and experiences of the children need to be considered
- Create ways for students to share their emotions
- Give every student the same opportunity for success.
- Offer tutoring
- Assemble a packet with information and expectations for each class.
- Be flexible with assignments
- Allow students to finish assignments independently, or give them the opportunity to complete tasks at their own pace.
- Talk with parents about class expectations and the challenges of changing schools mid-year.
- Use real-world examples and create mental models for abstract idea
- Provide increased knowledge base and vocabulary use about real world experiences.
- Share the decision making in class.
- Maintain expectations while offering choice and soliciting input (e.g., "Would you rather do your rough draft now or gather some more ideas first?").
- Use a variety of classroom strategies that strengthen social and emotional skills
- Create a familial atmosphere by using inclusive and affiliative language
- Build supportive relationships, provide positive guidance, foster hope and optimism, and take time for affirmation and celebration.
- Provide access to computers, magazines, newspapers, and books so low-income students can see and work with printed materials
- Daily affirmations
- Asking to hear students' hopes and offering reinforcements of those hopes
- Telling students why they can succeed
- Providing needed academic resources (paper, pencils, computer time)
- Helping students to set goals and build goal-setting skills

Culturally Diverse:

- Provide multiple grouping opportunities for students to share their ideas and to encourage work among various backgrounds and cultures (e.g. multiple representation and multimodal experiences).
- Structure lessons around questions that are authentic, relate to students' interests, social/family background and knowledge of their community.
- Provide opportunities for students to connect with people of similar backgrounds (e.g. conversations via digital tool such as SKYPE, experts from the community helping with a project, journal articles, and biographies)
- Involve families in student learning
- Consult with tribes and tribal education departments

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- Provide social/emotional support
- Respect cultural traditions
- Build in more group work to encourage interaction with peers
- Show photos, videos, and definitions when possible for culturally unique vocabulary
- Help students feel more comfortable by learning about their cultural background
- Provide immediate praise and feedback
- Provide high interest topics/options
- Provide road maps or outlines for difficult concepts
- Provide sufficient wait time before calling on any student to help keep students who may need more time engaged
- Create a nurturing environment with structured routines
- Teach study skills
- Provided students with necessary academic resources and materials
- Allow for alternative assignments
- Provide visuals
- Assign peer tutor
- Allow students to demonstrate knowledge through alternative assessments
- Allocation of more resources to involve parents who are non-native English speakers
- Become familiar with the values, traditions, and customs of various cultures; and learn the migratory conditions specific to each of their students' families.
- Learn at least a few words of students' native languages.
- Collaborate with language professionals and ESL teachers
- Encourage parents to help children maintain their native language at home, while the school helps the child attain proficiency in English.
- Have a clear sense of your own ethnic and cultural identities.
- Communicate high expectations for the success of all students and a belief that all students can succeed.
- Provide "scaffolding" that links the academically challenging curriculum to the cultural resources that students bring to school.
- Explicitly teach students the culture of the school and seek to maintain students' sense of ethnocultural pride and identity
- Maintain high standards and demonstrate high expectations for all ethnically, culturally, and linguistically diverse students.

Unit 2: Forces and Motion	Duration: 25 Days
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Standards/Learning Targets

- New Jersey Student Learning Standards:**
- **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.

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[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 would 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.]

Performance Expectation

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 would 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.]

Science and Engineering Practices	Disciplinary Core Ideas
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<p>Analyzing and Interpreting-</p> <ul style="list-style-type: none"> ● Analyze data from tests of an object or tool to determine if it works as intended. 	<p>PS2.A: Forces and Motion-</p> <ul style="list-style-type: none"> ● 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
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Crosscutting Concepts	Learning Objectives
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<p>Cause and Effect-</p> <ul style="list-style-type: none"> ● Simple tests can be designed to gather evidence to support or refute student ideas about causes 	<p>Organizing data-</p> <ul style="list-style-type: none"> ● With guidance, students organize given information using graphical or visual displays (e.g., pictures,
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pictographs, drawings, written observations, tables, charts).

The given information

students organize includes:

- The relative speed or direction of the object before a push or pull is applied (i.e., qualitative measures and expressions of speed and direction; e.g., faster, slower, descriptions* of “which way”).
- The relative speed or direction of the object after a push or pull is applied.
- How the relative strength of a push or pull affects the speed or direction of an object (i.e., qualitative measures or expressions of strength; e.g., harder, softer).

Identifying relationships-

- Using their organization of the given information, students describe relative changes in the speed or direction of the object caused by pushes or pulls from the design solution.

Interpreting data-

- Students describe the goal of the design solution.
- Students describe their ideas about how the push or pull from the design solution causes the change in the object’s motion.

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	<ul style="list-style-type: none"> Based on the relationships they observed in the data, students describe whether the push or pull from the design solution causes the intended change in speed or direction of motion of the object.
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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.]

Science and Engineering Practices	Disciplinary Core Ideas
<p>Planning and Carrying Out Investigations-</p> <ul style="list-style-type: none"> With guidance, plan and conduct an investigation in collaboration with peers. 	<p>PS2.B: Types of Interactions-</p> <ul style="list-style-type: none"> When objects touch or collide, they push on one another and can change motion <p>PS3.C: Relationship Between Energy and Forces-</p> <ul style="list-style-type: none"> A bigger push or pull makes things speed up or slow down more quickly. (secondary)
Crosscutting Concepts	Learning Objectives
<p>Cause and Effect-</p> <ul style="list-style-type: none"> Simple tests can be designed to gather evidence to support or refute student ideas about causes. 	<p>Identifying the phenomenon to be investigated-</p> <ul style="list-style-type: none"> With guidance, students collaboratively identify the phenomenon under investigation, which includes the following idea: the effect caused by different strengths and directions of pushes and pulls on the motion of an object. With guidance, students collaboratively identify the purpose of

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the investigation, which includes gathering evidence to support or refute student ideas about causes of the phenomenon by comparing the effects of different strengths of pushes and pulls on the motion of an object.

Identifying the evidence to address this purpose of the investigation-

- With guidance, students collaboratively develop an investigation plan to investigate the relationship between the strength and direction of pushes and pulls and the motion of an object (i.e., qualitative measures or expressions of strength and direction; e.g., harder, softer, descriptions* of “which way”).
- Students describe* how the observations they make connect to the purpose of the investigation, including how the observations of the effects on object motion allow causal relationships between pushes and pulls and object motion to be determined
- Students predict the effect of the push or pull on the motion of the object, based on prior experiences.

Planning the investigation-

- In the collaboratively developed investigation plan, students describe
 - The object whose motion will be investigated.
 - What will be in contact with the object to cause the push or pull.
 - The relative strengths of the push or pull that will be applied to the object to start or stop its motion or change its speed.
 - The relative directions of the

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- push or pull that will be applied to the object
- How the motion of the object will be observed and recorded
- How the push or pull will be applied to vary strength or direction

Collecting the data-

- According to the investigation plan they developed, and with guidance, students collaboratively make observations that would allow them to compare the effect on the motion of the object caused by changes in the strength or direction of the pushes and pulls and record their data.

Primary Interdisciplinary Connections:

- ELA
 - Reading
 - RI.K.1 With prompting and support, ask and answer questions about key details in a text.
 - RI.K.2 With prompting and support, identify the main topic and retell key details of a text.
 - RI.K.3 With prompting and support, describe the connection between two individuals, events, ideas, or pieces of information in a text.
 - RI.K.4 With prompting and support, ask and answer questions about unknown words in a text.
 - RI.K.5 Identify the front cover, back cover, and title page of a book.
 - RI.K.7 With prompting and support, describe the relationship between illustrations and the text in which they appear (e.g., what person, place, thing, or idea in the text an illustration depicts).
 - RI.K.10 Actively engage in group reading activities with purpose and understanding.
 - Writing
 - 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.

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- 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.
- Speaking and Listening
 - SL.K.1 Participate in collaborative conversations with diverse partners about kindergarten topics and texts with peers and adults in small and larger groups.
 - 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.4 Describe familiar people, places, things, and events and, with prompting and support, provide additional detail.
- Language:
 - L.K.4 Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on kindergarten reading and content.
 - L.K.6 Use words and phrases acquired through conversations, reading and being read to, and responding to texts.
- **Mathematics**
 - Math Practices
 - MP1 Make sense of problems and persevere in solving them.
 - MP2 Reason abstractly and quantitatively.
 - MP4 Model with mathematics.
 - MP6 Attend to precision.
 - Measurement and Data
 - K.MD.1 Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object.
 - K.MD.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.MD.3 Classify objects into given categories; count the numbers of objects in each category and sort the categories by count.
 - Geometry
 - K.G.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.G.4 Analyze and compare two- and three-dimensional shapes, in different sizes and orientations, using informal language to describe their similarities, differences, parts (e.g., number of sides and

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vertices/“corners”) and other attributes (e.g., having sides of equal length).

Technology Standards:

- 8.1 Educational Technology: All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.
- A. Technology Operations and Concepts: Students demonstrate a sound understanding of technology concepts, systems and operations
 - **8.1.2.A.4** Demonstrate developmentally appropriate navigation skills in virtual environments (i.e. games)
- B. Creativity and Innovation: Students demonstrate creative thinking, construct knowledge and develop innovative products and process using technology.
- C. Communication and Collaboration: Students use digital media and environments to communicate and work collaboratively, including at a distance, to support individual learning and contribute to the learning of others.
 - **8.1.2.C.1** Collaborate with peers by participating in interactive digital games or activities
- D. Digital Citizenship: Students understand human, cultural, and societal issues related to technology and practice legal and ethical behavior.
- E. Research and Information Fluency: Students apply digital tools to gather, evaluate, and use information.
 - **8.1.2.E.1** Use digital tools and online resources to explore a problem or issue

21st Century Themes/Career Readiness:

<https://www.state.nj.us/education/cccs/2014/career/92.pdf>

Additional activities

Interactive games; keyboarding practice when typing compositions; related videos & websites; use of online leveled readers.

21st Century Life and Career Standards

9.2.4.A.2 Identify various life roles and civic and work-related activities in the school, home, and community

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21st Century Career Ready Practices

<https://www.state.nj.us/education/cccs/2014/career/CareerReadyPractices.pdf>

- CRP1. Act as a responsible and contributing citizen and employee.
- CRP4. Communicate clearly and effectively and with reason.
- CRP6. Demonstrate creativity and innovation
- CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.

Evidence of Student Learning

Formative Tasks:

- Interactive worktext, Graphic Organizers & Guided Note Taking
- Directed Reading
- Homework
- Journal Entries
- Exit slips
- Analysis of student work
- Teacher observations
- Self-reflection
- Design simple tests to gather evidence to support or refute ideas about cause-and-effect relationships.
- Plan and conduct an investigation in collaboration with peers.
- Collaboratively 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.
- Some examples of pushes and pulls on the motion of an object could include:
 - A string attached to an object being pulled, a person pushing an object, person stopping a rolling ball, objects colliding and pushing on each other.
- Examples of problems requiring a solution could include having a marble or other object move a certain

Alternative Assessments:

- Performance Tasks
- 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.
- Analyze data to determine whether a design solution works as intended to change the speed or direction of an object with a push or a pull.
- Student created models
- draw/verbal explanations
- To engage in the **engineering design process**:
 - Students design a simple way to change the speed or direction of an object using a push or pull from another object.
 - Students collaborate to determine what the design should be able to do (criteria). For example: 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

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<p>distance, follow a particular path, and knock down other objects.</p> <ul style="list-style-type: none"> • 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 	<p>object; and/or An object should knock down other specified objects.</p> <ul style="list-style-type: none"> • 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.
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<p>Summative Assessments:</p> <ul style="list-style-type: none"> • Unit Tests • Unit Projects • Performance tasks 	<p>Benchmark Assessments:</p> <ul style="list-style-type: none"> • Baseline SGO • Mid-year SGO • End of year SGO
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Knowledge & Skills

<p>Enduring Understandings:</p> <ul style="list-style-type: none"> • An object starts to move when another object exerts a force on it. • Forces happen between two objects. • An object moves a long distance when a strong force is exerted on it. • An object moves a short distance when a gentle force is exerted on it. 	<p>Essential Questions:</p> <ul style="list-style-type: none"> • What makes and object start to move? • What makes an object move shorter or longer distances? • What makes an object start moving in a certain direction?
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<ul style="list-style-type: none"> ● An object starts to move in the same direction as the force that starts the motion. ● Every force has a strength—gentle or strong—and a direction. ● Every force has a strength—gentle or strong—and a direction, which makes the object move a certain distance and direction. ● A moving object changes direction when another moving object exerts a force on it. ● A moving object changes direction when a still object in its way exerts a force on it. 	<ul style="list-style-type: none"> ● What makes an object move to a certain place? ● What can make a moving object change direction? ● How do engineers make their solutions do all the things they want them to do? ● How do engineers make their solutions do all the things they want them to do?
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Core Instructional & Supplemental Materials
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<p>Suggested Activities/Resources: Houghton Mifflin Harcourt <i>Science Dimensions</i></p> <ul style="list-style-type: none"> ● 1. Lesson 1: <i>What is Motion?</i> ● 2. Lesson 2: <i>How can we Change the Way Things Move?</i> <p>Learning Activities:</p> <ul style="list-style-type: none"> ● Ramp Builder activity http://sciencenetlinks.com/lessons/ramps-2-ramp-builder/ ● Push and Pull Activity https://tbamoodle.tbaisd.org/course/view.php?id=161 ● Collision Activities (dominoes, bowling pins) ● Pulling and pushing activities with carts, wagons, or scooters ● “A Push or a Pull” by Peter Weatherall-music video https://www.youtube.com/watch?v=FOcY37oGhj Forces Can Push or Pull Educational Songs Jack Hartmann ● https://www.youtube.com/watch?v=AKUgWLCNb68 	<p>Varied Levels of Text:</p> <ul style="list-style-type: none"> ● Houghton Mifflin Harcourt “Science Dimensions” leveled readers ● <i>Talking About Forces</i> ● <i>Building with Forces</i> ● <i>Room 4 Solves a Problem</i> ● <i>A Busy Day in Pushville</i> ● <i>Forces in Ball Games</i>
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- STEM Activity- Teacher Resource Video
<https://www.youtube.com/watch?v=DiSwO8ISMks>
- Bitesize- Interactive Forces Video
http://www.bbc.co.uk/bitesize/ks3/science/energy_electricity_forces/forces/activity/
Force Work and Energy Relationship - by
www.makemegenius.com
- <https://www.youtube.com/watch?v=PD7a1EWjsTc>
- Pushing and Pulling - Force, Work and Energy- Learning Junction
<https://www.youtube.com/watch?v=vAThuCmwp9I>
- "Push and Pull" song
<https://www.youtube.com/watch?v=XZlqas0tixo>
- Kindergarten Science Lesson on Push and Pull forces (Teacher Resource)
https://www.youtube.com/watch?v=0ZuYUCdWT_s
- NASA Engineering in the Classroom
<https://www.jpl.nasa.gov/edu/teach/resources/engineering-in-the-classroom.php>
- California Academy of Sciences Sample Plans
<http://www.calacademy.org/educators/science-lesson-plans-for-kindergarten-and-1st-grade>
- California Academy of Sciences films
<https://www.calacademy.org/educators/science-films-for-the-classroom>
- California Academy of Sciences- virtual programs
https://www.calacademy.org/educators/virtual-programs?utm_campaign=Teachers%202017-08-16%20eNews%20Teachers&utm_medium=email&utm_source=EOA_CLK

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- Better Lessons- Sample Lesson Plans
http://betterlesson.com/common_core/browse/2105/ngss-k-2-ets1-1-ask-questions-make-observations-and-gather-information-about-a-situation-people-want-to-change-to-define-a-simple
- Oregon Coast STEM Hub
<http://oregoncoaststem.oregonstate.edu/educators/resources/curriculum>
- <https://www.sciencea-z.com/marketing-content/science-a-z-and-ngss-grade-k.pdf>
- <http://www.education.com/activity/kindergarten/science/>
- <https://www.youtube.com/watch?v=FOcY37oGhj8>
- <https://www.youtube.com/watch?v=AKUgWLCNb68>
- http://www.sciencebuddies.org/science-activities?gclid=CjwKEAjwiZitBRCy0pb3rIbG9XwSJACmuvvziKHHQaFENLZpQDpWc9hEI0M1iXg3QHKGKilQ2G8W0FhoCRbTw_wcB

Accommodations/Modifications

English Language Learners:

- Use word wall
- Use labeled pictures of academic skill
- Use tactile objects to relate to key ideas.
- Chunk/limit information
- Speak slowly and carefully
- Limit number of questions
- Partner with a strong English speaking partner
- Provide extended time
- Modify assignments

Special Education/504 Plans/Students with Disabilities:

- Follow specific IEP/504 accommodations and modifications
- Provide extended time
- Modify assignments
- Label pictures of engineering and design vocabulary/concepts
- Pre-teach concepts
- Differentiate assignments

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- Allow alternate assignments and assessment
- Listen to audio recordings instead of reading text
- Learn content from audio books, movies, videos and digital media instead of reading print version
- Work with fewer items per page or line and/or materials in a larger print size
- Have a designated reader
- Hear instructions orally
- Provide multiple choices to represent their understandings (e.g. multisensory techniques-auditory/visual aids; pictures, illustrations, graphs, charts, data tables, multimedia, modeling).
- Dictate answers to a scribe
- Capture responses on an audio recorder
- Work or take a test in a different setting, such as a quiet room with few distractions
- Sit in optimal location (for example, near the teacher)
- Use special lighting or acoustics

Students at Risk of Failure:

- Small group instruction
- Structure lessons that are authentic
- Provide frequent breaks
- Model how assignments should look
- Incorporate social/emotional discussions
- Encourage and monitor positive peer collaboration
- Provide academic resources for both home and school use
- Provide incentives to increase motivation and collaboration

Economically Disadvantaged:

- Provide clear, achievable expectation, do not lower academic requirements for them.
- Build a safe and nurturing atmosphere
- Perspective and experiences of the children need to be considered
- Create ways for students to share their emotions
- Give every student the same opportunity for success.
- Offer tutoring
- Assemble a packet with information and expectations for each class.
- Be flexible with assignments
- Allow students to finish assignments independently, or give them the opportunity to complete tasks at their own pace.
- Talk with parents about class expectations and the challenges of changing schools mid-year.
- Use real-world examples and create mental models for abstract idea
- Provide increased knowledge base and vocabulary use about real world experiences.
- Share the decision making in class.
- Maintain expectations while offering choice and soliciting input (e.g., "Would you rather do your rough draft now or gather some more ideas first?").
- Use a variety of classroom strategies that strengthen social and emotional skills
- Create a familial atmosphere by using inclusive and affiliative language

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- Build supportive relationships, provide positive guidance, foster hope and optimism, and take time for affirmation and celebration.
- Provide access to computers, magazines, newspapers, and books so low-income students can see and work with printed materials
- Daily affirmations
- Asking to hear students' hopes and offering reinforcements of those hopes
- Telling students why they can succeed
- Providing needed academic resources (paper, pencils, computer time)
- Helping students to set goals and build goal-setting skills

Culturally Diverse:

- Provide multiple grouping opportunities for students to share their ideas and to encourage work among various backgrounds and cultures (e.g. multiple representation and multimodal experiences).
- Structure lessons around questions that are authentic, relate to students' interests, social/family background and knowledge of their community.
- Provide opportunities for students to connect with people of similar backgrounds (e.g. conversations via digital tool such as SKYPE, experts from the community helping with a project, journal articles, and biographies)
- Provide multiple grouping opportunities for students to share their ideas and to encourage work among various backgrounds and cultures (e.g. multiple representation and multimodal experiences).
- Structure lessons around questions that are authentic, relate to students' interests, social/family background and knowledge of their community.
- Provide opportunities for students to connect with people of similar backgrounds (e.g. conversations via digital tool such as SKYPE, experts from the community helping with a project, journal articles, and biographies)
- families in student learning
- Consult with tribes and tribal education departments
- Provide social/emotional support
- Respect cultural traditions
- Build in more group work to encourage interaction with peers
- Show photos, videos, and definitions when possible for culturally unique vocabulary
- Help students feel more comfortable by learning about their cultural background
- Provide immediate praise and feedback
- Provide high interest topics/options
- Provide road maps or outlines for difficult concepts
- Provide sufficient wait time before calling on any student to help keep students who may need more time engaged
- Create a nurturing environment with structured routines
- Teach study skills
- Provided students with necessary academic resources and materials
- Allow for alternative assignments
- Provide visuals
- Assign peer tutor

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- Allow students to demonstrate knowledge through alternative assessments
- Allocation of more resources to involve parents who are non-native English speakers
- Become familiar with the values, traditions, and customs of various cultures; and learn the migratory conditions specific to each of their students' families.
- Learn at least a few words of students' native languages.
- Collaborate with language professionals and ESL teachers
- Encourage parents to help children maintain their native language at home, while the school helps the child attain proficiency in English.
- Have a clear sense of your own ethnic and cultural identities.
- Communicate high expectations for the success of all students and a belief that all students can succeed.
- Provide "scaffolding" that links the academically challenging curriculum to the cultural resources that students bring to school.
- Explicitly teach students the culture of the school and seek to maintain students' sense of ethnocultural pride and identity
- Maintain high standards and demonstrate high expectations for all ethnically, culturally, and linguistically diverse students.

Unit 3: Plants and Animals

Duration: 25 Days

Standards/Learning Targets

New Jersey Student Learning 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-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-ESS3-1-** 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-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*

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a squirrel digs in the ground to hide its food and tree roots can break concrete.]

Performance Expectation

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.]*

Science and Engineering Practices	Disciplinary Core Ideas
<p>Analyzing and Interpreting Data-</p> <ul style="list-style-type: none"> Use observations (firsthand or from media) to describe patterns in the natural world in order to answer scientific questions. <p>Scientific Knowledge is Based on Empirical Evidence-</p> <ul style="list-style-type: none"> Scientists look for patterns and order when making observations about the world. 	<p>LS1.C: Organization for Matter and Energy-</p> <ul style="list-style-type: none"> 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.
Crosscutting Concepts	Learning Objectives
<p>Patterns-</p> <ul style="list-style-type: none"> Patterns in the natural and human designed world can be observed and used as evidence. 	<ul style="list-style-type: none"> With guidance, students organize the given data from observations (firsthand or from media) using graphical displays (e.g., pictures, charts), including: <ul style="list-style-type: none"> Different types of animals Data about the foods different animals eat and drink Data about plants' need for water Data about plants' need for light Students identify patterns in the organized data, including that: <ul style="list-style-type: none"> All animals eat food. All animals drink

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	<ul style="list-style-type: none"> ○ water. ○ Plants cannot live or grow if there is no water. ○ Plants cannot live or grow if there is no light. ● Students describe that the patterns they identified in the data provide evidence that: <ul style="list-style-type: none"> ○ Plants need light and water to live and grow. ○ Animals need food and water to live and grow. ○ Animals get their food from plants, other animals, or both.
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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.]

Science and Engineering Practices	Disciplinary Core Ideas
<p>Engaging in Argument from Evidence-</p> <ul style="list-style-type: none"> ● Construct an argument with evidence to support a claim. 	<p>ESS2.E: Biogeology-</p> <ul style="list-style-type: none"> ● Plants and animals can change their environment. <p>ESS3.C: Human Impacts on Earth Systems-</p> <ul style="list-style-type: none"> ● 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. (secondary)
Crosscutting Concepts	Learning Objectives
<p>Systems and System Models-</p>	<ul style="list-style-type: none"> ● Students make a claim to be supported about a phenomenon. In

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- Systems in the natural and designed world have parts that work together.

their claim, students include the idea that plants and animals (including humans) can change the environment to meet their needs.

- Students identify and describe the given evidence to support the claim, including
 - Examples of plants changing their environments (e.g., plant roots lifting sidewalks).
 - 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).
 - 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
- Students support the claim and present an argument by logically connecting various needs of plants and animals to evidence about how plants/animals change their environments to meet their needs. Students include:
 - Examples of how plants affect other parts of their systems by changing their environments to meet their needs (e.g., roots push soil aside as they grow to better absorb water).
 - Examples of how animals affect other parts of their systems by changing their environments to meet their needs (e.g., ants, birds, rabbits, and humans use natural materials to build shelter; some animals store

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food for winter).

Primary Interdisciplinary Connections:

- **ELA**

- Reading

- RI.K.1 With prompting and support, ask and answer questions about key details in a text.
- RI.K.2 With prompting and support, identify the main topic and retell key details of a text.
- RI.K.3 With prompting and support, describe the connection between two individuals, events, ideas, or pieces of information in a text.
- RI.K.4 With prompting and support, ask and answer questions about unknown words in a text.
- RI.K.5 Identify the front cover, back cover, and title page of a book.
- RI.K.7 With prompting and support, describe the relationship between illustrations and the text in which they appear (e.g., what person, place, thing, or idea in the text an illustration depicts).
- RI.K.10 Actively engage in group reading activities with purpose and understanding.

- Writing

- 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.

- Speaking and Listening

- SL.K.1. Participate in collaborative conversations with diverse partners about kindergarten topics and texts with peers and adults in small and larger groups.
- 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.4 Describe familiar people, places, things, and events and, with prompting and support, provide additional detail.
- SL.K.5 Add drawings or other visual displays to descriptions as desired to provide additional detail.

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- Language
 - L.K.4 Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on kindergarten reading and content.
 - L.K.6 Use words and phrases acquired through conversations, reading and being read to, and responding to texts.
- **Mathematics-**
 - Mathematics Practices
 - MP1 Make sense of problems and persevere in solving them.
 - MP2 Reason abstractly and quantitatively.
 - MP4 Model with mathematics.
 - MP5 Use appropriate tools strategically
 - Counting and Cardinality
 - K.CC.4 Understand the relationship between numbers and quantities; connect counting to cardinality.
 - K.CC.4a When counting objects, say the number names in the standard order, pairing each object with one and only one number name and each number name with one and only one object.
 - K.CC.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.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.
 - Measurement & Data
 - K.MD.1 Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object.
 - K.MD.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.
 - Geometry
 - K.G.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.G.5 . Model shapes in the world by building shapes from components (e.g., sticks and clay balls) and drawing shapes.

Technology Standards:

- 8.1 Educational Technology: All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.
- A. Technology Operations and Concepts: Students demonstrate a sound

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<p>understanding of technology concepts, systems and operations</p> <ul style="list-style-type: none"> ○ 8.1.2.A.4 Demonstrate developmentally appropriate navigation skills in virtual environments (i.e. games) <ul style="list-style-type: none"> ● B. Creativity and Innovation: Students demonstrate creative thinking, construct knowledge and develop innovative products and process using technology. ● C. Communication and Collaboration: Students use digital media and environments to communicate and work collaboratively, including at a distance, to support individual learning and contribute to the learning of others. <ul style="list-style-type: none"> ○ 8.1.P.C.1 Collaborate with peers by participating in interactive digital games or activities ● D. Digital Citizenship: Students understand human, cultural, and societal issues related to technology and practice legal and ethical behavior. <ul style="list-style-type: none"> ○ 8.1.2.E.1 Use digital tools and online resources to explore a problem or issue

21st Century Life and Career Standards:

<https://www.state.nj.us/education/cccs/2014/career/92.pdf>

9.2.4.A.2 Identify various life roles and civic and work-related activities in the school, home, and community

21st Century Career Ready Practices:

<https://www.state.nj.us/education/cccs/2014/career/CareerReadyPractices.pdf>

CRP1. Act as a responsible and contributing citizen and employee

Evidence of Student Learning	
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<p>Formative Tasks:</p> <ul style="list-style-type: none"> ● Interactive Worktext, Graphic Organizers & Guided Note Taking ● Directed Reading ● Cooperative Group Learning ● Homework ● Journal Entries ● Quizzes ● Lesson Review 	<p>Alternative Assessments:</p> <ul style="list-style-type: none"> ● Performance Assessments
<p>Summative Assessments:</p> <ul style="list-style-type: none"> ● Unit Tests 	<p>Benchmark Assessments:</p> <ul style="list-style-type: none"> ● Baseline SGO

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<ul style="list-style-type: none"> • Unit Projects • Unit Performance Tasks 	<ul style="list-style-type: none"> • Mid-year SGO • End of year SGO
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Knowledge & Skills

<p>Enduring Understandings:</p> <ul style="list-style-type: none"> • Different kinds of plants and animals live in a place • An animal needs to eat food to live. • Animals can only live in a place that has the food they need. • When plants grow, they get bigger and have new parts that were not there before. • Plants need water from the place where they are in order to live and grow. • Animals need water from the place where they are in order to live and grow. • Plants get water they need with their roots from the soil around them. Plants need light to live and grow • Plants get light they need with their leaves. • What scientists learn about living things can help people make choices about what to do. 	<p>Essential Questions:</p> <ul style="list-style-type: none"> • Why can an animal live where it does? • What does it look like when plants grow? • Do plants need water to grow? • How do plants get the water they need? • Do plants need light to live and grow? • How do plant get light? • How can humans make sure that other living things can live and grow?
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Core Instructional & Supplemental Materials

<p>Suggested Activities/Resources:</p> <p>Houghton Mifflin Harcourt <i>Science Dimensions</i></p> <ol style="list-style-type: none"> 1. Lesson 1: <i>What Do Plants Need?</i> 2. Lesson 2: <i>What Do Animals Need?</i> 3. Lesson 3: <i>Where Do Plants and Animals Live?</i> 4. Lesson 4: <i>How Do Plants and Animals Change Their Environment?</i> <p>Hooked on Science http://www.hookedonscience.org/nextgenerationstandards.html</p>	<p>Varied Levels of Text:</p> <ul style="list-style-type: none"> • Houghton Mifflin Harcourt “Science Dimensions” leveled texts • <i>Science Walk</i> • <i>A Plant In the Desert</i> • <i>Above and Below</i> • <i>Investigating Monarchs</i> • <i>Handbook of Plants</i>
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Smithsonian Science Education Center
<http://www.ssec.si.edu/games/students>

School of Dragons Interactive Game
<http://www.schoolofdragons.com/hiccups-science-workshop/ngss/kindergarten>

NASA- Climate Kids Interactive Website
<http://climatekids.nasa.gov/menu/big-questions/>

What is an Ecosystem?
<https://www.youtube.com/watch?v=0Gm9zJS10-E>

Environment: Ecosystem Around Us
<https://www.youtube.com/watch?v=WDLC9igcfQw>

Accommodations/Modifications

English Language Learners:

- Use word wall
- Use labeled pictures of academic skill
- Use tactile objects to relate to key ideas.
- Chunk/limit information
- Speak slowly and carefully
- Limit number of questions
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- Have a designated reader
- Hear instructions orally
- Provide multiple choices to represent their understandings (e.g. multisensory techniques-auditory/visual aids; pictures, illustrations, graphs, charts, data tables, multimedia, modeling).
- Dictate answers to a scribe
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- Use special lighting or acoustics

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- Create ways for students to share their emotions
- Give every student the same opportunity for success.
- Offer tutoring
- Assemble a packet with information and expectations for each class.
- Be flexible with assignments
- Allow students to finish assignments independently, or give them the opportunity to complete tasks at their own pace.
- Talk with parents about class expectations and the challenges of changing schools mid-year.
- Use real-world examples and create mental models for abstract idea
- Provide increased knowledge base and vocabulary use about real world experiences.
- Share the decision making in class.
- Maintain expectations while offering choice and soliciting input (e.g., "Would you rather do your rough draft now or gather some more ideas first?").
- Use a variety of classroom strategies that strengthen social and emotional skills
- Create a familial atmosphere by using inclusive and affiliative language
- Build supportive relationships, provide positive guidance, foster hope and optimism, and take time for affirmation and celebration.
- Provide access to computers, magazines, newspapers, and books so low-income students can see and work with printed materials
- Daily affirmations

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- Asking to hear students' hopes and offering reinforcements of those hopes
- Telling students why they can succeed
- Providing needed academic resources (paper, pencils, computer time)
- Helping students to set goals and build goal-setting skills

Culturally Diverse:

- Provide multiple grouping opportunities for students to share their ideas and to encourage work among various backgrounds and cultures (e.g. multiple representation and multimodal experiences).
- Structure lessons around questions that are authentic, relate to students' interests, social/family background and knowledge of their community.
- Provide opportunities for students to connect with people of similar backgrounds (e.g. conversations via digital tool such as SKYPE, experts from the community helping with a project, journal articles, and biographies)
- Involve families in student learning
- Consult with tribes and tribal education departments
- Provide social/emotional support
- Respect cultural traditions
- Build in more group work to encourage interaction with peers
- Show photos, videos, and definitions when possible for culturally unique vocabulary
- Help students feel more comfortable by learning about their cultural background
- Provide immediate praise and feedback
- Provide high interest topics/options
- Provide road maps or outlines for difficult concepts
- Provide sufficient wait time before calling on any student to help keep students who may need more time engaged
- Create a nurturing environment with structured routines
- Teach study skills
- Provided students with necessary academic resources and materials
- Allow for alternative assignments
- Provide visuals
- Assign peer tutor
- Allow students to demonstrate knowledge through alternative assessments
- Allocation of more resources to involve parents who are non-native English speakers
- Become familiar with the values, traditions, and customs of various cultures; and learn the migratory conditions specific to each of their students' families.
- Learn at least a few words of students' native languages.
- Collaborate with language professionals and ESL teachers
- Encourage parents to help children maintain their native language at home, while the school helps the child attain proficiency in English.
- Have a clear sense of your own ethnic and cultural identities.
- Communicate high expectations for the success of all students and a belief that all students can succeed.
- Provide "scaffolding" that links the academically challenging curriculum to the cultural resources that students bring to school.

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- Explicitly teach students the culture of the school and seek to maintain students' sense of ethnocultural pride and identity
- Maintain high standards and demonstrate high expectations for all ethnically, culturally, and linguistically diverse students.

Unit 4: Sun Warms Earth	Duration: 25 Days
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Standards/Learning Targets

New Jersey Student Learning Standards:

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

Performance Expectation

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.]

Science and Engineering Practices	Disciplinary Core Ideas
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- Planning and Carrying Out Investigations-**
- Make observations (firsthand or from media) to collect data that can be used to make comparisons.
- Scientific Investigations Use a Variety of Methods-**
- Scientists use different ways to study the world.

- PS3.B: Conservation of Energy and Energy Transfer-**
- Sunlight warms Earth’s surface.

Crosscutting Concepts	Learning Objectives
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- Cause and Effect-**
- Events have causes that generate observable patterns.

- Identifying the phenomenon to be investigated-**
- From the given investigation plan, students describe (with guidance) the phenomenon under investigation,

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	<p>which includes the following idea: sunlight warms the Earth’s surface</p> <ul style="list-style-type: none"> Students describe (with guidance) the purpose of the investigation, which includes determining the effect of sunlight on Earth materials by identifying patterns of relative warmth of materials in sunlight and shade (e.g., sand, soil, rocks, water) <p>Identifying the evidence to address the purpose of the investigation-</p> <ul style="list-style-type: none"> Based on the given investigation plan, students describe (with guidance) the evidence that will result from the investigation, including observations of the relative warmth of materials in the presence and absence of sunlight (i.e., qualitative measures of temperature; e.g., hotter, warmer, colder). Students describe how the observations they make connect to the purpose of the investigation. <p>Planning the investigation-</p> <ul style="list-style-type: none"> Based on the given investigation plan, students describe (with guidance) the materials on the Earth’s surface to be investigated and how the relative warmth of the materials will be observed and recorded.
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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	Disciplinary Core Ideas
<p>Asking Questions and Defining Problems-</p> <ul style="list-style-type: none"> Ask questions based on observations to find more information about the designed world. 	<p>ESS3.B: Natural Hazards-</p> <ul style="list-style-type: none"> Some kinds of severe weather are more likely than others in a given region. Weather scientists forecast severe weather so that the

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<p>Obtaining, Evaluating, and Communicating Information-</p> <ul style="list-style-type: none"> Read grade-appropriate texts and/or use media to obtain scientific information to describe patterns in the natural world. 	<p>communities can prepare for and respond to these events.</p> <p>ETS1.A: Defining and Delimiting an Engineering Problem-</p> <ul style="list-style-type: none"> Asking questions, making observations, and gathering information are helpful in thinking about problems. (secondary)
<p align="center">Crosscutting Concepts</p>	<p align="center">Learning Objectives</p>
<p>Cause and Effect-</p> <ul style="list-style-type: none"> Events have causes that generate observable patterns. <p>Interdependence of Science, Engineering, and Technology-</p> <ul style="list-style-type: none"> People encounter questions about the natural world every day. <p>Influence of Engineering, Technology, and Science on Society and the Natural World-</p> <ul style="list-style-type: none"> People depend on various technologies in their lives; human life would be very different without technology. 	<ul style="list-style-type: none"> Students formulate questions about local severe weather, the answers to which would clarify how weather forecasting can help people avoid the most serious impacts of severe weather events. Identifying the scientific nature of the question a Students' questions are based on their observations.. Obtaining information a Students collect information (e.g., from questions, grade appropriate texts, media) about local severe weather warnings (e.g., tornado alerts, hurricane warnings, major thunderstorm warnings, winter storm warnings, severe drought alerts, heatwave alerts), including that: <ul style="list-style-type: none"> There are patterns related to local severe weather that can be observed (e.g., certain types of severe weather happen more in certain places). Weather patterns (e.g., some events are more likely in certain regions) help scientists predict severe weather before it happens. Severe weather warnings are used to communicate predictions about severe weather. Weather forecasting can help

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people plan for, and respond to, specific types of local weather (e.g., responses: stay indoors during severe weather, go to cooling centers during heat waves; preparations: evacuate coastal areas before a hurricane, cover windows before storms).

Primary Interdisciplinary Connections:

- **ELA/Literacy-**

- Reading

- RI.K.1 With prompting and support, ask and answer questions about key details in a text.
- RI.K.3 With prompting and support, describe the connection between two individuals, events, ideas, or pieces of information in a text.
- RI.K.7 With prompting and support, describe the relationship between illustrations and the text in which they appear (e.g., what person, place, thing, or idea in the text an illustration depicts).
- RI.K.10 Actively engage in group reading activities with purpose and understanding.

- Writing

- 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.

- Speaking and Listening

- SL.K.1 Participate in collaborative conversations with diverse partners about kindergarten topics and texts with peers and adults in small and larger groups.
- 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.5 Add drawings or other visual displays to descriptions as desired to provide additional detail.

- Language

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- L.K.4 Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on kindergarten reading and content.
- L.K.6 Use words and phrases acquired through conversations, reading and being read to, and responding to texts.
- **Mathematics-**
 - Math Practices
 - MP1 Make sense of problems and persevere in solving them.
 - MP2 Reason abstractly and quantitatively.
 - MP4 Model with mathematics.
 - MP5 Use appropriate tools strategically.
 - MP6 Attend to precision.
 - Counting & Cardinality
 - K.CC.4 Understand the relationship between numbers and quantities; connect counting to cardinality.
 - K.CC.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.7 Compare two numbers between 1 and 10 presented as written numerals.
 - Measurement & Data
 - K.MD.1 Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object.
 - K.MD.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.

Technology Standards:

Interactive games; keyboarding practice when typing compositions; related videos & websites; use of online leveled readers.

8.1 Educational Technology: All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.

- A. Technology Operations and Concepts: Students demonstrate a sound understanding of technology concepts, systems and operations
 - **8.1.2.A.4 Demonstrate developmentally appropriate navigation skills in virtual environments (i.e. games)**
- B. Creativity and Innovation: Students demonstrate creative thinking, construct knowledge and develop innovative products and process using technology.

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- C. Communication and Collaboration: Students use digital media and environments to communicate and work collaboratively, including at a distance, to support individual learning and contribute to the learning of others.
 - **8.1.P.C.1 Collaborate with peers by participating in interactive digital games or activities**
- D. Digital Citizenship: Students understand human, cultural, and societal issues related to technology and practice legal and ethical behavior.
 - **8.1.2.E.1 Use digital tools and online resources to explore a problem or issue**

21st Century Life and Career Standards:

<https://www.state.nj.us/education/cccs/2014/career/92.pdf>

9.2.4.A.2 Identify various life roles and civic and work-related activities in the school, home, and community

21st Century Career Ready Practices:

<https://www.state.nj.us/education/cccs/2014/career/CareerReadyPractices.pdf>

CRP1. Act as a responsible and contributing citizen and employee

Evidence of Student Learning

Formative Tasks:

- 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, Water
- 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.

Alternative Assessments:

- Performance Assessments
- 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.

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 of designs

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<p>Use tools and materials to design and build a structure (e.g., umbrellas, canopies, tents) that will reduce the warming effect of sunlight on an area.</p> <p>Develop a simple model based on evidence to represent a proposed object or tool.</p> <ul style="list-style-type: none"> ● Graphic Organizers & Guided Note Taking ● Directed Reading ● Cooperative Group Learning, develop models, build structures, analyze data ● Homework ● Journal Entries 	
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<p>Summative Assessments:</p> <ul style="list-style-type: none"> ● Unit Tests ● Unit Projects ● Performance Tasks 	<p>Benchmark Assessments:</p> <ul style="list-style-type: none"> ● Baseline SGO ● Mid-year SGO ● End of year SGO
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Knowledge & Skills

<p>Enduring Understandings:</p> <ul style="list-style-type: none"> ● When light shows on a surface, the surface gets warmer. ● The longer light shines on a surface, the warmer the surface gets ● Dark surfaces get warmer than pale surfaces when light shines on them. 	<p>Essential Questions:</p> <ul style="list-style-type: none"> ● Why does Earth’s surface get warm? ● Why are the playgrounds warmer in the afternoon? ● Why does one surface on the Earth get warmer than another when sunlight shines on them for the same amount of time.
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Core Instructional & Supplemental Materials

<p>Suggested Activities/Resources: Houghton Mifflin Harcourt Science Dimensions</p> <ul style="list-style-type: none"> ● 1. Lesson 1: <i>How Does the Sun Warm the Earth?</i> 	<p>Varied Levels of Text:</p> <ul style="list-style-type: none"> ● <i>Science Dimensions leveled readers</i> ● <i>Getting Warm in the Sunlight</i> ● <i>Cool People in Hot Places</i>
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- 2. Lesson 2: *How Can I Protect Myself from the Sun?*

- *Handbook of Models*

Accommodations/Modifications

English Language Learners:

- Use word wall
- Use labeled pictures of academic skill
- Use tactile objects to relate to key ideas.
- Chunk/limit information
- Speak slowly and carefully
- Limit number of questions
- Partner with a strong English speaking partner
- Provide extended time
- Modify assignments

Special Education/504 Plans/Students with Disabilities:

- Follow specific IEP/504 accommodations and modifications
- Provide extended time
- Modify assignments
- Label pictures of engineering and design vocabulary/concepts
- Pre-teach concepts
- Differentiate assignments
- Allow alternate assignments and assessment
- Listen to audio recordings instead of reading text
- Learn content from audio books, movies, videos and digital media instead of reading print version
- Work with fewer items per page or line and/or materials in a larger print size
- Have a designated reader
- Hear instructions orally
- Provide multiple choices to represent their understandings (e.g. multisensory techniques-auditory/visual aids; pictures, illustrations, graphs, charts, data tables, multimedia, modeling).
- Dictate answers to a scribe
- Capture responses on an audio recorder
- Work or take a test in a different setting, such as a quiet room with few distractions
- Sit in optimal location (for example, near the teacher)
- Use special lighting or acoustics

Students at Risk of Failure:

- Small group instruction
- Structure lessons that are authentic
- Provide frequent breaks
- Model how assignments should look
- Incorporate social/emotional discussions

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- Encourage and monitor positive peer collaboration
- Provide academic resources for both home and school use
- Provide incentives to increase motivation and collaboration

Economically Disadvantaged:

- Provide clear, achievable expectation, do not lower academic requirements for them.
- Build a safe and nurturing atmosphere
- Perspective and experiences of the children need to be considered
- Create ways for students to share their emotions
- Give every student the same opportunity for success.
- Offer tutoring
- Assemble a packet with information and expectations for each class.
- Be flexible with assignments
- Allow students to finish assignments independently, or give them the opportunity to complete tasks at their own pace.
- Talk with parents about class expectations and the challenges of changing schools mid-year.
- Use real-world examples and create mental models for abstract idea
- Provide increased knowledge base and vocabulary use about real world experiences.
- Share the decision making in class.
- Maintain expectations while offering choice and soliciting input (e.g., "Would you rather do your rough draft now or gather some more ideas first?").
- Use a variety of classroom strategies that strengthen social and emotional skills
- Create a familial atmosphere by using inclusive and affiliative language
- Build supportive relationships, provide positive guidance, foster hope and optimism, and take time for affirmation and celebration.
- Provide access to computers, magazines, newspapers, and books so low-income students can see and work with printed materials
- Daily affirmations
- Asking to hear students' hopes and offering reinforcements of those hopes
- Telling students why they can succeed
- Providing needed academic resources (paper, pencils, computer time)
- Helping students to set goals and build goal-setting skills

Culturally Diverse:

- Provide opportunities to learn from scientists of similar backgrounds
- Involve families in student learning
- Consult with tribes and tribal education departments
- Provide social/emotional support
- Respect cultural traditions
- Build in more group work to encourage interaction with peers
- Show photos, videos, and definitions when possible for culturally unique vocabulary
- Help students feel more comfortable by learning about their cultural background
- Provide immediate praise and feedback
- Provide high interest topics/options

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- Provide road maps or outlines for difficult concepts
- Provide sufficient wait time before calling on any student to help keep students who may need more time engaged
- Create a nurturing environment with structured routines
- Teach study skills
- Provide students with necessary academic resources and materials
- Allow for alternative assignments
- Provide visuals
- Assign peer tutor
- Allow students to demonstrate knowledge through alternative assessments
- Allocation of more resources to involve parents who are non-native English speakers
- Become familiar with the values, traditions, and customs of various cultures; and learn the migratory conditions specific to each of their students' families.
- Learn at least a few words of students' native languages.
- Collaborate with language professionals and ESL teachers
- Encourage parents to help children maintain their native language at home, while the school helps the child attain proficiency in English.
- Have a clear sense of your own ethnic and cultural identities.
- Communicate high expectations for the success of all students and a belief that all students can succeed.
- Provide "scaffolding" that links the academically challenging curriculum to the cultural resources that students bring to school.
- Explicitly teach students the culture of the school and seek to maintain students' sense of ethnocultural pride and identity
- Maintain high standards and demonstrate high expectations for all ethnically, culturally, and linguistically diverse students.

Unit 5: Weather

Duration: 20 Days

Standards/Learning Targets

New Jersey Student Learning Standards:

- **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.]

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Performance Expectation

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.]

Disciplinary Core Ideas

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

Science and Engineering Practices

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.

Science Knowledge is Based on Empirical Evidence

Scientists look for patterns and order when making observations about the world.

Patterns

Patterns in the natural world can be observed, used to describe phenomena, and used as evidence.

Learning Objectives

Organizing data

With guidance, students organize data from given observations (firsthand or from media) about local weather conditions using graphical displays (e.g., pictures, charts). The weather condition data include:

- The number of sunny, cloudy, rainy, windy, cool, or warm days.
- The relative temperature at various times of the day (e.g., cooler in the morning, warmer during the day, cooler at night).

Identifying relationships

Students identify and describe* patterns in the organized data, including:

- The relative number of days of different types of weather conditions in a month.
- The change in the relative temperature over the course of a day.

Interpreting data

Students describe and share that:

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- Certain months have more days of some kinds of weather than do other months (e.g., some months have more hot days, some have more rainy days).
- The differences in relative temperature over the course of a day (e.g., between early morning and the afternoon, between one day and another) are directly related to the time of day
- Read appropriate texts, media) about local severe weather warnings (e.g., tornado alerts, hurricane warnings, major thunderstorm warnings, winter storm warnings, severe drought alerts, heatwave alerts), including that:
 - There are patterns related to local severe weather that can be observed (e.g., certain types of severe weather happen more in certain places).
 - Weather patterns (e.g., some events are more likely in certain regions) help scientists predict severe weather before it happens.
 - Severe weather warnings are used to communicate predictions about severe weather.
 - Weather forecasting can help people plan for, and respond to, specific types of local weather (e.g., responses: stay indoors during severe weather, go to cooling centers during heat waves; preparations: evacuate coastal areas before a hurricane, cover windows before storms).

Primary Interdisciplinary Connections:

- **ELA/Literacy-**
 - Reading
 - RI.K.1 With prompting and support, ask and answer questions about key details in a text.
 - RI.K.3 With prompting and support, describe the connection between two individuals, events, ideas, or pieces of information in a text.
 - RI.K.7 With prompting and support, describe the relationship between illustrations and the text in which they appear (e.g., what person, place, thing, or idea in the text an illustration depicts).
 - RI.K.10 Actively engage in group reading activities with purpose and understanding.
 - Writing
 - 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.
 - Speaking and Listening

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- SL.K.1 Participate in collaborative conversations with diverse partners about kindergarten topics and texts with peers and adults in small and larger groups.
- 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.5 Add drawings or other visual displays to descriptions as desired to provide additional detail.
- Language
 - L.K.4 Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on kindergarten reading and content.
 - L.K.6 Use words and phrases acquired through conversations, reading and being read to, and responding to texts.
- **Mathematics-**
 - Math Practices
 - MP1 Make sense of problems and persevere in solving them.
 - MP2 Reason abstractly and quantitatively.
 - MP4 Model with mathematics.
 - MP5 Use appropriate tools strategically.
 - MP6 Attend to precision.
 - Counting & Cardinality
 - K.CC.4 Understand the relationship between numbers and quantities; connect counting to cardinality.
 - K.CC.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.7 Compare two numbers between 1 and 10 presented as written numerals.
 - Measurement & Data
 - K.MD.1 Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object.
 - K.MD.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.

Technology Standards:

- 8.1 Educational Technology: All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.
- A. Technology Operations and Concepts: Students demonstrate a sound

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<p>understanding of technology concepts, systems and operations</p> <ul style="list-style-type: none"> ● B. Creativity and Innovation: Students demonstrate creative thinking, construct knowledge and develop innovative products and process using technology.C. Communication and Collaboration: Students use digital media and environments to communicate and work collaboratively, including at a distance, to support individual learning and contribute to the learning of others. ● D. Digital Citizenship: Students understand human, cultural, and societal issues related to technology and practice legal and ethical behavior. <ul style="list-style-type: none"> ○ 8.1.2.A.4 Demonstrate developmentally appropriate navigation skills in virtual environments (i.e. games) ○ 8.1.P.C.1 Collaborate with peers by participating in interactive digital games or activities ○ 8.1.2.E.1 Use digital tools and online resources to explore a problem or issue

<p>21st Century Life and Career Standards: https://www.state.nj.us/education/cccs/2014/career/92.pdf</p> <p>9.2.4.A.2 Identify various life roles and civic and work-related activities in the school, home, and community</p> <p>21st Century Career Ready Practices: https://www.state.nj.us/education/cccs/2014/career/CareerReadyPractices.pdf</p> <ul style="list-style-type: none"> ● CRP1. Act as a responsible and contributing citizen and employee

Evidence of Student Learning

<p>Formative Tasks:</p> <ul style="list-style-type: none"> ● Interactive worktext, Graphic Organizers & Guided Note Taking ● Directed Reading ● Cooperative Group Learning ● Homework ● Evidence Notebook/Journal Entries 	<p>Alternative Assessments: Performance Assessments</p>
<p>Summative Assessments:</p> <ul style="list-style-type: none"> ● Unit Tests ● Unit Projects ● Performance Tasks 	<p>Benchmark Assessments:</p> <ul style="list-style-type: none"> ● Baseline SGO ● Mid-year SGO ● End of year SGO

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Knowledge & Skills

Enduring Understandings:

- Patterns in the natural world can be observed, used to describe, phenomena, and used as evidence.
- Events have causes that generate observable patterns.
Weather forecasting is important to prepare for and respond to severe weather.
- Weather has different patterns.
- The temperature of the Earth's surface (sand, soil, rocks, and water) can be warmer or cooler in relation to the sun's effect.

Essential Questions:

- What predictable, observable patterns occur as a result of the effects of rain, sun, wind, and clouds?
- What is the purpose of weather forecasting?
- How do you protect yourself in different types of weather?
- How is the weather yesterday different from today?

Core Instructional & Supplemental Materials

Suggested Activities/Resources:

Houghton Mifflin Harcourt *Science Dimensions*
Lesson 1: *How Can We Observe Weather Patterns?*
Lesson 2: *How Can We Measure Weather?*
Lesson 3: *What are Kinds of Severe Weather?*
Lesson 4: *How Can Forecasts Help Us?*

- Weather vs. Climate
<https://www.youtube.com/watch?v=RK5WUIVxv50>
- Weather Videos
<http://www.sciencekids.co.nz/videos/weather.html>
- Franklin and Friends: The Four Seasons
<https://www.youtube.com/watch?v=GrGpw4ra5HE>
- Weather: Different Seasons
<https://www.youtube.com/watch?v=7UckUHeWXD0>
- Sid the Science Kid: Weather Songs
<http://pbskids.org/sid/videoplayer.html>

Varied Levels of Text:

- "Science Dimensions" leveled readers
- "Tornadoes!"
- Various weather related books

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- Seasons
<http://www.sciencecourseware.org/eec/GlobalWarming/Tutorials/Seasons/>
- Seasons
http://pbs.panda-prod.cdn.s3.amazonaws.com/media/assets/wgbh/ess05/ess05_int_seasonsgame/index.html
- Hooked on Science
<http://www.hookedonscience.org/nextgenerationsciencestandards.html>
- Science Lesson Plans
<http://www.calacademy.org/educators/science-lesson-plans-for-kindergarten-and-1st-grade>
-
- Climate Kids
<http://climatekids.nasa.gov/menu/big-questions/>
-
- Weather.com- <https://weather.com/>
-
- Weather Wiz Kids
<http://www.weatherwizkids.com/>
-
- Almanac for Kids- Weather
<http://www.almanac4kids.com/weather/index.php>
- Treehouse Weather Kids Activities and Games
<http://extension.illinois.edu/treehouse/index.cfm>
- Pete's Powerpoint Station- Collection of slideshow presentations
<http://science.pppst.com/weather/clouds.html>
- NASA- Climate Kids Interactive Website
<http://climatekids.nasa.gov/menu/big-questions/>

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- Steve Spangler's Science Experiments
<http://www.stevespanglerscience.com/lab/categories/experiments/weather/>
- Crazy Weather:
<https://www.youtube.com/watch?v=UbfSgigD9M>
- The Weather Channel:
<https://weather.com/>

Accommodations/Modifications

English Language Learners:

- Labeled pictures of academic skill
- Using tactile objects to relate to key ideas.
- Chunk/limit information
- Speak slowly
- Limit number of questions
- Partner with a strong English speaking partner
- Extended time
- Modified assignments

Special Education/504 Plans/Students with Disabilities:

- Follow specific IEP/504 accommodations and modifications
- Extended time
- Modified assignments
- Labeled pictures of weather phenomenon
- Pre-teach concepts
- Differentiate assignments
- Allow alternate assignments and assessment

Students at Risk of Failure:

- Small group instruction
- Frequent breaks
- Model how assignments should look
- Incorporate social/emotional discussions
- Encourage and monitor positive peer collaboration
- Provide academic resources for both home and school use
- Provide incentives to increase motivation and collaboration

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Economically Disadvantaged:

- Provide clear, achievable expectation, do not lower academic requirements for them.
- Build a safe and nurturing atmosphere
- Perspective and experiences of the children need to be considered
- Create ways for students to share their emotions
- Give every student the same opportunity for success.
- Offer tutoring. Thirty or forty minutes a few times a week can dramatically increase a disadvantaged child's achievement level
- Assemble a packet with information and expectations for each class.
- Be flexible with assignments
- Allow students to finish assignments independently, or give them the opportunity to complete tasks at their own pace.
- Talk with parents about class expectations and the challenges of changing schools mid-year.
- Use real-world examples and create mental models for abstract idea
- Provide increased knowledge base and vocabulary use about real world experiences.
- Share the decision making in class.
- Maintain expectations while offering choice and soliciting input (e.g., "Would you rather do your rough draft now or gather some more ideas first?").
- Model the process of adult thinking.
- Discipline through positive relationships, not by exerting power or authority.
- Use a variety of classroom strategies that strengthen social and emotional skills
- Create a familial atmosphere by using inclusive and affiliative language
- Build supportive relationships, provide positive guidance, foster hope and optimism, and take time for affirmation and celebration.
- Provide access to computers, magazines, newspapers, and books so low-income students can see and work with printed materials
- Daily affirmations
- Asking to hear students' hopes and offering reinforcements of those hopes
- Telling students why they can succeed
- Providing needed academic resources (paper, pencils, computer time)
- Helping students to set goals and build goal-setting skills

Culturally Diverse:

- Involve families in student learning
- Consult with tribes and tribal education departments
- Provide social/emotional support
- Respect cultural traditions
- Build in more group work to encourage interaction with peers
- Show photos, videos, and definitions when possible for culturally unique vocabulary

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- Help students feel more comfortable by learning about their cultural background
- Provide immediate praise and feedback
- Provide high interest topics/options
- Provide road maps or outlines for difficult concepts
- Provide sufficient wait time before calling on any student to help keep students who may need more time engaged
- Create a nurturing environment with structured routines
- Teach study skills
- Provided students with necessary academic resources and materials
- Allow for alternative assignments
- Provide visuals
- Assign peer tutor
- Allow students to demonstrate knowledge through alternative assessments Asian, Native Hawaiian/ Other Pacific Islanders
- Greater accommodation of English language learner students on assessment tests and in the classroom,
- Allocation of more resources to involve parents who are non-native English speakers
- Familiarize themselves with the values, traditions, and customs of various cultures; and learn the migratory conditions specific to each of their students' families.
- Learn at least a few words of their Asian students' native languages. By showing such interest, teachers can set the tone for better communication.
- Collaborate with language professionals and ESL teachers
- Encourage parents to help children maintain their native language at home, while the school helps the child attain proficiency in English.
- Teachers have a clear sense of their own ethnic and cultural identities.
- Teachers communicate high expectations for the success of all students and a belief that all students can succeed.
- Teachers provide a "scaffolding" that links the academically challenging curriculum to the cultural resources that students bring to school.
- Teachers explicitly teach students the culture of the school and seek to maintain students' sense of ethnocultural pride and identity
- Maintain high standards and demonstrate high expectations for all ethnically, culturally, and linguistically diverse students.