



BRIGANTINE COMMUNITY SCHOOL

Where Everyone is Someone

Subject: Science

Grade Level: 3

Original Adoption: August 25, 2016

Revised on: November 1, 2021

Board Approved on: August 24, 2023

Pacing Guide

Unit 1: Growth and Development	25 Days
Unit 2: Inherited Traits	20 Days
Unit 3: Motion and Stability	25 Days
Unit 4: Ecosystems: Group Behavior	20 Days
Unit 5: Biological Evolution	30 Days
Unit 6: Weather and Climate	40 Days
Unit 7: Natural Hazards	20 Days
Unit 8: Engineering Design	Ongoing

*STEAM Activities integrated for 40 days throughout all units

Unit 1: Growth and Development

25 Days

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. [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.]



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. Scientific Knowledge is Based on Empirical Evidence- - Science findings are based on recognizing patterns.	- Students develop models (e.g., conceptual, physical, drawing) to describe the phenomenon. In their models, students identify the relevant components of their models. - In the models, students describe relationships between components. - Students use the models to describe that although organisms can display life cycles that look different, they all follow the same pattern. - Students use the models to make predictions related to the phenomenon, based on patterns identified among life cycles (e.g., prediction could include



	that if there are no births, deaths will continue and eventually there will be no more of that type of organism).
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Interdisciplinary Connections

ELA:

- **RI.3.7** Use information gained from illustrations (e.g., maps, photographs) and the words in a text to demonstrate understanding of the text (e.g., where, when, why, and how key events occur). (3-LS1-1)
- **SL.3.5** Create engaging audio recordings of stories or poems that demonstrate fluid reading at an understandable pace; add visual displays when appropriate to emphasize or enhance certain facts or details. (3-LS1-1)

Mathematics:

- **MP.4** Model with mathematics. (3-LS1-1)
- **3.NBT** Number and Operations in Base Ten (3-LS1-1)
- **3.NF** Number and Operations—Fractions (3-LS1-1)

Computer Science & Design Thinking:

8.1.5.CS.3: Identify potential solutions for simple hardware and software problems using common troubleshooting strategies.

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.

8.1.5.DA.4: Organize and present climate change data visually to highlight relationships or support a claim.

8.1.5.DA.5: Propose cause and effect relationships, predict outcomes, or communicate ideas using data.

8.1.5.AP.4: Break down problems into smaller, manageable sub-problems to facilitate program development.

8.1.5.AP.5: Modify, remix, or incorporate pieces of existing programs into one's own work to add additional features or create a new program.

8.2.5.ED.1: Explain the functions of a system and its subsystems.

8.2.5.ED.2: Collaborate with peers to collect information, brainstorm to solve a problem, and



evaluate all possible solutions to provide the best results with supporting sketches or models.

8.2.5.ED.3: Follow step by step directions to assemble a product or solve a problem, using appropriate tools to accomplish the task.

8.2.5.ED.4: Explain factors that influence the development and function of products and systems.

8.2.5.ED.5: Describe how specifications and limitations impact the engineering design process.

8.2.5.ED.6: Evaluate and test alternative solutions to a problem using the constraints and tradeoffs identified in the design process.

8.2.5.ITH.1: Explain how societal needs and wants influence the development and function of a product and a system.

8.2.5.ITH.4: Describe a technology/tool that has made the way people live easier or has led to a new business or career.

8.2.5.NT.2: Identify new technologies resulting from the demands, values, and interests of individuals, businesses, industries, and societies.

8.2.5.ETW.1: Describe how resources such as material, energy, information, time, tools, people, and capital are used in products or systems.

8.2.5.ETW.2: Describe ways that various technologies are used to reduce improper use of resources.

8.2.5.ETW.3: Explain why human-designed systems, products, and environments need to be constantly monitored, maintained, and improved.

8.2.5.ETW.4: Explain the impact that resources, such as energy and materials used to develop technology, have on the environment.

8.2.5.ETW.5: Identify the impact of a specific technology on the environment and determine what can be done to increase positive effects and to reduce any negative effects, such as climate change.

Career Readiness, Life Literacies, & Key Skills:

9.1.5.CR.1: Compare various ways to give back and relate them to your strengths, interests, and other personal factors.

9.2.5.CAP.1: Evaluate personal likes and dislikes and identify careers that might be suited to personal likes.

9.2.5.CAP.2: Identify how you might like to earn an income.

9.2.5.CAP.3: Identify qualifications needed to pursue traditional and non-traditional careers and occupations.

9.2.5.CAP.4: Explain the reasons why some jobs and careers require specific training, skills, and certification

9.4.5.CI.1: Use appropriate communication technologies to collaborate with individuals with diverse perspectives about a local and/or global climate change issue and deliberate about possible solutions



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.

9.4.5.CI.3: Participate in a brainstorming session with individuals with diverse perspectives to expand one's thinking about a topic of curiosity.

9.4.5.CT.1: Identify and gather relevant data that will aid in the problem-solving process

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.

9.4.5.CT.3: Describe how digital tools and technology may be used to solve problems.

9.4.5.CT.4: Apply critical thinking and problem-solving strategies to different types of problems such as personal, academic, community and global.

9.4.5.DC.4: Model safe, legal, and ethical behavior when using online or offline technology.

9.4.5.DC.8: Propose ways local and global communities can engage digitally to participate in and promote climate action.

9.4.5.IML.2: Create a visual representation to organize information about a problem or issue.

9.4.5.IML.3: Represent the same data in multiple visual formats in order to tell a story about the data.

9.4.5.IML.5: Distinguish how media are used by individuals, groups, and organizations for varying purposes.

9.4.5.IML.6: Use appropriate sources of information from diverse sources, contexts, disciplines, and cultures to answer questions.

9.4.5.TL.2: Sort and filter data in a spreadsheet to analyze findings.

9.4.5.TL.3: Format a document using a word processing application to enhance text, change page formatting, and include appropriate images, graphics, or symbols.

9.4.5.TL.5: Collaborate digitally to produce an artifact.

Assessments

Formative:

- Observation
- Conferring
- Quizzes
- Exit Slips
- Collaborative group work
- Google Classroom assignments

Alternative:

- Portfolio
- Interactive journal
- Google - Classroom, Slides, Forms Assignments
- Timeline/Phases sequencing
- Modeling activities



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Where Everyone is Someone

Summative: • End of Unit Tests • Projects • Chromebook Research Report • Scientific Article Report	Benchmark: • Beginning of Year, Mid-year, and End of Year SGOs • Edulastic Benchmark
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Enduring Understandings:	Essential Questions:
• Reproduction is essential to every kind of organism. • Organisms have unique and diverse life cycles. • Scientists use patterns to understand how plants and animals develop over time.	• What are the components of life cycles that all organisms share and how do they differ? • What patterns can be seen in the life cycles of plants and animals?

Materials and Resources

Varied Text Levels

Classroom Library - Leveled
Time For Kids
Guided Reading Materials
NewsELA
Khan Academy

Resources and Labs:

Class Presentation

- Germination Lab
- Seed Discussion
- Egg Membrane Lab



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Where Everyone is Someone

Germination Lab

- 9 bean seeds (700 total)
- 3 ziploc bags (210 total)
- 2 paper towels
- water
- permanent marker

(based on 70 students/ individual lab)

Seed Dissection

- Lima bean
- toothpick

Egg Membrane Lab

- egg (24)
- 250 ml beaker (15)
- 200 ml vinegar (4 bottles)
- Paper towel
- Ruler
- Rectangular tray or pan (15)

(groups of 4 students)

STEM:

Butterfly Larvae

Accommodations/Modifications

Study Guide

Group work

Open-ended tasks

Tiered assignments

Modified assignments

***See Addendum**



Unit 2: Inherited Traits

20 Days

New Jersey Student Learning Standards:

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

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.].

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

Science and Engineering Practices

Constructing Explanations and Designing Solutions-

- Use evidence (e.g., observations, patterns) to support an explanation.
- Analyze and interpret data to make sense of phenomena using logical reasoning.

Disciplinary Core Ideas

LS3.A: Inheritance of Traits

- Many characteristics of organisms are inherited from their parents.
- Other characteristics result from individuals' interactions with the environment, which can range from diet to learning. Many characteristics involve both inheritance and environment

LS3.B: Variation of Traits



	• 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.
Crosscutting Concepts	Learning Objectives
Patterns • Similarities and differences in patterns can be used to sort and classify natural phenomena.	• Students identify that many inherited traits can be influenced by the environment. • Students connect inherited traits to parent traits. • Students will understand that environmental factors that vary for organisms of the same type (e.g., amount of food, amount of water, amount of exercise an animal gets, chemicals in the water) may influence organisms' traits.

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) to support an explanation. • 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. • Other characteristics result from individuals' interactions with the environment, which can range from diet to learning. Many characteristics involve



	both inheritance and environment LS3.B: Variation of Traits • 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.
Crosscutting Concepts	Learning Objectives
Cause and Effect • Cause and effect relationships are routinely identified and used to explain change.	• Students demonstrate that many inherited traits can be influenced by the environment. • Students will identify observable inherited traits of organisms in varied environmental conditions. • Students use a cause and effect relationship between a specific causal environmental factor and its effect of a given variation in a trait.

Interdisciplinary Connections

ELA:

- **RI.3.2** Determine the main idea of a text; recount the key details and explain how they support the main idea. (3-LS3-1), (3-LS3-2)
- **RI.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. (3-LS3-1), (3-LS3-2)
- **W.3.2** Write informative/explanatory texts to examine a topic and convey ideas and information clearly. (3-LS3-1), (3-LS3-2)
- **SL.3.4** Report on a topic or text, tell a story, or recount an experience with appropriate facts and relevant, descriptive details, speaking clearly at an understandable pace.



(3-LS3-1), (3-LS3-2)

Mathematics:

- **MP.2** Reason abstractly and quantitatively. (3-LS3-1), (3-LS3-2)
- **MP.4** Model with mathematics. (3-LS3-1), (3-LS3-2)
- **3.MD.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. (3-LS3-1), (3-LS3-2)

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Assessments

Formative:

- Observation
- Conferring
- Quizzes
- Exit Slips
- Inherited traits activity
- Collaborative group work
- Google Classroom assignments

Alternative:

- Portfolio
- Interactive journal
- Google - Classroom, Slides, Forms Assignments
- Timeline/Phases sequencing
- Modeling activities

Summative:

- End of Unit Tests
- Projects
- Chromebook Research Report
- Scientific Article Report

Benchmark:

- Beginning of Year, Mid-year, and End of Year SGOs
- Edulastic Benchmark

Enduring Understandings:

Essential Questions:



- | | |
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| <ul style="list-style-type: none">• 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. | <ul style="list-style-type: none">• 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? |
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Materials and Resources

Varied Levels of Text:

Classroom Library - Leveled
Time For Kids
Guided Reading Materials
NewsELA
Khan Academy

Resources and Labs:

Labs/Activities:

- Pothos Plant Lab
- Bearded Worm Fly Lab

Pothos Plant Lab

- mature pothos plants (4)
- small peat pot (60)
- potting soil (4 bags)
- water
- salt
- measuring cup
- 1/4 teaspoon measuring spoon
- 1 teaspoon measuring spoon

Bearded Worm Fly Lab

- Chart
- Dice
- Paper
- Color pencils



Accommodations/Modifications

Study Guide
Group work
Open-ended tasks
Tiered assignments
Modified assignments

***See Addendum**

Unit 3: Motion and Stability

25 Days

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. [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.]

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.]

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.]

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.]

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-	Students identify and describe



- Cause and effect relationships are routinely identified.
- Science investigations use a variety of methods, tools, and techniques.

the phenomenon under investigation, which includes the effects of different forces on an object's motion (e.g., starting, stopping, or changing direction).

- 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

Planning and Carrying Out Investigations-

Disciplinary Core Ideas

Planning and Carrying Out



• 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.	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.
Crosscutting Concepts	Learning Objectives
Patterns- • Patterns of change can be used to make predictions. • Science findings are based on recognizing patterns.	• 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 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
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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- Cause and effect relationships are routinely identified, tested, and used to explain change.	- Students ask questions that arise from observations of two objects not in contact with each other interacting through electric or magnetic forces. - Students investigate 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 and electrically charged objects and an electric force. • Students' questions can be investigated within the scope of the classroom.
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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 build a model to demonstrate that force between



	objects do not require that those objects be in contact with each other • And that the size of the force depends on the properties of objects, distance between the objects, and orientation of magnetic objects relative to one another.
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Interdisciplinary Connections

ELA:

- **RI.3.1** Ask and answer questions, and make relevant connections to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers. (3-PS2-1), (3-PS2-3)
- **RI.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. (3-PS2- 3)
- **RI.3.8** 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. (3-PS2-3)
- **W.3.7** Conduct short research projects that build knowledge about a topic. (3-PS2-1), (3-PS2-2)
- **W.3.8** Recall information from experiences or gather information from print and digital sources; take brief notes on sources and sort evidence into provided categories. (3-PS2-1), (3-PS2-2)
- **SL.3.3** Ask and answer questions about information from a speaker, offering appropriate elaboration and detail. (3-PS2-3)

Mathematics:

- **MP.2** Reason abstractly and quantitatively. (3-PS2-1)
- **MP.5** Use appropriate tools strategically. (3-PS2-1)
- **3.MD.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-PS2-1)

Computer Science & Design Thinking:

8.1.5.CS.3: Identify potential solutions for simple hardware and software problems using common troubleshooting strategies.

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.

8.1.5.DA.4: Organize and present climate change data visually to highlight relationships or support a claim.

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8.2.5.ETW.2: Describe ways that various technologies are used to reduce improper use of resources.

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constantly monitored, maintained, and improved.

8.2.5.ETW.4: Explain the impact that resources, such as energy and materials used to develop technology, have on the environment.

8.2.5.ETW.5: Identify the impact of a specific technology on the environment and determine what can be done to increase positive effects and to reduce any negative effects, such as climate change.

Career Readiness, Life Literacies, & Key Skills:

9.1.5.CR.1: Compare various ways to give back and relate them to your strengths, interests, and other personal factors.

9.2.5.CAP.1: Evaluate personal likes and dislikes and identify careers that might be suited to personal likes.

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9.4.5.CI.1: Use appropriate communication technologies to collaborate with individuals with diverse perspectives about a local and/or global climate change issue and deliberate about possible solutions

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.

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Assessments

Formative:

- Observation
- Conferring
- Quizzes
- Exit Slips
- Speed activity sheet
- Collaborative group work
- Google Classroom assignments

Alternative:

- Portfolio
- Interactive journal
- Google - Classroom, Slides, Forms Assignments
- Timeline/Phases sequencing
- Modeling activities

Summative:

- End of Unit Tests
- Projects
- Chromebook Research Report
- Scientific Article Report

Benchmark:

- Beginning of Year, Mid-year, and End of Year SGOs
- Edulastic Benchmark

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

Essential Questions:

- What are the effects of balanced and unbalanced forces on the motion of an object?
- How can you utilize a pattern to



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.

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?

Materials and Resources

Varied Levels of Text

Classroom Library - Leveled
Time For Kids
Guided Reading Materials
NewsELA
Khan Academy

Resources and Labs:

Class Presentation

Labs/Activities:

- Distance Time and Speed Lab
- Balanced and Unbalanced Forces
- Magnetic Interactions
- Magnet Racing
- Building with Magnets Lab



- Electricity Lab

Distance Time and Speed Lab

Balanced/Unbalanced Forces

- hair dryer
- Ping-Pong balls (4)
- washers (1 bag)
- balance scale (1)
- pulley (5)

(Lab materials based on 4 groups)

Magnetic Interactions

- Floating ceramic ring magnets (5)
- An upright rod on a base (1)
- Bar magnets (20)
- Compass (1)
- Paper clips
- ceramic ring magnets (5)
- container of water
- copper or aluminum rod with a diameter of 3/4" (1)
- 1/2" cylindrical neodymium magnets (1)

Magnet Racing

STEM:

Building with Magnets: per team

- As many toy cars or carts (all of the same size) as you can provide (minimum 5).
- Tape to attach the magnets to each cart (these should not be used to directly connect one cart to another).
- Two ceramic magnets for each toy car.

Electricity Lab:

Materials:

Balloons



Cotton cloth

Wool cloth

Fur cloth

Leather cloth

Hair

Plastic combs

Sink

Coil of wire-wrap a piece of copper wire around a pen/pencil, slide the wire off the pen/pencil and a coil is created

Accommodations/Modifications

Study Guide

Group work

Open-ended tasks

Tiered assignments

Modified assignments

***See Addendum**

Unit 4: Ecosystems: Group Behavior

20 Days

New Jersey Student Learning Standards:

3-LS2-1 Construct an argument that some animals form groups that help members survive.

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, 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 identify and describe patterns in the data. - Students organize data to show patterns. - Students describe that the pattern of similarities in traits between parents and offspring, and between siblings, provides evidence that traits are inherited and that inherited traits can vary.

Interdisciplinary Connections

ELA:

- RI.3.1** Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers. (3-LS2-1)
- RI.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. (3-LS2- 1)
- W.3.1** Write opinion pieces on topics or texts, supporting a point of view with reasons. (3-LS2-1)



Mathematics:

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

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Summative:

- End of Unit Tests
- Projects
- Chromebook Research Report
- Scientific Article Report

Benchmark:

- Beginning of Year, Mid-year, and End of Year SGOs
- Edulastic Benchmark

Enduring Understandings:

- Being part of a group helps animals obtain food, defend themselves, and cope with changes.

Essential Questions:

- Why do some animals form groups to help members survive?



Materials and Resources

Varied Levels of Text:

Classroom Library - Leveled
Time For Kids
Guided Reading Materials
NewsELA
Khan Academy

Resources and Labs:

Class Presentation

Labs/Activities:

- Paper Building Challenge
- Who has the advantage?

Paper Building Challenge

-paper
-tape
-meter stick

Who Has the Advantage?

-Several boxes of different sizes
-1 large box with a flag attached

Accommodations/Modifications

Study Guide
Group work
Open-ended tasks
Tiered assignments



Modified assignments

***See Addendum**

Unit 5: Biological Evolution

30 Days

New Jersey Student Learning Standards:

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.]

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 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.]

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.]

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.]

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
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 digital tools to organize data. - Students conceptualize that fossils represent plants and animals that lived long ago. - They relate fossils of organisms that lived long ago and their modern counterparts.

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 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.
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- Construct an argument with evidence.	LS4.C: Adaptation- 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 create a cause and effect chart showing that 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 chart.

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 the problem. (3-LS4-4)	LS2.C: Ecosystem Dynamics, Functioning, and Resilience- - When the environment changes in ways that affect a place's physical characteristics, 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 a change in the environment, how the change in the given environment causes a problem for the existing plants and animals living within that area, and the changes to plants and animals living within that changed environment. • Students will create a model to better understand a concept and find a potential solution to a problem.

Interdisciplinary Connections

ELA:

- **RI.3.1** Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers. (3-LS4-1), (3-LS4-2), (3-LS4-3), (3-LS4-4)
- **RI.3.2** Determine the main idea of a text; recount the key details and explain how they support the main idea. (3-LS4-1), (3-LS4-2), (3-LS4-3), (3-LS4-4)
- **RI.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. (3-LS4-1), (3-LS4-2), (3-LS4-3), (3-LS4-4)
- **W.3.1** Write opinion pieces on topics or texts, supporting a point of view with reasons. (3-LS4-1), (3-LS4-3), (3-LS4-4)
 - **W.3.2** Write informative/explanatory texts to examine a topic and convey ideas and information clearly. (3-LS4-1), (3-LS4-2), (3-LS4-3), (3-LS4-4)
 - **W.3.8** Recall information from experiences or gather information from print and digital sources; take brief notes on sources and sort evidence into provided categories. (3-LS4-1)
 - **SL.3.4** Report on a topic or text, tell a story, or recount an experience with appropriate facts and relevant, descriptive details, speaking clearly at an understandable pace. (3-LS4-2), (3-LS4-3), (3-LS4-4)

Mathematics:

- **MP.2** Reason abstractly and quantitatively. (3-LS4-1), (3-LS4-2), (3-LS4-3), (3-LS4-4)
- **MP.4** Model with mathematics. (3-LS4-1), (3-LS4-2), (3-LS4-3), (3-LS4-4)
- **MP.5** Use appropriate tools strategically. (3-LS4-1) • **3.MD.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. (3-LS4-2), (3-LS4-3)
- **3.MD.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. (3-LS4-1)

Computer Science & Design Thinking:

8.1.5.CS.3: Identify potential solutions for simple hardware and software problems using common troubleshooting strategies.

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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9.4.5.CT.3: Describe how digital tools and technology may be used to solve problems.

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9.4.5.DC.4: Model safe, legal, and ethical behavior when using online or offline technology.

9.4.5.DC.8: Propose ways local and global communities can engage digitally to participate in and promote climate action.

9.4.5.IML.2: Create a visual representation to organize information about a problem or issue.

9.4.5.IML.3: Represent the same data in multiple visual formats in order to tell a story about the data.

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9.4.5.TL.2: Sort and filter data in a spreadsheet to analyze findings.

9.4.5.TL.3: Format a document using a word processing application to enhance text, change page formatting, and include appropriate images, graphics, or symbols.

9.4.5.TL.5: Collaborate digitally to produce an artifact.

Assessments

Formative:

- Observation
- Conferring
- Quizzes
- Exit Slips
- Collaborative group work

Alternative:

- Portfolio
- Interactive journal
- Google - Classroom, Slides, Forms Assignments
- Timeline/Phases sequencing



BRIGANTINE COMMUNITY SCHOOL

Where Everyone is Someone

● Google Classroom assignments	● Modeling activities
Summative: ● End of Unit Tests ● Projects ● Chromebook Research Report ● Scientific Article Report	Benchmark: ● Beginning of Year, Mid-year, and End of Year SGOs ● Edulastic Benchmark

Enduring Understandings:	Essential Questions:
● 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.	● 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? ● What are some solutions to some problems that are caused by environmental changes? ● What is the impact of these changes on plants and animals?

Materials and Resources

Varied Text Levels

Classroom Library - Leveled
Time For Kids
Guided Reading Materials
NewsELA
Khan Academy

Resources and Labs:



Class Presentation

Labs/Activities:

- Compost Time Capsule
- Small Change/Big Range
- Camouflage Lab
- Make a Fossil Activity

Compost Time Capsule

- Large Mason jars with lids (16)

-Compostable Materials

Fruits
Veggies
Seeds
Paper/newspaper/cardboard
Paper towels/napkins
Coffee filters
Egg shells
Feathers
Hair
Tea bags
Leaves/plant matter

-Non-Compostable Materials

Cans
Batteries
Glass
Plastic (plastic bags, plastic wrap, plastic items)
Styrofoam

Small Change/Big Range

- internet access / computer lab
- Poster board
- Markers

Camouflage Lab

- dry beans (all of the same type) (6 bags)
- Three different patterns of wrapping paper (2 rolls of each)

Make a Fossil Activity



- Clay (6 boxes)
- Paper plate (1 pack)
- Petroleum jelly (1)
- Plaster of Paris (3)
- Water
- Spoon
- Cup
- Items to be fossilized

Accommodations/Modifications

Study Guide
Group work
Open-ended tasks
Tiered assignments
Modified assignments

***See Addendum**

Unit 6: Weather and Climate

40 Days

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. [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.]

3-ESS2-2- Obtain and combine information to describe climates in different regions of the world.



Performance Expectation	
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 collect weather condition data from the same area across multiple seasons (e.g., average temperature, precipitation, wind direction). - Students identify and describe patterns of weather conditions across different seasons and areas. - Students use weather patterns to make predictions.

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 Information- Obtain and combine information from books	Weather and Climate- Climate describes a range of an area's typical weather conditions



and other reliable media to explain phenomena.	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 - Students identify equatorial, polar, coastal, mid-continental. - Students will find patterns between variations in climates within different regions of the world.

Interdisciplinary Connections

ELA:

- **RI.3.1** Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers. (3-LS2-1)
- **RI.3.1** Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers. (3-ESS2-2)
- **RI.3.9** Compare and contrast the most important points and key details presented in two texts on the same topic. (3-ESS2-2)
- **W.3.8** Recall information from experiences or gather information from print and digital sources; take brief notes on sources and sort evidence into provided categories. (3-ESS2-2)

Mathematics:

- **MP.2** Reason abstractly and quantitatively. (3-LS3-1), (3-LS3-2)
- **MP.2** Reason abstractly and quantitatively. (3-ESS2-1), (3-ESS2-2)
- **MP.4** Model with mathematics. (3-ESS2-1), (3-ESS2-2)
- **MP.5** Use appropriate tools strategically. (3-ESS2-1)
- **3.MD.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-ESS2-1)

- **3.MD.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 bar graphs. (3-ESS2-1)

Computer Science & Design Thinking:

8.1.5.CS.3: Identify potential solutions for simple hardware and software problems using common troubleshooting strategies.

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.

8.1.5.DA.4: Organize and present climate change data visually to highlight relationships or support a claim.

8.1.5.DA.5: Propose cause and effect relationships, predict outcomes, or communicate ideas using data.

8.1.5.AP.4: Break down problems into smaller, manageable sub-problems to facilitate program development.

8.1.5.AP.5: Modify, remix, or incorporate pieces of existing programs into one’s own work to add additional features or create a new program.

8.2.5.ED.1: Explain the functions of a system and its subsystems.

8.2.5.ED.2: Collaborate with peers to collect information, brainstorm to solve a problem, and evaluate all possible solutions to provide the best results with supporting sketches or models.

8.2.5.ED.3: Follow step by step directions to assemble a product or solve a problem, using appropriate tools to accomplish the task.

- 8.2.5.ED.4: Explain factors that influence the development and function of products and systems.

8.2.5.ED.5: Describe how specifications and limitations impact the engineering design process.

8.2.5.ED.6: Evaluate and test alternative solutions to a problem using the constraints and tradeoffs identified in the design process.

8.2.5.ITH.1: Explain how societal needs and wants influence the development and function of a product and a system.

8.2.5.ITH.4: Describe a technology/tool that has made the way people live easier or has led to a new business or career.

8.2.5.NT.2: Identify new technologies resulting from the demands, values, and interests of individuals, businesses, industries, and societies.

8.2.5.ETW.1: Describe how resources such as material, energy, information, time, tools, people, and capital are used in products or systems.

8.2.5.ETW.2: Describe ways that various technologies are used to reduce improper use of



resources.

8.2.5.ETW.3: Explain why human-designed systems, products, and environments need to be constantly monitored, maintained, and improved.

8.2.5.ETW.4: Explain the impact that resources, such as energy and materials used to develop technology, have on the environment.

8.2.5.ETW.5: Identify the impact of a specific technology on the environment and determine what can be done to increase positive effects and to reduce any negative effects, such as climate change.

Career Readiness, Life Literacies, & Key Skills:

9.1.5.CR.1: Compare various ways to give back and relate them to your strengths, interests, and other personal factors.

9.2.5.CAP.1: Evaluate personal likes and dislikes and identify careers that might be suited to personal likes.

9.2.5.CAP.2: Identify how you might like to earn an income.

9.2.5.CAP.3: Identify qualifications needed to pursue traditional and non-traditional careers and occupations.

9.2.5.CAP.4: Explain the reasons why some jobs and careers require specific training, skills, and certification

9.4.5.CI.1: Use appropriate communication technologies to collaborate with individuals with diverse perspectives about a local and/or global climate change issue and deliberate about possible solutions

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.

9.4.5.CI.3: Participate in a brainstorming session with individuals with diverse perspectives to expand one's thinking about a topic of curiosity.

9.4.5.CT.1: Identify and gather relevant data that will aid in the problem-solving process

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.

9.4.5.CT.3: Describe how digital tools and technology may be used to solve problems.

9.4.5.CT.4: Apply critical thinking and problem-solving strategies to different types of problems such as personal, academic, community and global.

9.4.5.DC.4: Model safe, legal, and ethical behavior when using online or offline technology.

9.4.5.DC.8: Propose ways local and global communities can engage digitally to participate in and promote climate action.

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9.4.5.IML.3: Represent the same data in multiple visual formats in order to tell a story about the data.

9.4.5.IML.5: Distinguish how media are used by individuals, groups, and organizations for



varying purposes.

9.4.5.IML.6: Use appropriate sources of information from diverse sources, contexts, disciplines, and cultures to answer questions.

9.4.5.TL.2: Sort and filter data in a spreadsheet to analyze findings.

9.4.5.TL.3: Format a document using a word processing application to enhance text, change page formatting, and include appropriate images, graphics, or symbols.

9.4.5.TL.5: Collaborate digitally to produce an artifact.

Assessments

Formative:

- Observation
- Conferring
- Quizzes
- Exit Slips
- Data collection and weather prediction activity
- Collaborative group work
- Google Classroom assignments

Alternative:

- Portfolio
- Interactive journal
- Google - Classroom, Slides, Forms Assignments
- Timeline/Phases sequencing
- Modeling activities

Summative:

- End of Unit Tests
- Projects
- Chromebook Research Report
- Scientific Article Report

Benchmark:

- Beginning of Year, Mid-year, and End of Year SGOs
- Edulastic Benchmark

Enduring Understandings:

- Climate describes patterns of typical

Essential Questions:

- How do seasonal changes affect



weather conditions over different scales and variations.

- Data in tables and graphical displays to describe typical weather conditions.
- Weather patterns can be analyzed.

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?

Materials and Resources

Varied Text Levels

Classroom Library - Leveled

Time For Kids

Guided Reading Materials

NewsELA

Khan Academy

Resources and Labs:

Class Presentation

Labs/Activities:

- Collecting Weather Data
- Thermometer Making
- Water Cycle in a Jar
- Convection Winds Demo

Collecting Weather Data

-anemometer (2)

-wind vane (2)

-rain gauge (2)

-thermometer (2)

(4 students per group)

Thermometer Making

-11 oz. plastic bottle (20)

-Tap water

-Rubbing alcohol

-Food coloring



BRIGANTINE COMMUNITY SCHOOL

Where Everyone is Someone

-Clear, plastic drinking straw (20)
-Modeling clay
(4 students per group)

Water Cycle in a Jar

-Glass jar (15)
-Water
-Plate (15)
-Ice cubes
(4 students per group)

Convection Winds Demo

-plastic pinwheel (1)
- preform tubes (4)
- sport bottle screw-on caps with
stopper top removed
-Hot and cold water
-Food coloring (blue and red)
-Holders for the preforms that keep the
tubes vertical
- Plastic shoe boxes or tubs (4)

Accommodations/Modifications

Study Guide
Group work
Open-ended tasks
Tiered assignments
Modified assignments

***See Addendum**



Unit 7: Natural Hazards

20 Days

New Jersey Student Learning Standards:

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.]

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

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.

Disciplinary Core Ideas

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

Cause and Effect-

- Cause and effect relationships are routinely identified, tested, and used to explain change.

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

Learning Objectives

- Students design a solution that reduces the impact of a weather-related hazard.
- Students identify weather-related hazards.
- Students identify problems caused by the weather related hazard (e.g., heavy rains cause flooding, lightning causes fires).



societal demands (e.g., cell phones).

Connections to Nature of Science-

- Science is a Human Endeavor Science affects everyday life.

Interdisciplinary Connections

ELA:

- **RI.3.1** Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers. (3-ESS3-1)
- **W.3.7** Conduct short research projects that build knowledge about a topic. (3-ESS3-1)

Mathematics:

- **MP.2** Reason abstractly and quantitatively. (3-ESS3-1)
- **MP.4** Model with mathematics. (3-ESS3-1)

Computer Science & Design Thinking:

8.1.5.CS.3: Identify potential solutions for simple hardware and software problems using common troubleshooting strategies.

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9.4.5.TL.5: Collaborate digitally to produce an artifact.

Assessments

Formative:

- Observation
- Conferring
- Quizzes
- Exit Slips
- Weather related hazard design solution
- Collaborative group work
- Google Classroom assignments

Alternative:

- Portfolio
- Interactive journal
- Google - Classroom, Slides, Forms Assignments
- Timeline/Phases sequencing
- Modeling activities



BRIGANTINE COMMUNITY SCHOOL

Where Everyone is Someone

Summative:

- End of Unit Tests
- Projects
- Chromebook Research Report
- Scientific Article Report

Benchmark:

- Beginning of Year, Mid-year, and End of Year SGOs
- Edulastic Benchmark

Enduring Understandings:

- Solutions can be designed to reduce impact of a weather-related hazard.

Essential Questions:

- How do engineers design a solution to reduce the impact of a weather-related hazard?

Materials and Resources

Varied Text Levels

Classroom Library - Leveled
Time For Kids
Guided Reading Materials
NewsELA
Khan Academy

Resources and Labs:**Class Presentation****Labs/Activities:**

- Making Electricity Activity
- Analyzing Leaves Lab
- Fire Triangle Lab

Making Electricity Activity

- Aluminum pie pan (24)
- Small piece of wool fabric (6)
- Styrofoam plate (24)
- Pencil with an eraser



-Thumbtack
(groups of 4 students)
Analyzing Leaves Activity
-Rectangular disposable aluminum
baking pan (24)
-Modeling clay (16 packs)
-1 toothpick
-1 plastic knife
-1 cup or beaker
-Plenty of water
(groups of 4 students)

Fire Triangle Lab

- small ball of play-doh or modeling clay
-2 small birthday candles (4 boxes)
-Matches (to be used by teacher only)
-Tall beaker (5)
-Small spray bottle (5)
(groups of 4)

Accommodations/Modifications

Study Guide
Group work
Open-ended tasks
Tiered assignments
Modified assignments

***See Addendum**



New Jersey Student Learning Standards:

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.

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.

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 Asking questions and defining problems in 3–5 builds on K–2 experiences and progresses to specifying qualitative relationships. Define a simple design problem that can be solved through the development of an object, tool, process, or system and includes several criteria for success and constraints on materials, time, or cost. (3-5-ETS1-1)	ETS1.A: Defining and Delimiting Engineering Problems Possible solutions to a problem are limited by available materials and resources (constraints). The success of a designed solution is determined by considering the desired features of a solution (criteria). Different proposals for solutions can be compared on the basis of how well each one meets the specified criteria for success or how well each takes the constraints into account. (3-5-ETS1-1)
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 will build a bridge to hold the weight of two textbooks. They will: - build a model. - test their model for three trials - revise their model based on criteria for success found in previous trials.



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 Constructing explanations and designing solutions in 3–5 builds on K–2 experiences and progresses to the use of evidence in constructing explanations that specify variables that describe and predict phenomena and in designing multiple solutions to design problems. 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) - At whatever stage, communicating with peers about proposed solutions is an important part of the design process, and shared ideas can lead to improved designs. (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: - Test their bridge with the weight of more than two textbooks - redesign their bridge to the new constraints and find a solution - evaluate the criteria and constraints to better build the model to support the weight required.



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)
- **W.5.8** Recall relevant information from experiences or gather relevant information from print and digital sources; summarize or paraphrase information in notes and finished work and provide a list of sources. (3-5-ETS1-1), (3-5-ETS1-3)
- **W.5.9** Draw evidence from literary or informational texts to support analysis, reflection, and research. (3-5- ETS1-1), (3-5-ETS1-3)

Mathematics:

- **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 & Design Thinking:

8.1.5.CS.3: Identify potential solutions for simple hardware and software problems using common troubleshooting strategies.

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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8.2.5.ED.1: Explain the functions of a system and its subsystems.

8.2.5.ED.2: Collaborate with peers to collect information, brainstorm to solve a problem, and evaluate all possible solutions to provide the best results with supporting sketches or models.

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appropriate tools to accomplish the task.

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8.2.5.ED.6: Evaluate and test alternative solutions to a problem using the constraints and tradeoffs identified in the design process.

8.2.5.ITH.1: Explain how societal needs and wants influence the development and function of a product and a system.

8.2.5.ITH.4: Describe a technology/tool that has made the way people live easier or has led to a new business or career.

8.2.5.NT.2: Identify new technologies resulting from the demands, values, and interests of individuals, businesses, industries, and societies.

8.2.5.ETW.1: Describe how resources such as material, energy, information, time, tools, people, and capital are used in products or systems.

8.2.5.ETW.2: Describe ways that various technologies are used to reduce improper use of resources.

8.2.5.ETW.3: Explain why human-designed systems, products, and environments need to be constantly monitored, maintained, and improved.

8.2.5.ETW.4: Explain the impact that resources, such as energy and materials used to develop technology, have on the environment.

8.2.5.ETW.5: Identify the impact of a specific technology on the environment and determine what can be done to increase positive effects and to reduce any negative effects, such as climate change.

Career Readiness, Life Literacies, & Key Skills:

9.1.5.CR.1: Compare various ways to give back and relate them to your strengths, interests, and other personal factors.

9.2.5.CAP.1: Evaluate personal likes and dislikes and identify careers that might be suited to personal likes.

9.2.5.CAP.2: Identify how you might like to earn an income.

9.2.5.CAP.3: Identify qualifications needed to pursue traditional and non-traditional careers and occupations.

9.2.5.CAP.4: Explain the reasons why some jobs and careers require specific training, skills, and certification

9.4.5.CI.1: Use appropriate communication technologies to collaborate with individuals with diverse perspectives about a local and/or global climate change issue and deliberate about possible solutions

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.

9.4.5.CI.3: Participate in a brainstorming session with individuals with diverse perspectives to expand one's thinking about a topic of curiosity.

9.4.5.CT.1: Identify and gather relevant data that will aid in the problem-solving process

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.

9.4.5.CT.3: Describe how digital tools and technology may be used to solve problems.

9.4.5.CT.4: Apply critical thinking and problem-solving strategies to different types of problems such as personal, academic, community and global.

9.4.5.DC.4: Model safe, legal, and ethical behavior when using online or offline technology.

9.4.5.DC.8: Propose ways local and global communities can engage digitally to participate in and promote climate action.

9.4.5.IML.2: Create a visual representation to organize information about a problem or issue.

9.4.5.IML.3: Represent the same data in multiple visual formats in order to tell a story about the data.

9.4.5.IML.5: Distinguish how media are used by individuals, groups, and organizations for varying purposes.

9.4.5.IML.6: Use appropriate sources of information from diverse sources, contexts, disciplines, and cultures to answer questions.

9.4.5.TL.2: Sort and filter data in a spreadsheet to analyze findings.

9.4.5.TL.3: Format a document using a word processing application to enhance text, change page formatting, and include appropriate images, graphics, or symbols.

9.4.5.TL.5: Collaborate digitally to produce an artifact.

Assessments

Formative:

- Observation
- Conferring
- Quizzes
- Exit Slips
- Collaborative group work
- Google Classroom assignments

Alternative:

- Portfolio
- Interactive journal
- Google - Classroom, Slides, Forms Assignments
- Timeline/Phases sequencing
- Modeling activities



BRIGANTINE COMMUNITY SCHOOL

Where Everyone is Someone

Summative:

- End of Unit Tests
- Projects
- Chromebook Research Report
- Scientific Article Report

Benchmark:

- Beginning of Year, Mid-year, and End of Year SGOs
- Edulastic Benchmark

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?

Materials and Resources

Varied Text Levels

Classroom Library - Leveled
Time For Kids
Guided Reading Materials
NewsELA
Khan Academy

Resources and Labs:

- Introduce the five stages of the Engineering Design Process.
- Discuss and define what an engineer does.
- Develop a definition for the term technology.
- Forces/Magnets



- Building Bridges
- Creating and Collaborating in Google Classroom
- Designing Parachutes

Materials:

- Kinex-Bridges
- Kapla Planks
- Engineering is Elementary- A Long Way Down: Designing Parachutes

Accommodations/Modifications

Study Guide
Group work
Open-ended tasks
Tiered assignments
Modified assignments

***See Addendum**



Addendum:

Accommodations/Modifications for All Units

English Language Learners:

- Provide clear and specific directions
- Allow for alternate forms of responses- drawing or speaking instead of writing to
- demonstrate knowledge when you are not specifically assessing writing
- Provide extended time
- Allow the use of an online dictionary to look up the definition and hear the
- pronunciation of unknown words
- Provide written directions with models and diagrams when possible
- Build in more group work to allow ELL students to interact and communicate with
- peers
- Collaborate with language professionals and ESL teachers
- Implement pre-reading strategies such as picture walks or topic discussions
- Utilize graphic organizers to help provide a purpose for reading and increase
- comprehension
- Utilize visual charts/cues
- Display a word wall with current academic vocabulary in each subject
- Gather materials such as visuals, models, manipulatives, videos and other tangible
- referents to contextualize the lesson.
- Allow the use of audio books when appropriate.
- Allow the use of text to speech technology when appropriate.
- Utilize translation technology when appropriate.

Special Education/504 Plans/Students with Disabilities:

- Follow specific students accommodations and modifications as listed in individual
- student IEP or 504 plan
- Extended Time to complete tests and assignments
- Provide manipulatives when needed
- Provide additional time as needed.
- Allow the use of audio books when appropriate.
- Allow the use of text to speech technology when appropriate.
- Utilize translation technology when appropriate.
- Shorten assignments as needed.



- Allow students to respond verbally when appropriate.
- Allow students to type/utilize technology for written responses when appropriate.
- Provide study guides as needed.
- Repeat, clarify and model directions as needed.
- Testing in a small group as needed.

Students at Risk:

- Build a safe and nurturing atmosphere
- Assign peer tutor
- Frequently check for understanding
- Check in with students on progress during projects or long assignments
- Utilize centers to address areas of need.

Economically Disadvantaged:

- Provide clear, achievable expectations, do not lower academic requirements for them.
- Build a safe and nurturing atmosphere
- Phone/Zoom conferences as an alternative.
- Provide access to computers, magazines, newspapers, and books so low-income
- students can see and work with printed materials
- Providing needed academic resources (paper, pencils, computer time)
- Helping students to set goals and build goal-setting skills
- Place more importance on attitude, effort, and strategy
- Provide technology tools for the home.

Culturally Diverse:

- Involve families in student learning
- Respect cultural traditions
- Provided students with necessary academic resources and materials
- Allow for alternative assignments
- Provide visuals
- Assign peer tutor
- 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.
- Establish a positive connection with parent



- Utilize closed captioning when available
- 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
- Display a word wall with current academic vocabulary in each subject
- Speak clearly and slowly, avoid slang and idiomatic expressions
- Create a nurturing environment with structured routines

Gifted and Talented:

- Ask students higher level questions that require students to look into causes, experiences, and facts to draw a conclusion or make connections to other areas of learning.
- Encourage students to explore concepts in depth and encourage independent studies or investigations.
- Brainstorm with gifted children on what types of projects they would like to explore to extend what they're learning in the classroom.
- Supply reading materials on a wide variety of subjects and levels.
- Help them learn to set their own learning goals, then provide them with the opportunity to work towards those goals.
- Allow students to work on independent projects or other unfinished work when they finish an assignment early.
- Teach research skills for accessing information; higher level thinking skills for processing it.
- Participating in regional and national competitions such as science fairs and STEAM events.