Tuckerton Borough School District Curriculum Guide

Grade: 3rd Grade	**Content Area:** Science

Created by : Ellen Healy, Hayley Oliver
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Recommended Pacing Guide	
Unit 1: Forces and Interactions	**40** Days
Unit 2: Inheritance and Traits	**40** Days
Unit 3: Environments and Survival (Ecosystems)	**40** Days
Unit 4: Weather and Climate	**40** Days

Suggested Accommodations For All Units

English Language Learners

- Visuals
- Gesturing
- Use of realia and manipulatives
- Simplified language / teacher talk / thinking aloud
- Graphic organizers
- Frequently check for understanding
- Personal word walls / word rings
- Introducing key vocabulary before lesson
- Total physical response (TPR) activities
- Cloze activities
- Teacher modeling
- Pattern sentences (speaking and/or writing)
- Choral chanting
- Small group instruction / cooperative learning
- Allowing for additional wait time for student responses during conversations
- Scaffolding questions and instructional language
- Allowing students to show or use gestures if not yet able to produce oral language
- Modeled and shared writing activities
- Providing a student buddy

Special Education

- Model assignments

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- Provide Brain Breaks
- Chunk assignments
- Use visuals
- Introduce key vocabulary before lesson
- Teacher reads aloud daily
- Provide peer tutoring
- Use a strong student as a "buddy" (does not necessarily have to speak the primary language)
- Choral reading
- Chants, songs
- Assign a picture or movement to vocabulary words
- Small group instruction - guided reading and guided writing
- Use books on tape
- Allow extra time to complete assignments or tests
- Work in a small group
- Flexible grouping
- Allow answers to be given orally or dictated
- Have students repeat what was said
- Follow all IEP modifications
- Scriber for students who can't write
- Technology resources

504 Plans

- Follow all 504 plan modifications
- Provide Picture Instructions
- Small Group Instruction - Guided Reading and Guided Writing
- Allow Extra Time To Complete Assignments Or Tests
- Allowing For Additional Wait Time For Student Responses During Conversations
- Provide Fidget Tools
- Flexible Seating
- Chunk Assignments
- Positive Reinforcement

Gifted and talented

- Encourage upper level intellectual behavior based on bloom's taxonomy
- Do not always be explicit, allow for discovery
- Use centers and group students according to ability or interest
- Propose interest-based extension activities
- Use leveled texts and offer an advanced reader reading list
- Use varied modes of pre-assessment and assessment
- Create an enhanced set of introductory activities (e.g. advance organizers, concept maps, concept puzzles)
- Provide options, alternatives and choices to differentiate and broaden the curriculum
- Organize and offer flexible small group learning activities
- Provide whole group enrichment explorations
- Teach cognitive and methodological skills
- Use center, stations, or contracts

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- Organize integrated problem-solving simulations
- Debrief students
- Propose interest-based extension activities
- Ask higher order thinking questions using
- Discovery learning instead of explicit learning
- Use centers and group students according to ability or interest

Students at Risk of School Failure

- Provide peer tutoring
- Use a strong student as a "buddy"
- Use books on tape
- Allow extra time to complete assignments or tests
- Work in a small group
- One on one instruction
- Provide immediate praise and feedback
- Provide high interest topics
- Create a nurturing environment
- Provide visuals
- Be flexible with assignments and time frames
- Provide needed academic resources

Economically Disadvantaged:

- Build a safe and nurturing atmosphere
- Perspective and experiences of the children need to be considered
- Create ways for students to share their emotions
    - Build supportive relationships, provide positive guidance, foster hope and optimism, and take time for affirmation and celebration.

Culturally Diverse:

- Provide social/emotional support
- Respect cultural traditions
- Provide immediate praise and feedback
- Create a nurturing environment with structured routines
- Follow specific students accommodations and modifications as listed in individual student IEP or 504 plan
- Provide visuals

Amistad Law: N.J.S.A. 18A 52:16A-88 Every board of education shall incorporate the information regarding the contributions of AfricanAmericans to our country in an appropriate place in the curriculum of elementary and secondary school students.

Holocaust Law: N.J.S.A. 18A:35-28 Every board of education shall include instruction on the Holocaust and genocides in an appropriate place in the curriculum of all elementary and secondary school pupils. The instruction shall further emphasize the personal responsibility that each citizen bears to fight racism and hatred whenever and wherever it happens.

Diversity and Inclusion Law: N.J.S.A. 18A:35-4.36a Each school district shall incorporate instruction on diversity and inclusion in an appropriate place in the curriculum of students in grades kindergarten through 12 as part of the district's implementation of the New Jersey Student Learning Standards.

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Unit 1: Balancing Forces	**Duration: 40 days**

Standards/Learning Targets

New Jersey Student Learning Standards:

- **3-PS2-1-** Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object.
- **3-PS2-2-** Make observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predict future motion.
- **3-PS2-3-** Ask questions to determine cause and effect relationships of electric or magnetic interactions between two objects not in contact with each other.
- **3-PS2-4-** Define a simple design problem that can be solved by applying scientific ideas about magnets.

Performance Expectation

3-PS2-1- Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object. [Clarification Statement: Examples could include an unbalanced force on one side of a ball can make it start moving; and, balanced forces pushing on a box from both sides will not produce any motion at all.] [Assessment Boundary: Assessment is limited to one variable at a time: number, size, or direction of forces. Assessment does not include quantitative force size, only qualitative and relative. Assessment is limited to gravity being addressed as a force that pulls objects down.]

Science and Engineering Practices	**Disciplinary Core Ideas**
Planning and Carrying Out Investigations- ● Plan and conduct an investigation collaboratively to produce data to serve as the basis for evidence, using fair tests in which variables are controlled and the number of trials considered. **Scientific Investigations Use a Variety of Methods-** ● Science investigations use a variety of methods, tools, and techniques.	**PS2.A: Forces and Motion-** ● Each force acts on one particular object and has both strength and a direction. An object at rest typically has multiple forces acting on it, but they add to give zero net force on the object. Forces that do not sum to zero can cause changes in the object's speed or direction of motion. (Boundary: Qualitative and conceptual, but not quantitative addition of forces are used at this level.) **PS2.B: Types of Interactions-** ● Objects in contact exert forces on each other.
Crosscutting Concepts	**Learning Objectives**
Cause and Effect- ● Cause and effect relationships are routinely identified.	● Students identify and describe the phenomenon under investigation, which includes the effects of different forces on an object's motion (e.g., starting, stopping, or changing direction).

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	• Students describe the purpose of the investigation, which includes producing data to serve as the basis for evidence for how balanced and unbalanced forces determine an object's motion. • Students collaboratively develop an investigation plan. In the investigation plan, students describe the data to be collected. • Students individually describe how the evidence to be collected will be relevant to determining the effects of balanced and unbalanced forces on an object's motion. • In the collaboratively developed investigation plan, students describe how the motion of the object will be observed and recorded

Performance Expectation	
3-PS2-2- Make observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predict future motion. [Clarification Statement: Examples of motion with a predictable pattern could include a child swinging in a swing, a ball rolling back and forth in a bowl, and two children on a seesaw.] [Assessment Boundary: Assessment does not include technical terms such as period and frequency.]	
Science and Engineering Practices	**Disciplinary Core Ideas**
Planning and Carrying Out Investigations- • Make observations and/or measurements to produce data to serve as the basis for evidence for an explanation of a phenomenon or test a design solution. **Science Knowledge is Based on Empirical Evidence-** • Science findings are based on recognizing patterns.	**PS2.A: Forces and Motion-** • The patterns of an object's motion in various situations can be observed and measured; when that past motion exhibits a regular pattern, future motion can be predicted from it. (Boundary: Technical terms, such as magnitude, velocity, momentum, and vector quantity, are not introduced at this level, but the concept that some quantities need both size and direction to be described is developed
Crosscutting Concepts	**Learning Objectives**
Patterns- • Patterns of change can be used to make predictions.	• From the given investigation plan, students identify and describe the phenomenon under investigation, which includes observable patterns in the motion of an object. • Students identify and describe the purpose of the investigation, which includes providing

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	evidence for an explanation of the phenomenon that includes the idea that patterns of motion can be used to predict future motion of an object. ● Based on a given investigation plan, students identify and describe the data to be collected through observations and/or measurements, including data on the motion of the object as it repeats a pattern over time (e.g., a pendulum swinging, a ball moving on a curved track, a magnet repelling another magnet). ● Students describe how the data will serve as evidence of a pattern in the motion of an object and how that pattern can be used to predict future motion. ● From the given investigation plan, students identify and describe how the data will be collected

Performance Expectation	
3-PS2-3- Ask questions to determine cause and effect relationships of electric or magnetic interactions between two objects not in contact with each other. [Clarification Statement: Examples of an electric force could include the force on hair from an electrically charged balloon and the electrical forces between a charged rod and pieces of paper; examples of a magnetic force could include the force between two permanent magnets, the force between an electromagnet and steel paper clips, and the force exerted by one magnet versus the force exerted by two magnets. Examples of cause and effect relationships could include how the distance between objects affects strength of the force and how the orientation of magnets affects the direction of the magnetic force.] [Assessment Boundary: Assessment is limited to forces produced by objects that can be manipulated by students, and electrical interactions are limited to static electricity.]	
Science and Engineering Practices	**Disciplinary Core Ideas**
Asking Questions and Defining Problems- ● Ask questions that can be investigated based on patterns such as cause and effect relationships.	**PS2.B: Types of Interactions-** ● Electric and magnetic forces between a pair of objects do not require that the objects be in contact. The sizes of the forces in each situation depend on the properties of the objects and their distances apart and, for forces between two magnets, on their orientation relative to each other.
Crosscutting Concepts	**Learning Objectives**
Cause and Effect-	● Students ask questions that arise from

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● Cause and effect relationships are routinely identified, tested, and used to explain change.	observations of two objects not in contact with each other interacting through electric or magnetic forces, the answers to which would clarify the cause and effect relationships between: ○ The sizes of the forces on the two interacting objects due to the distance between the two objects. ○ The relative orientation of two magnets and whether the force between the magnets is attractive or repulsive. ○ The presence of a magnet and the force the magnet exerts on other objects. ○ Electrically charged objects and an electric force. ● Students' questions can be investigated within the scope of the classroom.

Performance Expectation	
3-PS2-4- Define a simple design problem that can be solved by applying scientific ideas about magnets.* [Clarification Statement: Examples of problems could include constructing a latch to keep a door shut and creating a device to keep two moving objects from touching each other.]	
Science and Engineering Practices	**Disciplinary Core Ideas**
Asking Questions and Defining Problems- ● Define a simple problem that can be solved through the development of a new or improved object or tool.	**PS2.B: Types of Interactions-** ● Electric and magnetic forces between a pair of objects do not require that the objects be in contact. The sizes of the forces in each situation depend on the properties of the objects and their distances apart and, for forces between two magnets, on their orientation relative to each other.
Crosscutting Concepts	**Learning Objectives**
Interdependence of Science, Engineering, and Technology- ● Scientific discoveries about the natural world can often lead to new and improved technologies, which are developed through the engineering design process.	● Students identify and describe a simple design problem that can be solved by applying a scientific understanding of the forces between interacting magnets. ● Students identify and describe the scientific ideas necessary for solving the problem, including: ○ Force between objects do not require

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	that those objects be in contact with each other ○ The size of the force depends on the properties of objects, distance between the objects, and orientation of magnetic objects relative to one another. ● Students identify and describe the criteria (desirable features) for a successful solution to the problem. ● Students identify and describe the constraints.

Primary Interdisciplinary Connections:

- **ELA/Literacy-**
  - **RI.CR.3.1.** Ask and answer questions and make relevant connections to demonstrate understanding of an informational text, referring explicitly to textual evidence as the basis for the answers.
  - **RI.IT.3.3.** Describe the relationship between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text, using language that pertains to time, sequence, and cause-effect.
  - **RI.AA.3.7.** Describe the logical connection between particular sentences and paragraphs in a text (e.g., comparison, cause/effect, first/second/third in a sequence) to support specific points the author makes in a text.
  - **W.WR.3.5**. Generate questions about a topic and independently locate related information from at least two reference sources (print and non-print) to obtain information on that topic.
  - **W.SE.3.6.** Use discussion, books, or media resources to gather ideas, outline them, and prioritize the information to include while planning to write about a topic.
- **Mathematics-**
  - 3.M.A.2 Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l). Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem.

● **Computer Science and Design Thinking -2020 New Jersey Student Learning Standards –**	
● 8.1.5.IC.1: Identify computing technologies that have impacted how individuals live and work and describe the factors that influenced the changes. ● 8.1.5.DA.1: Collect, organize, and display data in order to highlight relationships or support a claim. ● 8.1.5.DA.3: Organize and present collected data visually to communicate insights gained from different views of the data	

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2020 New Jersey Student Learning Standards – Career Readiness, Life Literacies, and Key Skills	
• 9.4.5.CT.1: Identify and gather relevant data that will aid in the problem-solving process (e.g., 2.1.5.EH.4, 4-ESS3-1, 6.3.5.CivicsPD.2). • 9.4.5.CT.2: Identify a problem and list the types of individuals and resources (e.g., school, community agencies, governmental, online) that can aid in solving the problem (e.g., 2.1.5.CHSS.1, 4-ESS3-1). • 9.4.5.CT.3: Describe how digital tools and technology may be used to solve problems. • 9.4.5.DC.4: Model safe, legal, and ethical behavior when using online or offline technology (e.g., 8.1.5.NI.2) • 9.4.5.CI.2: Investigate a persistent local or global issue, such as climate change, and collaborate with individuals with diverse perspectives to improve upon current actions designed to address the issue (e.g., 6.3.5.CivicsPD.3, W.5.7)	

Evidence of Student Learning	
Formative Tasks: • Exit slips • Analysis of student work • Teacher observations • Self-reflection • Science journals	**Alternative Assessments:** • 3-D Performance Tasks • Student created models • draw/verbal explanations
Summative Assessments: • Brain Pop • Achieve 3000 • Graphic Organizers & Guided Note Taking • Cooperative Group Learning	**Benchmark Assessments:** • Teacher created assessments • Mystery Science • Scholastic
Knowledge & Skills	

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Enduring Understandings:

- The effect of unbalanced forces on an object results in a change of motion.
- Patterns of motion can be used to predict future motion. Some forces act through contact, some forces act even when objects are not in contact.
- The gravitational force of Earth acting on an object near Earth's surface pulls that object toward the planet's center.
- The effect of unbalanced forces on an object results in a change of motion.
- Patterns of motion can be used to predict future motion.
- Some forces act through contact, some forces act even when objects are not in contact.

Essential Questions:

- What are the effects of balanced and unbalanced forces on the motion of an object?
- How can you utilize a pattern to predict future motion?
- What is the relationship between electric or magnetic interactions between two objects not in contact?
- How can I solve a design problem using what I have learned about magnet?
- What are the effects of balanced and unbalanced forces on the motion of an object?
- How can you utilize a pattern to predict future motion?
- What is the relationship between electric or magnetic interactions between two objects not in contact?
- How can I solve a design problem using what I have learned about magnets?

Core Instructional & Supplemental Materials

Suggested Activities/Resources:

- Students will explore motion by simulating a push with a golf ball and pencil. Using a graphic organizer, students will record their data on a table and relay the information to class table by the end of the experiment. Students will observe forces and motion, as well as how much force is required to move an object.
- Third grade Lesson Force and Motion Investigation | BetterLesson
- Students will rub a balloon against shirt which builds up negative charges on the surface of the balloon. These charges attract to the positive charges on the static ghost, causing the ghost to move. *great activity to teach around Halloween.
- Students will add blocks to a structure which allows the center of gravity, of your structure, to shift from right to left. Once you remove the bottom vertical block, your structure perfectly balances over the bottom left block. Students can also demonstrate this idea with "Jenga" blocks.

Varied Levels of Text:

- Forces All Around
- Handbook of Forces
- What My Sister Taught Me About Magnets
- Hoverboard
- Schoolwide mentor texts "Forces and Motion" unit
- Forces Make Things Move-Kimberly Bradley
- Gravity is a Mystery-Franklyn Branley
- Waking Upside Down-Phillip Heckman
- Move It! Motion, Forces, and You- Adrienne Mason

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Unit 2: Inheritance and Traits	**Duration: 40 days**

Standards/Learning Targets

New Jersey Student Learning Standards:

- **3-LS1-1-** Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death
- **3-LS3-1-** Analyze and interpret data to provide evidence that plants and animals have traits inherited from parents and that variation of these traits exists in a group of similar organisms
- **3-LS3-2-** Use evidence to support the explanation that traits can be influenced by the environment
- **3-LS4-2 -** Use evidence to construct an explanation for how the variations in characteristics among individuals of the same species may provide advantages in surviving, finding mates, and reproducing

Performance Expectation

3-LS1-1- Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death. [Clarification Statement: Changes organisms go through during their life form a pattern.] [Assessment Boundary: Assessment of plant life cycles is limited to those of flowering plants. Assessment does not include details of human reproduction.]

Science and Engineering Practices	**Disciplinary Core Ideas**
Developing and Using Models- ● Develop models to describe phenomena.	**LS1.B: Growth and Development of Organisms-** ● Reproduction is essential to the continued existence of every kind of organism. Plants and animals have unique and diverse life cycles.
Crosscutting Concepts	**Learning Objectives**
Patterns: ● Patterns of change can be used to make predictions. (3-LS1-1) **Scientific Knowledge is Based on Empirical Evidence-** ● Science findings are based on recognizing patterns. ●	Students will be able to develop models Students will be able to examine the life cycles of organisms Students will be able to describe the life changes that plants and animals undergo

Performance Expectation

3-LS3-1- Analyze and interpret data to provide evidence that plants and animals have traits inherited from parents and that variation of these traits exists in a group of similar organisms. [Clarification Statement: Patterns are the similarities and differences in traits shared between offspring and their parents, or among siblings. Emphasis is on organisms other than humans.] [Assessment Boundary: Assessment does not

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include genetic mechanisms of inheritance and prediction of traits. Assessment is limited to non-human examples.]

Science and Engineering Practices	Disciplinary Core Ideas
Analyzing and Interpreting Data- ● Analyze and interpret data to make sense of phenomena using logical reasoning	**LS3.A: Inheritance of Traits-** ● Many characteristics of organisms are inherited from their parents. **LS3.B: Variation of Traits-** ● Different organisms vary in how they look and function because they have different inherited information.
Crosscutting Concepts	**Learning Objectives**
● **Patterns:** similarities and differences in patterns can be used to sort and classify natural phenomena.	● Students organize the data (e.g., from students' previous work, grade-appropriate existing datasets) using graphical displays (e.g., table, chart, graph). ● Students identify and describe patterns in the data. ● Students describe that the pattern of similarities in traits between parents and offspring, and between siblings, provides evidence that traits are inherited. ● Students describe that the pattern of differences in traits between parents and offspring, and between siblings, provides evidence that inherited traits can vary. ● Students describe that the variation in inherited traits results in a pattern of variation in traits in groups of organisms that are of a similar type.

Performance Expectation
3-LS3-2- Use evidence to support the explanation that traits can be influenced by the environment. [Clarification Statement: Examples of the environment affecting a trait could include normally tall plants grown with insufficient water are stunted; and, a pet dog that is given too much food and little exercise may become overweight.]

Science and Engineering Practices	Disciplinary Core Ideas
Constructing Explanations and Designing Solutions- ● Use evidence (e.g., observations, patterns)	**LS3.A: Inheritance of Traits-** ● Other characteristics result from individuals' interactions with the environment, which can

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to support an explanation. ●	range from diet to learning. Many characteristics involve both inheritance and environment. **LS3.B: Variation of Traits-** ● The environment also affects the traits that an organism develops.
Crosscutting Concepts	**Learning Objectives**
Cause and Effect- ● Cause and effect relationships are routinely identified and used to explain change.	● Students identify the given explanation to be supported, including a statement that relates the phenomenon to a scientific idea, including that many inherited traits can be influenced by the environment. ● Students describe the given evidence that supports the explanation, including: ○ Environmental factors that vary for organisms of the same type (e.g., amount or food, amount of water, amount of exercise an animal gets, chemicals in the water) that may influence organisms' traits. ○ Inherited traits that vary between organisms of the same type (e.g., height or weight of a plant or animal, color or quantity of the flowers). ○ Observable inherited traits of organisms in varied environmental conditions ● Students use reasoning to connect the evidence and support an explanation about environmental influences on inherited traits in organisms. In their chain of reasoning, students describe a cause and effect relationship between a specific causal environmental factor and its effect of a given variation in a trait (e.g., not enough water produces plants that are shorter and have fewer flowers than plants that had more water available).

Performance Expectation
3-LS4-2- Use evidence to construct an explanation for how the variations in characteristics among individuals of the same species may provide advantages in surviving, finding mates, and reproducing. [Clarification Statement: Examples of cause and effect relationships could be plants that have larger

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thorns than other plants may be less likely to be eaten by predators; and, animals that have better camouflage coloration than other animals may be more likely to survive and therefore more likely to leave offspring.]

Science and Engineering Practices	Disciplinary Core Ideas
Constructing Explanations and Designing Solutions- ● Use evidence Use evidence (e.g., observations, patterns) to construct an explanation.	**LS4.B: Natural Selection-** ● Sometimes the differences in characteristics between individuals of the same species provide advantages in surviving, finding mates, and reproducing.
Crosscutting Concepts	**Learning Objectives**
Cause and Effect- ● Cause and effect relationships are routinely identified and used to explain change.	● Students articulate a statement that relates the given phenomenon to a scientific idea, including that variations in characteristics among individuals of the same species may provide advantages in surviving, finding mates, and reproducing. ● Students use evidence and reasoning to construct an explanation for the phenomenon. ● Students describe the given evidence necessary for the explanation. ● Students use reasoning to logically connect the evidence to support the explanation for the phenomenon. Students describe a chain of reasoning.

Primary Interdisciplinary Connections:

- **ELA/Literacy–**
  - **RI.CR.3.1.** Ask and answer questions and make relevant connections to demonstrate understanding of an informational text, referring explicitly to textual evidence as the basis for the answers.
  - **RI.CI.3.2.** Recount in oral and written form key details from a text and explain how they support the main idea (in multi-paragraph informational text).
  - **RI.IT.3.3.** Describe the relationship between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text, using language that pertains to time, sequence, and cause-effect.
  - **W.IW.3.2.** Write informative/explanatory texts to examine a topic and convey ideas and information.

A. Introduce a topic clearly.
B. Develop a topic with facts, definitions, concrete details, text evidence, or other information and examples related to the topic.
C. Include text features (e.g.: illustrations, diagrams, captions) when useful to support comprehension.
D. Link ideas within sections of information using transition words and phrases (e.g., then, because, also, therefore).

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E. Provide a conclusion related to the information or explanation presented

- **Mathematics–**
  - MP.2 Reason abstractly and quantitatively.
  - MP.4 Model with mathematics.
  - 3.DL.B.4 Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units—whole numbers, halves, or quarters.

Computer Science and Design Thinking -2020 New Jersey Student Learning Standards

- 8.1.5.IC.1: Identify computing technologies that have impacted how individuals live and work and describe the factors that influenced the changes.
- 8.1.5.DA.1: Collect, organize, and display data in order to highlight relationships or support a claim.
- 8.1.5.DA.3: Organize and present collected data visually to communicate insights gained from different views of the data

2020 New Jersey Student Learning Standards – Career Readiness, Life Literacies, and Key Skills:

- 9.4.5.CT.1: Identify and gather relevant data that will aid in the problem-solving process (e.g., 2.1.5.EH.4, 4-ESS3-1, 6.3.5.CivicsPD.2).
- 9.4.5.CT.2: Identify a problem and list the types of individuals and resources (e.g., school, community agencies, governmental, online) that can aid in solving the problem (e.g., 2.1.5.CHSS.1, 4-ESS3-1).
- 9.4.5.CT.3: Describe how digital tools and technology may be used to solve problems.
- 9.4.5.DC.4: Model safe, legal, and ethical behavior when using online or offline technology (e.g., 8.1.5.NI.2)
- 9.4.5.CI.2: Investigate a persistent local or global issue, such as climate change, and collaborate with individuals with diverse perspectives to improve upon current actions designed to address the issue (e.g., 6.3.5.CivicsPD.3, W.5.7)

Evidence of Student Learning

Formative Tasks:

- Exit slips
- Analysis of student work
- Teacher observations
- Self-reflection
- Science journals

Alternative Assessments:

- 3-D Performance Tasks
- Student created models
- draw/verbal explanations

Summative Assessments:

- Brain Pop
- Achieve 3000
- Graphic Organizers & Guided Note Taking
- Cooperative Group Learning

Benchmark Assessments:

- Teacher created assessments
- Mystery Science
- Scholastic

Knowledge & Skills

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Enduring Understandings:	**Essential Questions:**
• Reproduction is essential to every kind of organism. • Organisms have unique and diverse life cycles. • Different organisms vary in how they look and function because they have different inherited information. • The environment also affects the traits that an organism develops.	• What are the components of life cycles that all organisms share, and how do they differ? • Do all plant and animal offspring inherit the same traits? • How are traits influenced by the environment? • How do variations and characteristics provide advantages in nature?

Core Instructional & Supplemental Materials

Suggested Activities/Resources:	**Varied Levels of Text:**
• Hands on activities embedded within Amplify Science Lessons. • Using the information given on the PowerPoint, students will compare and contrast the life cycles of butterflies and grasshoppers as well as illustrate each step of the life cycle in their notebooks or on the pages provided. • Life Cycles Lesson 1 : Butterflies and Grasshoppers • Just as scientists classify organisms based on specific criteria, during this introductory lesson on classifying, students classify seashells by the criteria they have agreed upon collaboratively. Start with a full bucket of various seashells and have students discuss different patterns within seashells. • https://betterlesson.com/lesson/614384/she-sortsseashells-by-the-seashore	• Sky Notebook • Seeing the World Through Numbers • What's going on with the Weather • Dangerous Weather Ahead • World Weather Handbook • Secrets of Animal Life Cycles- Andrew Solway • Life Cycles- Julian Sayarer • The Tiny Seed- Eric Carle • Tadpole's Promise- Jeanne Willis

Unit 3: Environments and Survival (Ecosystems)	**Duration: 40 days**

Standards/Learning Targets

New Jersey Student Learning Standards:

- **3-LS2-1-** Construct an argument that some animals form groups that help members survive
- **3-LS4-1-** Analyze and interpret data from fossils to provide evidence of the organisms and the environments in which they lived long ago
- **3-LS4-3-** Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all

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- **3-LS4-4-** Make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change

Performance Expectation	
3-LS2-1- Construct an argument that some animals form groups that help members survive.	
Science and Engineering Practices	**Disciplinary Core Ideas**
Engaging in Argument from Evidence- ● Construct an argument with evidence, data, and/or a model.	**LS2.D: Social Interactions and Group Behavior-** ● Being part of a group helps animals obtain food, defend themselves, and cope with changes. Groups may serve different functions and vary dramatically in size
Crosscutting Concepts	**Learning Objectives**
Cause and Effect- ● Cause and effect relationships are routinely identified and used to explain change.	● Students make a claim to be supported about a phenomenon. In their claim, students include the idea that some animals form groups and that being a member of that group helps each member survive. ● Students describe the given evidence, data, and/or models necessary to support the claim. ● Students evaluate the evidence to determine its relevance, and whether it supports the claim that being a member of a group has a survival advantage. ● Students describe whether the given evidence is sufficient to support the claim and whether additional evidence is needed. ● Students use reasoning to construct an argument connecting the evidence, data and/or models to the claim.

Performance Expectation	
3-LS4-1- Analyze and interpret data from fossils to provide evidence of the organisms and the environments in which they lived long ago. [Clarification Statement: Examples of data could include type, size, and distributions of fossil organisms. Examples of fossils and environments could include marine fossils found on dry land, tropical plant fossils found in Arctic areas, and fossils of extinct organisms.] [*Assessment Boundary: Assessment does not include identification of specific fossils or present plants and animals. Assessment is limited to major fossil types and relative ages.*]	
Science and Engineering Practices	**Disciplinary Core Ideas**

Grade: 3rd Grade	**Content Area:** Science

Analyzing and Interpreting Data- ● Analyze and interpret data to make sense of phenomena using logical reasoning.	**LS4.A: Evidence of Common Ancestry and Diversity-** ● Some kinds of plants and animals that once lived on Earth are no longer found anywhere. (Note: moved from K-2) ● Fossils provide evidence about the types of organisms that lived long ago and also about the nature of their environments.
Crosscutting Concepts	**Learning Objectives**
Scale, Proportion, and Quantity- ● Observable phenomena exist from very short to very long time periods. **Scientific Knowledge Assumes an Order and Consistency in Natural Systems-** ● Science assumes consistent patterns in natural systems.	● Students use graphical displays (e.g., table, chart, graph) to organize the given data. ● Students identify and describe relationships in the data, including: ○ That fossils represent plants and animals that lived long ago. ○ The relationships between the fossils of organisms and the environments in which they lived (e.g., marine organisms, like fish, must have lived in water environments). ○ The relationships between types of fossils (e.g., those of marine animals) and the current environments where similar organisms are found. ○ That some fossils represent organisms that lived long ago and have no modern counterparts. ○ The relationships between fossils of organisms that lived long ago and their modern counterparts. ○ The relationships between existing animals and the environments in which they currently live.

Performance Expectation	
3-LS4-3- Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all. [Clarification Statement: Examples of evidence could include needs and characteristics of the organisms and habitats involved. The organisms and their habitat make up a system in which the parts depend on each other.]	
Science and Engineering Practices	**Disciplinary Core Ideas**
Engaging in Argument from Evidence-	**LS4.C: Adaptation-**

Grade: 3rd Grade	**Content Area:** Science

● Construct an argument with evidence.	● For any particular environment, some kinds of organisms survive well, some survive less well, and some cannot survive at all. (3-LS4-3)
Crosscutting Concepts	**Learning Objectives**
Cause and Effect- ● Cause and effect relationships are routinely identified and used to explain change	● Students make a claim to be supported about a phenomenon. In their claim, students include the idea that in a particular habitat, some organisms can survive well, some can survive less well, and some cannot survive at all. ● Students describe the given evidence necessary for supporting the claim. ● Students evaluate the evidence to determine: ○ The characteristics of organisms that might affect survival. ○ The similarities and differences in needs among at least three types of organisms. ○ How and what features of the habitat meet the needs of each of the organisms (i.e., the degree to which a habitat meets the needs of an organism). ○ How and what features of the habitat do not meet the needs of each of the organisms (i.e., the degree to which a habitat does not meet the needs of an organism)

Performance Expectation	
3-LS4-4- Make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change.* [Clarification Statement: Examples of environmental changes could include changes in land characteristics, water distribution, temperature, food, and other organisms.] [Assessment Boundary: Assessment is limited to a single environmental change. Assessment does not include the greenhouse effect or climate change.]	
Science and Engineering Practices	**Disciplinary Core Ideas**
Engaging in Argument from Evidence- ● Make a claim about the merit of a solution to a problem by citing relevant evidence about how it meets the criteria and constraints of	**LS2.C: Ecosystem Dynamics, Functioning, and Resilience-** ● When the environment changes in ways that affect a place's physical characteristics,

Grade: 3rd Grade	**Content Area:** Science

the problem. (3-LS4-4)	temperature, or availability of resources, some organisms survive and reproduce, others move to new locations, yet others move into the transformed environment, and some die. **LS4.D: Biodiversity and Humans-** ● Populations live in a variety of habitats, and change in those habitats affects the organisms living there.
Crosscutting Concepts	**Learning Objectives**
Systems and System Models- ● A system can be described in terms of its components and their interactions. **Interdependence of Engineering, Technology, and Science on Society and the Natural World-** ● Knowledge of relevant scientific concepts and research findings is important in engineering.	● Students make a claim about the merit of a given solution to a problem that is caused when the environment changes, which results in changes in the types of plants and animals that live there. ● Students describe the given evidence about how the solution meets the given criteria and constraints. This evidence includes: ○ A system of plants, animals, and a given environment within which they live before the given environmental change occurs. ○ A given change in the environment. ○ How the change in the given environment causes a problem for the existing plants and animals living within that area. ○ The effect of the solution on the plants and animals within the environment. ○ The resulting changes to plants and animals living within that changed environment, after the solution has been implemented.

Primary Interdisciplinary Connections:

- **ELA/Literacy-**
  - **RI.CR.3.1.** Ask and answer questions and make relevant connections to demonstrate understanding of an informational text, referring explicitly to textual evidence as the basis for the answers.
  - **RI.IT.3.3.** Describe the relationship between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text, using language that pertains to time, sequence, and cause-effect.

W.AW.3.1. Write opinion texts to present an idea with reasons and information.

Grade: 3rd Grade	**Content Area:** Science

A. Introduce an opinion clearly.
B. Support the opinion with facts, definitions, reasons, text evidence, or other information and examples related to the topic.
C. Link ideas within sections of information using transition words and phrases (e.g., then, because, also, therefore).
D. Provide a conclusion related to the opinion presented.

- **Mathematics-**
  - MP.4 Model with mathematics. (3-LS2-1)
  - 3.NBT Number and Operations in Base Ten (3-LS2-1)

Computer Science and Design Thinking -2020 New Jersey Student Learning Standards –

- 8.1.5.IC.1: Identify computing technologies that have impacted how individuals live and work and describe the factors that influenced the changes.
- 8.1.5.DA.1: Collect, organize, and display data in order to highlight relationships or support a claim.
- 8.1.5.DA.3: Organize and present collected data visually to communicate insights gained from different views of the data

2020 Career Readiness, Life Literacies, and Key Skills

- 9.4.5.CT.1: Identify and gather relevant data that will aid in the problem-solving process (e.g., 2.1.5.EH.4, 4-ESS3-1, 6.3.5.CivicsPD.2).
- 9.4.5.CT.2: Identify a problem and list the types of individuals and resources (e.g., school, community agencies, governmental, online) that can aid in solving the problem (e.g., 2.1.5.CHSS.1, 4-ESS3-1).
- 9.4.5.CT.3: Describe how digital tools and technology may be used to solve problems.
- 9.4.5.DC.4: Model safe, legal, and ethical behavior when using online or offline technology (e.g., 8.1.5.NI.2)
- 9.4.5.CI.2: Investigate a persistent local or global issue, such as climate change, and collaborate with individuals with diverse perspectives to improve upon current actions designed to address the issue (e.g., 6.3.5.CivicsPD.3, W.5.7)

Evidence of Student Learning

Formative Tasks: • Exit slips • Analysis of student work • Teacher observations • Self-reflection • Science journals	**Alternative Assessments:** • 3-D Performance Tasks • Student created models • draw/verbal explanations
Summative Assessments: • Brain Pop • Achieve 3000	**Benchmark Assessments:** • Teacher created assessments • Mystery Science

Grade: 3rd Grade	**Content Area:** Science

• Graphic Organizers & Guided Note Taking • Cooperative Group Learning	• Scholastic

Knowledge & Skills

Enduring Understandings:	**Essential Questions:**
• When the environment changes, some organisms survive and reproduce, some move to new locations, some move into the transformed environment, and some die. • Being part of a group helps animals obtain food, defend themselves, and cope with changes. • Some living organisms resemble organisms that once lived on Earth. Fossils provide evidence about the types of organisms and environments that existed long ago. • Differences in characteristics between individuals of the same species provide advantages in surviving and reproducing. • Particular organisms can only survive in particular environments. • Populations of organisms live in a variety of habitats. Change in those habitats affects the organisms living there.	• Why do some animals form groups to help members survive? • How do fossils provide evidence of the organisms and the environments in which they lived long ago? • How does the chosen habitat affect the survival rate of its inhabitants? • Why do plants and animals change when their environment changes? • What are some solutions to some problems that are caused by environmental changes? • What is the impact of these changes up on plants and animals?

Core Instructional & Supplemental Materials

Suggested Activities/Resources:	**Varied Levels of Text:**
• Hands on activities embedded within Amplify Science Lessons. • Students use BrainPOP Jr. and/or BrainPOP resources to identify the roles that plants and animals play in various food chains during interactive game play. Students define vocabulary terms such as decomposer and producer and use those terms in class discussions and activities. • Students use BrainPOP resources to explore the relationships between organisms within an ecosystem. Students then build a virtual food web to support a selected animal using online game play.	• Earthworms Underground • Mystery Mouths • Environment News • Cockroach Robots • Biomimicry Handbook • Over and Under the Pond- Kate Messner • Seashore- Steve Parker • A Walk in the Rainforest- Rebecca L. Johnson • Swamp- Donald Silver

Grade: 3rd Grade	Content Area: Science

• What is the growth and development of a plant? Each student has a lima bean and a hand lens. Have them make detailed diagrams and chart their observations of the lima bean. Soak Lima beans, hand lens, paper towels, graphic organizer for modeling diagram 26 the lima beans in water overnight. Have students take apart the lima bean. Again, create a detailed diagram of the parts. Goal: students to be able to identify the parts of the seed and determine the development of the seed into a plant. • Using quick germinating seeds, have the students plant them. Have them plant and observe and measure the plant's in order to track the data of the plants. Students are able to create a graph of their plant growth. (Dixie cups, potting soil, quick germinating seeds, chart for tracking) • Plant Dissection: Draw a detailed diagram of the entire plant. Students are to dissect the flower to have a better understanding of the parts. Have them record and label each part. Using a ruler, measure the exact length of the flower. (ex. daffodils, lilies, iris, tulips work best) Students can glue the pieces of the plant into their science journal. Tulips, lilies, daffodils, iris (or any other large-stemmed flower), plastic knife (for teacher-use only), rulers, charts.	

Unit 4: Earth's Systems	**Duration: 40 Days**

Standards/Learning Targets

New Jersey Student Learning Standards:

- **3-ESS2-1-** Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season
- **3-ESS2-2-** Obtain and combine information to describe climates in different regions of the world
- **3-ESS3.1-** Make a claim about the merit of a design solution that reduces the impacts of a weather-related hazard

Performance Expectation

Grade: 3rd Grade	**Content Area:** Science

3-ESS2-1- Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season. [Clarification Statement: Examples of data could include average temperature, precipitation, and wind direction.] [Assessment Boundary: Assessment of graphical displays is limited to pictographs and bar graphs. Assessment does not include climate change.]

Science and Engineering Practices	**Disciplinary Core Ideas**
Analyzing and Interpreting Data- ● Represent data in tables and various graphical displays (bar graphs and pictographs) to reveal patterns that indicate relationships	**ESS2.D: Weather and Climate-** ● Scientists record patterns of the weather across different times and areas so that they can make predictions about what kind of weather might happen next.
Crosscutting Concepts	Learning Objectives
Patterns- ● Patterns of change can be used to make predictions.	● Students use graphical displays (e.g., table, chart, graph) to organize the given data by season using tables, pictographs, and/or bar charts, including: ○ Weather condition data from the same area across multiple seasons (e.g., average temperature, precipitation, wind direction). ○ Weather condition data from different areas (e.g., hometown and nonlocal areas, such as a town in another state). ● Students identify and describe patterns of weather conditions across: ○ Different seasons (e.g., cold and dry in the winter, hot and wet in the summer; more or less wind in a particular season). ○ Different areas (e.g., certain areas (defined by location, such as a town in the Pacific Northwest), have high precipitation, while a different area (based on location or type, such as a town in the Southwest) have very little precipitation).

Performance Expectation	
3-ESS2-2- Obtain and combine information to describe climates in different regions of the world.	
Science and Engineering Practices	**Disciplinary Core Ideas**
Obtaining, Evaluating, and Communicating	**Weather and Climate-**

Grade: 3rd Grade	**Content Area:** Science

Information- ● Obtain and combine information from books and other reliable media to explain phenomena.	● Climate describes a range of an area's typical weather conditions and the extent to which those conditions vary over years.
Crosscutting Concepts	**Learning Objectives**
Patterns- ● Patterns of change can be used to make predictions.	● Students use books and other reliable media to gather information about: ○ Climates in different regions of the world (e.g., equatorial, polar, coastal, mid-continental). ○ Variations in climates within different regions of the world (e.g., variations could include an area's average temperatures and precipitation during various months over several years or an area's average rainfall and temperatures during the rainy season over several years). ● Students combine obtained information to provide evidence about the climate pattern in a region that can be used to make predictions about typical weather conditions in that region.

Performance Expectation	
3-ESS3-1- Make a claim about the merit of a design solution that reduces the impacts of a weather-related hazard.* [Clarification Statement: Examples of design solutions to weather-related hazards could include barriers to prevent flooding, wind resistant roofs, and lightning rods.]	
Science and Engineering Practices	**Disciplinary Core Ideas**
Engaging in Argument from Evidence- ● Make a claim about the merit of a solution to a problem by citing relevant evidence about how it meets the criteria and constraints of the problem.	**ESS3.B: Natural Hazards-** ● A variety of natural hazards result from natural processes. Humans cannot eliminate natural hazards but can take steps to reduce their impacts. (Note: This Disciplinary Core Idea is also addressed by 4- ESS3-2.)
Crosscutting Concepts	**Learning Objectives**
Cause and Effect- ● Cause and effect relationships are routinely identified, tested, and used to explain change.	● Students make a claim about the merit of a given design solution that reduces the impact of a weather-related hazard. ● Students describe the given evidence about

Grade: 3rd Grade	Content Area: Science

Connections to Engineering, Technology, and Applications of Science-

- Engineers improve existing technologies or develop new ones to increase their benefits (e.g., better artificial limbs), decrease known risks (e.g., seatbelts in cars), and meet societal demands (e.g., cell phones).

Connections to Nature of Science-

- Science is a Human Endeavor Science affects everyday life.

the design solution, including evidence about:

- The given weather-related hazard (e.g., heavy rain or snow, strong winds, lightning, flooding along river banks).
- Problems caused by the weather related hazard (e.g., heavy rains cause flooding, lightning causes fires).
- How the proposed solution addresses the problem (e.g., dams and levees are designed to control flooding, lightning rods reduce the chance of fires) [note: mechanisms are limited to simple observable relationships that rely on logical reasoning]

Primary Interdisciplinary Connections:

- **ELA/Literacy-**

W.AW.3.1. Write opinion texts to present an idea with reasons and information.

A. Introduce an opinion clearly.
B. Support the opinion with facts, definitions, reasons, text evidence, or other information and examples related to the topic.
C. Link ideas within sections of information using transition words and phrases (e.g., then, because, also, therefore).
D. Provide a conclusion related to the opinion presented.

- **W.WR.3.5**. Generate questions about a topic and independently locate related information from at least two reference sources (print and non-print) to obtain information on that topic.

- **Mathematics-**

3.M.A.2 Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l). Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem

- 3.DL.B.3 Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step “how many more” and “how many less” problems using information presented in scaled bar graphs.

Computer Science and Design Thinking -2020 New Jersey Student Learning Standards

- 8.1.5.IC.1: Identify computing technologies that have impacted how individuals live and work and

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describe the factors that influenced the changes.
- 8.1.5.DA.1: Collect, organize, and display data in order to highlight relationships or support a claim.
- 8.1.5.DA.3: Organize and present collected data visually to communicate insights gained from different views of the data

2020 New Jersey Student Learning Standards – Career Readiness, Life Literacies, and Key Skills

- 9.4.5.CT.1: Identify and gather relevant data that will aid in the problem-solving process (e.g., 2.1.5.EH.4, 4-ESS3-1, 6.3.5.CivicsPD.2).
- 9.4.5.CT.2: Identify a problem and list the types of individuals and resources (e.g., school, community agencies, governmental, online) that can aid in solving the problem (e.g., 2.1.5.CHSS.1, 4-ESS3-1).
- 9.4.5.CT.3: Describe how digital tools and technology may be used to solve problems.
- 9.4.5.DC.4: Model safe, legal, and ethical behavior when using online or offline technology (e.g., 8.1.5.NI.2)
- 9.4.5.CI.2: Investigate a persistent local or global issue, such as climate change, and collaborate with individuals with diverse perspectives to improve upon current actions designed to address the issue (e.g., 6.3.5.CivicsPD.3, W.5.7)

Evidence of Student Learning

Formative Tasks:
- Exit slips
- Analysis of student work
- Teacher observations
- Self-reflection
- Science journals

Alternative Assessments:
- 3-D Performance Tasks
- Student created models
- draw/verbal explanations

Summative Assessments:
- Brain Pop
- Achieve 3000
- Graphic Organizers & Guided Note Taking
- Cooperative Group Learning

Benchmark Assessments:
- Teacher created assessments
- Mystery Science
- Scholastic

Knowledge & Skills

Enduring Understandings:
- Climate describes patterns of typical weather conditions over different scales and variations.
- Data in tables and graphical displays to describe typical weather conditions.
- Weather patterns can be analyzed.
- Solutions can be designed to reduce the impact of a weather-related hazard.

Essential Questions:
- How do seasonal changes affect weather conditions?
- How can I use data in tables and graphical displays to describe typical weather conditions?
- How does the global location of a region determine the climate?
- How do engineers design a solution to reduce the impact of a weather-related hazard?

Core Instructional & Supplemental Materials

Suggested Activities/Resources:

Varied Levels of Text:
- Sky Notebook

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• Hands on activities embedded within Amplify Science Lessons. • Students will record the humidity for your location from www.weather.gov and whether the pinecone is open or closed each day. Represent your data in a table. After two weeks graph your data. What happens to the pinecone when the humidity is high? What happens to the pinecone when the humidity is low? Describe any weather patterns over the two weeks. Using the data describe the typical weather conditions expected during this time of the year. • In this activity, students will conduct experiments or participate in demonstrations to answer questions about sky and weather phenomena. Students also will analyze and present data. • http://www.earthsciweek.org/classroom-activities/skyand-cloud-windows • As a citizen scientist, students can take their own air temperatures with an outdoor thermometer and compare their readings to the official ones from the National Weather Service. It is important that you follow the correct procedures, however, for placing your thermometer. This activity will help students to do that, as well as find out what the normal yearly average temperature is for each day. Classroom Activities | Earth Science Week • This guide provides an overview of unit concepts, a spark activity, vocabulary list, Internet links, and extension activities. It describes unit resources and addresses misconceptions. Students will understand why it is clear one day and cloudy another day or why is it snowing in one location and sunny in another location. • Measure the change in temperature of objects when placed under lamps or in the sunlight. (Lamps or sunlight, glass of water, thermometer, chart paper, timer)	• Seeing the World Through Numbers • What's Going On with the Weather? • Dangerous Weather Ahead • World Weather Handbook • Snowflake Bentley- Jacqueline Briggs Martin • Hurricanes- Gail Gibbons • Come On, Rain!- Karen Hesse • Albert- Donna Jo Napoli

Unit 5: Engineering (STEAM)	**Duration: 35** days Throughout
Standards/Learning Targets	

Tuckerton Borough School District Curriculum Guide

Grade: 3rd Grade	**Content Area:** Science

New Jersey Student Learning Standards:

- **ETS1.A:** Defining and Delimiting Engineering Problems
- **ETS1.B:** Developing Possible Solutions
- **ETS1.C:** Optimizing the Design Solution

Performance Expectation	
3-5-ETS1-1 Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.	
Science and Engineering Practices	**Disciplinary Core Ideas**
Asking Questions and Defining Problems- ● 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.	**ETS1.A: Defining and Delimiting Engineering Problems-** ● 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**
Influence of Engineering, Technology, and Science on Society and the Natural World- People's needs and wants change over time, as do their demands for new and improved technologies. (3-5-ETS1-1	● 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: ○ 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

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	tool. ● With guidance, students describe 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.

Performance Expectation	
3-5-ETS1-2 Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem. .	
Science and Engineering Practices	**Disciplinary Core Ideas**
Constructing Explanations and Designing Solutions- Generate and compare multiple solutions to a problem based on how well they meet the criteria and constraints of the design problem. (3-5-ETS1-2	**ETS1.B: Developing Possible Solutions** ● Research on a problem, such as climate change, should be carried out before beginning to design a solution. Testing a solution involves investigating how well it performs under a range of likely conditions. (3-5-ETS1-2)
Crosscutting Concepts	**Learning Objectives**
● **Influence of Engineering, Technology, and Science on Society and the Natural World-** Engineers improve existing technologies or develop new ones to increase their benefits, decrease known risks, and meet societal demands. (3-5-ETS1-2)	● Students will be able to research a problem ● Students will be able to develop a solution to their problem ● Students will be able to discuss with logical reasoning as to why certain solutions would not be effective

Performance Expectation	
3-5-ETS1-3 Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.	
Science and Engineering Practices	**Disciplinary Core Ideas**
Planning and Carrying Out Investigations- Plan and conduct an investigation collaboratively to produce data to serve as the basis for evidence, using fair tests in which variables are controlled and the number of trials considered. (3-5-ETS1-3)	**ETS1.C: Optimizing the Design Solution-** ● Different solutions need to be tested in order to determine which of them best solves the problem, given the criteria and the constraints. (3-5-ETS1-3)

Tuckerton Borough School District Curriculum Guide

Grade: 3rd Grade	**Content Area:** Science

Crosscutting Concepts	Learning Objectives

• **Influence of Engineering, Technology, and Science on Society and the Natural World-** Engineers improve existing technologies or develop new ones to increase their benefits, decrease known risks, and meet societal demands.	• Students will be able to plan a solution
	• Students will be able to test their solution and develop reasons as to why or why not it was effective.
	• Students use their organization of the data to find patterns in the data, including:
	  ○ How each of the objects performed, relative to:
	  ■ The other object.
	  ■ The intended performance
	  ○ How various features of the objects relate to their performance
	• both solve the problem.

Primary Interdisciplinary Connections ELA :

- RI.5.1 Quote accurately from a text when explaining what the text says explicitly and when drawing inferences from the text. (3-5-ETS1-2)
- • RI.5.7 Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently. (3-5-ETS1-2)
- • RI.5.9 Integrate information from several texts on the same topic in order to write or speak about the subject knowledgeably. (3-5-ETS1-2)
- • W.5.7 Conduct short research projects that use several sources to build knowledge through investigation of different aspects of a topic. (3-5-ETS1-1), (3-5-ETS1-3)

Math:

MP.2 Reason abstractly and quantitatively. (3-5-ETS1-1), (3-5-ETS1-2), (3-5-ETS1-3)
• MP.4 Model with mathematics. (3-5-ETS1-1), (3-5-ETS1-2), (3-5-ETS1-3)
• MP.5 Use appropriate tools strategically. (3-5-ETS1-1), (3-5-ETS1-2), (3-5-ETS1-3)
• 3-5.OA Operations and Algebraic Thinking (3-5-ETS1-1), (3-5-ETS1-2)

Computer Science and Design Thinking -2020 New Jersey Student Learning Standards

- 8.1.5.IC.1: Identify computing technologies that have impacted how individuals live and work and describe the factors that influenced the changes.
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2020 New Jersey Student Learning Standards – Career Readiness, Life Literacies, and Key Skills

- 9.4.5.CT.1: Identify and gather relevant data that will aid in the problem-solving process (e.g., 2.1.5.EH.4, 4-ESS3-1, 6.3.5.CivicsPD.2).

Tuckerton Borough School District Curriculum Guide

Grade: 3rd Grade	**Content Area:** Science

- 9.4.5.CT.2: Identify a problem and list the types of individuals and resources (e.g., school, community agencies, governmental, online) that can aid in solving the problem (e.g., 2.1.5.CHSS.1, 4-ESS3-1).
- 9.4.5.CT.3: Describe how digital tools and technology may be used to solve problems.
- 9.4.5.DC.4: Model safe, legal, and ethical behavior when using online or offline technology (e.g., 8.1.5.NI.2)
- 9.4.5.CI.2: Investigate a persistent local or global issue, such as climate change, and collaborate with individuals with diverse perspectives to improve upon current actions designed to address the issue (e.g., 6.3.5.CivicsPD.3, W.5.7)

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Alternative Assessments:
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- Student created models
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Summative Assessments:
- Brain Pop
- Achieve 3000
- Cooperative Group Learning

Benchmark Assessments:
- Teacher created assessments
- Mystery Science
- Scholastic

Knowledge & Skills

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

Essential Questions:
- How are asking questions, gathering information, and making observation helpful when thinking about problems?
- How does sketching or creating a model to illustrate its shape help solve a given problem?
- How does testing a model determine its strengths and weaknesses in solving a given problem?

Core Instructional & Supplemental Materials

Suggested Activities/Resources:
Nearpod

Varied Levels of Text:
Scholastic