

**FAIRFIELD TOWNSHIP SCHOOL**  
**Kindergarten Science Curriculum Guide Unit 1**

Key:

Climate

Equity and Inclusion

SEL

Holocaust

Amistad

Career Readiness, Life Literacies, and Key Skills

Subject: Science	Grade Level: K
Unit 1: Motion and Stability: Forces and Interactions /Energy	Pacing: 8 weeks
Essential Questions	Enduring Understandings
<ul style="list-style-type: none"> <li>● Can pushes and pulls have different strengths and directions?</li> <li>● Can we change speed and direction of an object by pushing or pulling it?</li> <li>● What happens when objects touch or collide?</li> <li>● What does a bigger push or pull do to an object?</li> <li>● What tools can we use to increase the</li> </ul>	<p>PS2.A: Forces and Motion</p> <ul style="list-style-type: none"> <li>● Pushes and pulls can have different strengths and directions. (KPS2-1) (K-PS2-2) (W.K.7) (MP.2) (K.MD.A.1) (K.MD.A.2) (SL.K.3) (K.ETS1.A) (K.ETS1.B)</li> <li>● Pushing or pulling on an object can change the speed or direction of its motion and can start or stop it. (K-PS2-1) (K-PS2-2) (W.K.7) (MP.2) (K.MD.A.1) (K.MD.A.2) (SL.K.3) (K.ETS1.A). (K.ETS1.B)</li> </ul> <p>PS2.B: Types of Interactions</p> <ul style="list-style-type: none"> <li>● When objects touch, or collide, they push on one another and can change motion. (K-PS2-1) (W.K.7) (MP.2) (K.MD.A.1) (K.MD.A.2) (K.ETS1.A) (K.ETS1.B)</li> </ul> <p>PS3.B: Conservation of Energy and Energy Transfer</p> <ul style="list-style-type: none"> <li>● Sunlight warms Earth's surface. (K-PS3-1) (K-PS3-2) (W.K.7) (K.MD.A.2) (K.ETS1.A) (K.ETS1.B)</li> </ul> <p>PS3.C: Relationship Between Energy and Forces</p>

<p>speed of an object or make the object turn?</p> <ul style="list-style-type: none"> <li>• What are characteristics of the sun?</li> <li>• Can structures reduce the warming effect of sunlight on Earth's surface?</li> </ul>	<ul style="list-style-type: none"> <li>• A bigger push or pull makes things speed up or slow down more quickly. (secondary to K-PS2-1)</li> </ul> <p>ETS1.A: Defining Engineering Problems</p> <ul style="list-style-type: none"> <li>• A situation that people want to change or create can be approached as a problem to be solved through engineering. Such problems may have many acceptable solutions. (secondary to KPS2-2)</li> </ul>
<p>NJSL Standards</p>	<p>Classroom Applications</p>
<p>K-PS2-1. Plan and conduct an investigation to compare the effects of different strengths or different directions of pushes and pulls on the motion of an object.</p> <ul style="list-style-type: none"> <li>• Examples of pushes or pulls could include a string attached to an object being pulled, a person pushing an object, a person stopping a rolling ball, and two objects colliding and pushing on each other.</li> <li>• Assessment Boundary: Assessment is limited to different relative strengths or different directions, but not</li> </ul>	<p>Objectives: Use evidence to relate the effects of various strengths and directions of pushes and pulls on the motion of an object. (KPS2-1) (K-PS2-2) (W.K.7) (MP.2) (K.MD.A.1) (K.MD.A.2) (SL.K.3) (K.ETS1.A) (K.ETS1.B)</p> <ul style="list-style-type: none"> <li>• Pushing or pulling on an object can change the speed or direction <ul style="list-style-type: none"> <li>• Pushes and pulls can have different strengths and directions.</li> <li>• When objects touch, or collide they push on one another and change direction/motion.</li> <li>• Example: (Make their own golf-course to demonstrate the effects of force on the ball) <a href="https://njctl.org/courses/science/kindergarten-science/forces-and-motion/attachments/golf-course-lab-activity/">https://njctl.org/courses/science/kindergarten-science/forces-and-motion/attachments/golf-course-lab-activity/</a></li> </ul> </li> </ul> <p>Use evidence to create a design solution to change the direction or speed of an object that has been pushed or pulled (K-PS2-1) (W.K.7) (MP.2) (K.MD.A.1) (K.MD.A.2) (K.ETS1.A) (K.ETS1.B)</p> <ul style="list-style-type: none"> <li>• Pushing or pulling on an object can change the speed or direction of its motion and start or stop it.</li> <li>• A larger push or pull makes things go faster.</li> <li>• Example: (Participate in whole-group potato sack race to visualize the variations of speed/motion and make a marble ramp in classroom centers) <a href="https://njctl.org/courses/science/kindergarten-science/forces-and-motion/attachments/potato-sack-race-lab-activity/">https://njctl.org/courses/science/kindergarten-science/forces-and-motion/attachments/potato-sack-race-lab-activity/</a></li> </ul> <p>Observe and examine the effects of sunlight on the Earth's surface areas (PS3-1) (W.K.7) (K.MD.A.2) (K.ETS1.A) (K.ETS1.B)</p>

both at the same time. Assessment does not include non-contact pushes or pulls such as those produced by magnets.

K-PS2-2.

Analyze data to determine if a design solution works as intended to change the speed or direction of an object with a push or a pull.

- Examples of problems requiring a solution could include having a marble or other object move a certain distance, follow a particular path, and knock down other objects. Examples of solutions could include tools such as a ramp to increase the speed of the object and a structure that would cause an object such as a marble or ball to turn.

- Assessment Boundary:

- How sunlight affects different surfaces on Earth. They will use the terms warm, cool, and hot to describe what they learned.
- Example:  
(<https://njctl.org/courses/science/kindergarten-science/energy/attachments/sun-light-energy-lab-activity/>)  
(<https://njctl.org/courses/science/kindergarten-science/energy/attachments/energy-lab-activity/>)

Create and use various tools/materials to build structures that will help reduce the warming effect of sunlight on the Earth's surface (K-PS3-1) (K-PS3-2) (W.K.7) (K.MD.A.2) (K.ETS1.A) (K.ETS1.B)

- Describe the sun's characteristics
- Design and build a structure that will reduce the warming effect of sunlight on Earth's surface. They will choose materials for their design that will create shade.

#### **Teaching Strategies/Materials:**

Lesson Structure: Anticipatory Set, Mini-Lesson, Whole Group, Small Group, Independent Work, Closure

Strategies: Think-Pair-Share, Read Aloud, Jigsaw, Investigations, Guided Explorations, Projects

Materials: Mentor Texts, DVDs, Internet, Technology (Smart Board, student computers/laptops, PowerPoint, Websites, etc.), supplemental books, visual aids, manipulatives, supplemental materials for investigations

Differentiation Strategies/Modifications

SWD/ Students at risk of failure: 1:1 teacher redirect / re-teach, peer helper, visual aids, modified tests/quizzes, modified homework

Assessment does not include friction as a mechanism for change in speed.

K-PS3-1.

Make observations to determine the effect of sunlight on Earth's surface.

- Clarification  
Statement: Examples of Earth's surface could include sand, soil, rocks, and water.
- Assessment  
Boundary:  
Assessment of temperature is limited to relative measures such as warmer/cooler.

K-PS3-2.

Use tools and materials to design and build a structure that will reduce the warming effect of sunlight on an area.

- Clarification  
Statement: Examples of structures could include umbrellas, canopies, and tents that minimize the

Gifted/Enrichment: computer-based research, high level task, class presentation.

Climate change activity:

<https://mysteryscience.com/lessons?query=climate>

Climate change lessons:

<https://www.brainpop.com/science/weather/climatechange/>

<https://www.calacademy.org/>

**Holocaust**

**Amistad**

African American & Differently abled/LGBTQ Scientists:

<https://www.brainpop.com/search/?keyword=scientists>

**10 famous scientists with disabilities**

- Thomas Edison. Born in 1847, Thomas Edison lost much of his hearing by his early twenties. ...
- Temple Grandin. ...
- Ralph Braun. ...
- Sang-Mook Lee. ...
- Stephen Hawking. ...

warming effect of the sun.

- Geerat Vermeij. ...
- Farida Bedwei. ...
- Richard Mankin.

<https://royalsociety.org/topics-policy/diversity-in-science/scientists-with-disabilities/>

<https://www.discovery.com/science/LGBT-Scientists-Who-Changed-World>

Connections to other content areas, including Career Readiness, Life Literacies, and Key Skills:

ELA/Literacy –

RI.K.1 With prompting and support, ask and answer questions about key details in a text.

W.K.7 Participate in shared research and writing projects (e.g., explore a number of books by a favorite author and express opinions about them).

SL.K.3 Ask and answer questions in order to seek help, get information, or clarify something that is not understood.

Mathematics –

MP.2 Reason abstractly and quantitatively.

K.MD.A.1 Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object.

K.MD.A.2 Directly compare two objects with a measurable attribute in common, to see which object has “more of”/”less of” the attribute, and describe the difference.

Career Readiness, Life Literacies, and Key Skills –

9.4.2.CI.1: Demonstrate openness to new ideas and perspectives.

9.4.2.CI.2: Demonstrate originality and inventiveness in work.

9.4.2.CT.1: Gather information about an issue, such as climate change and collaboratively brainstorm ways to solve the problem.

9.4.2.CT.2- Identify possible approaches and resources to execute a plan.

9.4.2.CT.3- Use a variety of types of thinking to solve problems (e.g. inductive, deductive).

Unit Resources:

Savvas Elevate Science for Kindergarten, Topic 1: Pushes and Pulls

Savvas Elevate Science for Kindergarten, Topic 3: Sunlight

Hands-on & Virtual Labs  
STEM Quest PBL  
Interactivities

List of books to be used:

*Inquiry in Action: Investigating Matter through Inquiry*

Conservation of Matter

<http://strandmaps.nsd.org/?id=SMS-MAP-1332>

Science Refreshers

<http://nsdl.org/refreshers/science/>

Science Kids <http://www.sciencekids.co.nz/gamesactivities/gases.html>

<http://archive.fossweb.com/modulesK-2/SolidsandLiquids/activities/changeit.swf>

[http://coolsciencelab.com/ice\\_cream.htm](http://coolsciencelab.com/ice_cream.htm)

Unit Assessment Opportunities:

- Journal Entries and Response Sheets
- Observations, Questioning, and discussions
- Comprehension Checks in literature
- Class Webs
- Presentations
- Collaboration
- Projects
- Rubrics (<http://www.nextgenscience.org/resources>)
- Unit Test
- Lesson Check
- Lesson Quiz
- Performance Expectations Activities
- Topic Test

**FAIRFIELD TOWNSHIP SCHOOL**  
**Kindergarten Science Curriculum Guide Unit 2**

Subject: Science	Grade Level: K
Unit 2: Molecules to Organisms: Structures and Processes	Pacing: 8 weeks
Essential Questions	Enduring Understandings
<ul style="list-style-type: none"> <li>● What are the basic needs of organisms?</li> <li>● What do animals need to live and grow?</li> <li>● Where do animals obtain their food?</li> <li>● Do all animals need the same kind of food?</li> <li>● What do plants need to live and grow?</li> <li>● Do all living things need water? Where can they get the water?</li> </ul>	<p>LS1.C: Organization for Matter and Energy Flow in Organisms</p> <ul style="list-style-type: none"> <li>● All animals need food in order to live and grow. They obtain their food from plants or from other animals. Plants need water and light to live and grow. (K-LS1-1) (W.K.7) (K.MD.A.2)</li> </ul>
NJSL-S Standards	Classroom Applications
K-LS1-1.	Objective:

Use observations to describe patterns of what plants and animals (including humans) need to survive.

- Examples of patterns could include that animals need to take in food but plants do not; the different kinds of food needed by different types of animals; the requirement of plants to have light; and, that all living things need water.

Use evidence to depict how plants and animals survive in their natural habitat (K-LS1-1) (W.K.7) (K.MD.A.2)

- All animals need food in order to live and grow.
- They obtain their food from plants or other animals.
- Different kinds of food are needed by different types of animals.
- Plants need light and water to live and grow.
- All living things need water.
- Differentiate between the needs of animals and plants.
- Recognize the basic needs of organisms.
- Example:  
<https://njctl.org/courses/science/kindergarten-science/plant-animal-needs/attachments/plant-animal-needs-classwork-homework/> (Lima Bean Lab)

**Teaching Strategies/Materials:**

Lesson Structure: Anticipatory Set, Mini-Lesson, Whole Group, Small Group, Independent Work, Closure

Strategies: Think-Pair-Share, Read Aloud, Jigsaw, Investigations, Guided Explorations, Projects

Materials: Mentor Texts, DVDs, Internet, Technology (Smart Board, student computers/laptops, PowerPoint, Websites, etc.), supplemental books, visual aids, manipulatives, supplemental materials for investigations

Differentiation Strategies/Modifications

SWD/ Students at risk of failure: 1:1 teacher redirect / re-teach, peer helper, visual aids, modified tests/quizzes, modified homework

Gifted/Enrichment: computer-based research, high level task, class presentation.

Connections to other content areas, including Career Readiness, Life Literacies, and Key Skills:

ELA/Literacy-



W.K.7 Participate in shared research and writing projects (e.g., explore a number of books by a favorite author and express opinions about them). (K-LS1-1)

Mathematics –

K.MD.A.2 Directly compare two objects with a measurable attribute in common, to see which object has “more of”/”less of” the attribute, and describe the difference. (K-LS1-1)

Career Readiness, Life Literacies, and Key Skills –

9.4.2.CI.1: Demonstrate openness to new ideas and perspectives.

9.4.2.CI.2: Demonstrate originality and inventiveness in work .

9.4.2.CT.1: Gather information about an issue, such as climate change and collaboratively brainstorm ways to solve the problem.

9.4.2.CT.2- Identify possible approaches and resources to execute a plan.

9.4.2.CT.3- Use a variety of types of thinking to solve problems (e.g. inductive, deductive).

Unit Resources:

Savvas Elevate Science for Kindergarten, Topic 5: Needs of Living Things

Hands-on & Virtual Labs

STEM Quest PBL

Interactivities

*List of books to be used:*

*Websites:*

Education.com

Easyscienceforkids.org

Kidsgrowingstrong.org/Plant Needs

Ducksters.com/science/photosynthesis.php

Animalatlas.tv

**Technology**

8.1.5.A.1 to 3 - Technology Operations and Concepts: Students demonstrate a sound understanding of technology concepts, systems and operations.

- Understand and use technology systems.
- Select and use applications effectively and productively.

8.1.5.D.1 to 4 - Digital Citizenship : Students understand human, cultural, societal issues related to technology and practice legal and ethical behaviors

- Advocate and practice safe, legal, and responsible use of information and technology.
- Demonstrate personal responsibility for lifelong learning.
- Exhibit leadership for digital citizenship.

8.1.5.E.1 - Research and Information Fluency: Students apply digital tools to gather, evaluate, and use information.

- Plan strategies to guide inquiry.
- Locate, organize, analyze, evaluate, synthesize, and ethically use information from a variety of sources and media.
- Evaluate and select information sources and digital tools based on the appropriateness for specific tasks.

**FAIRFIELD TOWNSHIP SCHOOL  
Kindergarten Science Curriculum Guide Unit 3**

Subject: Science	Grade Level: K
Unit 3: Earth Systems/ Earth and Human Activity	Pacing: 20 weeks
Essential Questions	Enduring Understandings
<ul style="list-style-type: none"><li>● What are examples of qualitative</li></ul>	ESS2.D: <b>Weather and Climate</b> <ul style="list-style-type: none"><li>● Weather is the combination of sunlight, wind, snow or rain, and temperature in a particular region at a particular time. People measure these conditions to describe and record the</li></ul>

<p>observations of the local weather?</p> <ul style="list-style-type: none"> <li>• How can we record quantitative observations of the local weather and temperature?</li> <li>• What patterns were observed in their observations?</li> <li>• Does this pattern change with seasons?</li> <li>• What is the relationship between animals and what they eat, and how does that determine where they live?</li> <li>• What features help plants and animals survive in different environments?</li> <li>• How are these features used?</li> <li>• How do plants and animals depend on the land, air, and water to survive?</li> <li>• How do plants and animals change the environment to meet their needs?</li> </ul>	<p>weather and to notice patterns over time. (K-ESS2-1) (W.K.7) (MP.2) (MP.4) (K.CC. A) (K.MD.A.1) (K.MD.B.3)</p> <p>ESS2.E: Biogeology</p> <ul style="list-style-type: none"> <li>• Plants and animals can change their environment. (K.ESS2-2) (RI.K.1) (W.K.1) (W.K.2)</li> </ul> <p>ESS3.A: Natural Resources</p> <ul style="list-style-type: none"> <li>• Living things need water, air, and resources from the land, and they live in places that have the things they need. Humans use natural resources for everything they do. (K-ESS3-1) (SL.K.5) (MP.2) (MP.4) (K.CC)</li> </ul> <p>ESS3.B: <b>Natural Hazards</b></p> <ul style="list-style-type: none"> <li>• Some kinds of severe weather are more likely than others in a given region. Weather scientists forecast severe weather so that the communities can prepare for and respond to these events. (K-ESS3-2) (RI.K.1) (SL.K.3) (K.ETS1.A)</li> </ul> <p>ESS3.C: <b>Human Impacts on Earth Systems</b></p> <ul style="list-style-type: none"> <li>• Things that people do to live comfortably can affect the world around them. But they can make choices that reduce their impacts on the land, water, air, and other living things. (Secondary to K-ESS2-2) (K-ESS3-3) (W.K.2) (SL.K.3) (K.ETS1.A)</li> </ul> <p>ETS1.A: Defining and Delimiting an Engineering Problem</p> <ul style="list-style-type: none"> <li>• Asking questions, making observations, and gathering information are helpful in thinking about problems. (secondary to K-ESS3-2)</li> </ul> <p>ETS1.B: Developing Possible Solutions</p> <ul style="list-style-type: none"> <li>• Designs can be conveyed through sketches, drawings, or physical models. These representations are useful in communicating ideas for a problem's solutions to other people. (secondary to K-ESS3-3)</li> </ul>
----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

<ul style="list-style-type: none"> <li>• What are examples of things that people do to live comfortably that can affect the world around them?</li> <li>• How does man affect the forest/land with his choices?</li> <li>• How can man conserve water?</li> <li>• What can a child do to keep the air clean?</li> <li>• How can our families help keep the Earth healthy?</li> <li>• What can we do to reduce, reuse, and recycle our natural resources?</li> </ul>	
<p>NJSL Standards</p>	<p>Classroom Applications</p>
<p>K-ESS2-1. Use and share observations of local weather conditions to describe patterns over time.</p> <ul style="list-style-type: none"> <li>• Examples of qualitative observations could include descriptions of the weather (such as</li> </ul>	<p>Objectives:</p> <p>Evaluate and record local weather observations to describe patterns over a period of time. (K-ESS2-1) (W.K.7) (MP.2) (MP.4) (K.CC. A) (K.MD.A.1) (K.MD.B.3)</p> <ul style="list-style-type: none"> <li>• How to make qualitative and quantitative observations of the local weather and temperature. This will include descriptions of the weather (such as sunny, cloudy, rainy, warm).</li> <li>• Measure these conditions to describe and record the local weather.</li> <li>• Use daily data of weather to notice patterns over time.</li> </ul>

sunny, cloudy, rainy, and warm); examples of quantitative observations could include numbers of sunny, windy, and rainy days in a month. Examples of patterns could include that it is usually cooler in the morning than in the afternoon and the number of sunny days versus cloudy days in different months.

- Assessment Boundary: Assessment of quantitative observations limited to whole numbers and relative measures such as warmer/cooler.

#### K-ESS2-2.

Construct an argument supported by evidence for how plants and animals (including humans) can change the environment to meet their needs.

- Examples of plants and animals changing their environment

- Use daily data of weather to compare two different seasons. (Morning Meeting discussions)
- Example:  
<https://njctl.org/courses/science/kindergarten-science/weather-climate/attachments/weather-climate-classwork-homework/>

Participate in a discussion to identify and support evidence of how plants and animals (humans included) can change the natural environment. (K-ESS2-2) (RI.K.1) (W.K.1) (W.K.2)

- How plants and animals can change their environment.
- Living things need water, air, resources from land to survive.
- Living things live in places that have the things they need to survive.
- Humans use natural resources from the environment.
- Plants, animals and their surroundings make a system, they work together to meet needs.
- Example:  
<https://njctl.org/courses/science/kindergarten-science/plant-animal-environments/attachments/plant-and-animal-environments-classwork-homework/>

Build a model to show the relationship between the needs of various plants or animals (humans included) and where they live. (K-ESS3-1) (SL.K.5) (MP.2) (MP.4) (K.CC)

- Diagram/explain how plants and animals can change their environment to meet their needs.
- Diagram/explain the relationship between the needs of different plants or animals and the places they live.
- Diagram/explain what features animals and plants have to survive in different environments.
- Sketch/explain how human use resources in different environments.
- Example:  
<https://njctl.org/courses/science/kindergarten-science/plant-animal-environments/attachments/plant-and-animal-environments-classwork-homework/>

Inquire to gain knowledge about the purpose of weather forecasting to enable humans to prepare for and respond to severe weather. (K-ESS3-2) (RI.K.1) (SL.K.3) (K.ETS1.A)

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

**K-ESS3-1.**

Use a model to represent the relationship between the needs of different plants or animals (including humans) and the places they live.

- Clarification  
Statement: Examples of relationships could include that deer eat buds and leaves, therefore, they usually live in forested areas; and, grasses need sunlight so they often grow in meadows. Plants, animals, and their surroundings make up a system.

**K-ESS3-2.**

Ask questions to obtain information about the purpose of weather forecasting to prepare for, and respond to, severe weather.

- There are different types of severe weather.
- Where you live can determine what types of severe weather occurs.
- Weather scientists help us prepare for severe weather.
- We can prepare for severe weather.
- Obtain information about weather forecasting to prepare for, and respond to, severe weather.
- Presentation:  
<https://njctl.org/courses/science/kindergarten-science/severe-weather/attachments/severe-weather-2/>

Conduct classroom discussions about the solutions that will decrease the human impact on the Earth's natural environment and living things ((K-ESS3-3) (W.K.2) (SL.K.3) (K.ETS1.A)

- There are specific things that people do to live comfortably that can affect the world around them.
- We need to reduce, reuse, and recycle our resources.
- Water conservation is saving our natural resources. We must try every day to conserve water.
- Humans use natural resources for everything they do.
- Resources are renewable or non-renewable.
- Identify and practice activities they can do to reduce their impact on land, water, air, and other living things.
- Identify and use water conservation practices.
- Explore and communicate solutions that will reduce the impact of humans in their local environment.
- Example:  
<https://njctl.org/courses/science/kindergarten-science/human-impact-on-earth/attachments/human-impact-on-earth-classwork-homework/>

**Teaching Strategies/Materials:**

Lesson Structure: Anticipatory Set, Mini-Lesson, Whole Group, Small Group, Independent Work, Closure

- Emphasis is on local forms of severe weather.

K-ESS3-3.

Communicate solutions that will reduce the impact of humans on the land, water, air, and/or other living things in the local environment.

- Examples of human impact on the land could include cutting trees to produce paper and using resources to produce bottles. Examples of solutions could include reusing paper and recycling cans and bottles.

Strategies: Think-Pair-Share, Read Aloud, Jigsaw, Investigations, Guided Explorations, Projects

Materials: Mentor Texts, DVDs, Internet, Technology (Smart Board, student computers/laptops, PowerPoint, Websites, etc.), supplemental books, visual aids, manipulatives, supplemental materials for investigations

Differentiation Strategies/Modifications

SWD/ Students at risk of failure: 1:1 teacher redirect / re-teach, peer helper, visual aids, modified tests/quizzes, modified homework

Gifted/Enrichment: computer-based research, high level task, class presentation

Connections to other content areas, including Career Readiness, Life Literacies, and Key Skills:

ELA/Literacy –

RI.K.1 With prompting and support, ask and answer questions about key details in a text.

W.K.1 Use a combination of drawing, dictating, and writing to compose opinion pieces in which they tell a reader the topic or the name of the book they are writing about and state an opinion or preference about the topic or book.

W.K.2 Use a combination of drawing, dictating, and writing to compose informative/explanatory texts in which they name what they are writing about and supply some information about the topic.

W.K.7 Participate in shared research and writing projects (e.g., explore a number of books by a favorite author and express opinions about them).

SL.K.3 Ask and answer questions in order to seek help, get information, or clarify something that is not understood.

SL.K.5 Add drawings or other visual displays to descriptions as desired to provide additional detail.

Mathematics –

MP.2 Reason abstractly and quantitatively.

MP.4 Model with mathematics.

K.CC.A Know number names and the count sequence.

K.MD.A.1 Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object.

K.MD.B.3 Classify objects into given categories; count the number of objects in each category and sort the categories by count.

K.CC Counting and Cardinality

Career Readiness, Life Literacies, and Key Skills –

9.4.2.CI.1: Demonstrate openness to new ideas and perspectives.

9.4.2.CI.2: Demonstrate originality and inventiveness in work .

9.4.2.CT.1: Gather information about an issue, such as climate change and collaboratively brainstorm ways to solve the problem.

9.4.2.CT.2- Identify possible approaches and resources to execute a plan.

9.4.2.CT.3- Use a variety of types of thinking to solve problems (e.g. inductive, deductive).

Unit Resources:

Savvas Elevate Science for Kindergarten, Topic 4: Earth's Weather

Savvas Elevate Science for Kindergarten, Topic 6: Environment

Hands-on & Virtual Labs

STEM Quest PBL

Interactivites

List of books to be used:

*Volcanoes!* by Cy Armour

*Volcanoes* by Anne Schreiber

Landforms series (*Caves, Islands, Mountains, Volcanoes*) by Cassie Mayer



Looking at Earth series (*Earth's Mountains, Introducing Landforms, Earth's Rivers, Volcanoes on Earth, What Shapes the Land?*) by Bobbie Kalman

*Hurricane!* by Jonathan London

*Earth* by David Bennett

*Rocking and Rolling -- The Earth* by Phillip Steele

Inquiry in Action: Investigating Matter through Inquiry

Conservation of Matter

<http://strandmaps.nsd.org/?id=SMS-MAP-1332>

Science Refreshers

<http://nsdl.org/refreshers/science/>

<http://www.sciencekids.co.nz/earth.html>

<http://science.nationalgeographic.com/science/earth/>

Unit Assessment Opportunities:

- Journal Entries and Response Sheets
- Observations, Questioning, and Discussions
- Comprehension Checks in Literature
- Class Webs
- Presentations
- Collaboration
- Unit Test
- Lesson Check
- Lesson Quiz
- Performance Expectations Activities
- Chapter Test
- Lesson Check
- Lesson Quiz
- Performance Expectations Activities
- Topic Tests

Subject: Science	Grade Level: K
Unit 4: Engineering Design	Pacing: Incorporate all year
<b>Essential Questions</b>	<b>Enduring Understandings</b>
<ul style="list-style-type: none"> <li>• How have objects or tools been developed in the past to solve a simple problem?</li> <li>• What simple problem can I solve by developing a new object or tool?</li> <li>• Compare the strengths and weaknesses of two objects or tools that are designed to solve the same problem.</li> </ul>	<p>ETS1.A: Defining and Delimiting Engineering Problems</p> <ul style="list-style-type: none"> <li>• A situation that people want to change or create can be approached as a problem to be solved through engineering. (K-2-ETS1-1)</li> <li>• Asking questions, making observations, and gathering information are helpful in thinking about problems. (K-2-ETS1-1)</li> <li>• Before beginning to design a solution, it is important to clearly understand the problem. (K-2-ETS1-1)</li> </ul> <p>ETS1.B: Developing Possible Solutions</p> <ul style="list-style-type: none"> <li>• Designs can be conveyed through sketches, drawings, or physical models. These representations are useful in communicating ideas for a problem's solutions to other people. (K-2-ETS1-2)</li> </ul> <p>ETS1.C: Optimizing the Design Solution</p> <ul style="list-style-type: none"> <li>• Because there is always more than one possible solution to a problem, it is useful to compare and test designs. (K-2-ETS1-3)</li> </ul>
<b>NJSL Standards</b>	<b>Classroom Applications</b>
<p>K-2-ETS1-1. Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the</p>	<p>Objectives: Ask questions based on observations to find more information about the natural and/or designed world (K-2-ETS1-1)</p> <p>Define a simple problem that can be solved through the development of a new or improved object or tool. (K-2-ETS1-1)</p> <p>Develop a simple model based on evidence to represent a proposed object or tool. (K-2-ETS1-2)</p>

<p>development of a new or improved object or tool.</p> <p>K-2-ETS1-2. Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps in function as needed to solve a given problem.</p> <p>K-2-ETS1-3. Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.</p>	<p>Analyze data from tests of an object or tool to determine if it works as intended. (K-2-ETS1-3)</p> <p><b>Teaching Strategies/Materials:</b></p> <p>Lesson Structure: Anticipatory Set, Mini-Lesson, Whole Group, Small Group, Independent Work, Closure</p> <p>Strategies: Think-Pair-Share, Read Aloud, Jigsaw, Investigations, Guided Explorations, Projects</p> <p>Materials: Mentor Texts, DVDs, Internet, Technology (Smart Board, student computers/laptops, PowerPoint, Websites, etc.), supplemental books, visual aids, manipulatives, supplemental materials for investigations</p> <p>Differentiation Strategies/Modifications</p> <p>SWD/ Students at risk of failure: 1:1 teacher redirect / re-teach, peer helper, visual aids, modified tests/quizzes, modified homework</p> <p>Gifted/Enrichment: computer-based research, high level task, class presentation</p>
<p>Connections to other content areas, including Career Readiness, Life Literacies, and Key Skills:</p> <p><i>ELA/Literacy:</i></p> <p>RI.K.1 With prompting and support, ask and answer questions about key details in a text.. (K-2-ETS1-1)</p> <p>W.K.6 With guidance and support from adults, explore a variety of digital tools to produce and publish writing, including in collaboration with peers. (K-2-ETS1-1), K-2-ETS1-3)</p> <p>W.K.8 With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question.(K-2-ETS1-1) (K-2-ETS1-3)</p> <p>SL.K.5 Add drawings or other visual displays to descriptions as desired to provide additional detail (K-2-ETS1-2)</p> <p><i>Mathematics-</i></p>	

2. MD.D.10 Draw a picture graph or bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems using information presented in a bar graph. (K-2-ETS1-1) (K-2-ETS1-3)

Career Readiness, Life Literacies, and Key Skills –

9.4.2.CI.1: Demonstrate openness to new ideas and perspectives.

9.4.2.CI.2: Demonstrate originality and inventiveness in work.

9.4.2.CT.1: Gather information about an issue, such as climate change and collaboratively brainstorm ways to solve the problem.

9.4.2.CT.2- Identify possible approaches and resources to execute a plan.

9.4.2.CT.3- Use a variety of types of thinking to solve problems (e.g. inductive, deductive).

Unit Resources:

Pearson Realize Interactive Science for Kindergarten,, Skills Handbook Part 1: The Nature of Science, Skills Handbook Part 2: Solve Problems

Hands-on & Virtual Labs  
STEM Quest PBL  
Interactivities

*List of Books to be read:*

Inventions and Discovery Through Time-Graphic History: variety pack

Eli Whitney and the Cotton Gin

Henry Ford and the Model T

Samuel Morse and the Telegraph

Garrett Morgan

George Washington Carver

Philo Farnsworth and the Television  
Steve Jobs and Steven Wozniak and the Personal Computer

### 5 Notable Inventors

*Books found in media center:*

Inventing Things by Julie Brown

Now & Ben by Gene Barretta

Imaginative Inventions by Charise Mericle Harper

Who Invented It & What Makes it Work? By Sarah Leslie

What's Next? By Lisa Thompson

Hoop Genius by John Coy

*Websites:*

Inventions.org

Unit Assessment Opportunities:

- Journal Entries and Response Sheets
- Observations, Questioning, and discussions
- Comprehension Checks in literature
- Class Webs
- Presentations
- Collaboration
- Projects
- Rubrics (<http://www.nextgenscience.org/resources>)
- Topic Tests