

FAIRFIELD TOWNSHIP SCHOOL
Science Curriculum Guide Grade 2 Unit 1

Subject: Science	Grade Level: 2
Unit 1: Structures and Properties of Matter	Pacing: 9 Weeks
Essential Questions	Enduring Understandings
<ul style="list-style-type: none"> • How are materials similar and different from one another, and how do the properties of the materials relate to their use? • What are the different properties of matter? • What properties are best suited for different purposes? • What are the differences between a solid, a liquid and a gas? • How can a substance change? • Are changes to substances reversible or permanent? 	<p>PS1.A: Structure and Properties of Matter</p> <ul style="list-style-type: none"> • Different kinds of matter exist and many of them can either be solid or liquid, depending on temperature. Matter can be described and classified by its observable properties. (2-PS1-1) (RI.2.8) (W.2.7) (W.2.8) (MP.4) (2.MD.D.10). • Different properties are suited for different purposes. (2-PS1-2), (2-PS1-3) (W.2.7) (W.2.8) (MP.2) (MP.4) (MP.5) (2.MD.D.10) • A great variety of objects can be built up from a small set of pieces. (2-PS1-3) (W.2.7) (W.2.8) <p>PS1.B: Chemical Reactions</p> <ul style="list-style-type: none"> • Heating and cooling a substance may cause changes that can be observed. Sometimes these changes are reversible, and sometimes, they are not. (2-PS1-4) (RI.2.1) (RI.2.3) (RI.2.8) (W.2.1)
NJSL Standards	Classroom Applications
2-PS1-1.	Objectives:

Plan and conduct an investigation to describe and classify different kinds of materials by its observable properties.

- Clarification

Statement:

Observations could include color, texture, hardness, and flexibility. Patterns could include the similar properties that different materials share.

2-PS1-2.

Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for and intended purpose.

- Clarification

Statement: Examples of properties could include, strength, flexibility, hardness, texture, and absorbency.

- Assessment

Boundary:

Assessment of quantitative measurements is

Plan and conduct an investigation collaboratively to produce data to serve as the basis for evidence to answer a question. (2-PS1-1) (RI.2.8) (W.2.7) (W.2.8) (MP.4) (2.MD.D.10).

- Properties of matter such as strength, hardness, flexibility and texture.
- What materials are best suited for different purposes.
- Properties of solids, liquids, and gas.

Analyze data from tests of an object or tool to determine if it works as intended. (2-PS1-2) (W.2.7) (W.2.8) (MP.2) (MP.4) (MP.5) (2.MD.D.10)

- Simple tests can be designed to gather evidence to support or refute student ideas about causes.
- Every human-made product is designed by applying some knowledge of the natural world and is built using materials derived from the natural world.
- Different properties are suited for different purposes.

Make observations (firsthand and from media) to construct an evidence-based account for natural phenomena. (2-PS1-3) (W.2.7) (W.2.8) (MP.2) (MP.4) (MP.5) (2.MD.D.10)

- Objects may break into smaller pieces and be put together into larger pieces, or change shapes.
- Some substances can experience reversible changes and some cannot.
- An object built out of a small set of pieces can be deconstructed and built into a different object.

Construct an argument with evidence to support a claim. (2-PS1-4) (RI.2.1) (RI.2.3) (RI.2.8) (W.2.1)

- Heating and cooling a substance may cause changes that can be observed. Sometimes these changes are reversible, and sometimes, they are not.
- Simple tests can be designed to gather evidence to support or refute student ideas about causes.

Scientists search for cause-and-effect relationships to explain natural events. (2-PS1-4) (RI.2.1) (RI.2.3) (RI.2.8) (W.2.1)

- Patterns in the natural and human designed world can be observed.

limited to length.

2-PS1-3.

Make observations to construct an evidence-based account of how an object made of a small set of pieces can be disassembled and made into a new object.

- Clarification
Statement: Examples of pieces could include blocks, building bricks, or other assorted small objects.

2-PS1-4.

Construct an argument with evidence that some changes caused by heating and cooling can be reversed, and some cannot.

- Examples of reversible changes could include materials such as water and butter at different temperatures.
Examples of irreversible changes could include cooking an egg, freezing a

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

plant leaf, and heating paper.

Connections to other content areas, including 21st Century Skills:

ELA/Literacy –

RI.2.1 Ask and answer such questions as who? what? where? when? why? and how? to demonstrate understanding of details in a text.

RI.2.3 Describe the connection between a series of historical events, scientific ideas or concepts, or steps in the technical procedures in a text.

R.1.2.8 Describe how reasons support specific points the author makes in a text.

W.2.1 Write opinion pieces in which they introduce the topic or book they are writing about, state an opinion, supply reasons that support the opinion, use linking words (e.g., because, and, also) to connect opinion and reasons, and provide a concluding statement or section.

W.2.7 Participate in shared research and writing projects (e.g., read a number of books on a single topic to produce a report; record science observations).

W.2.8 Recall information from experiences or gather information from provided sources to answer a question.

Mathematics –

MP.2 Reason abstractly and quantitatively.

MP.4 Model with mathematics.

MP.5 Use appropriate tools strategically.

2. MD.D.10 Draw a picture graph and a bar graph (with single-unit scale) to represent data set with up to four categories.

Solve simple put-together, take-apart, and compare problems using information presented in a bar graph.

21st Century Skills –

9.2.4.

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

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

9.2.4. A.3 Investigate both traditional and nontraditional careers and relate information to personal likes and dislikes.

9.2.4. A.4 - Explain why knowledge and skills acquired in the elementary grades lay the foundation

for future academic and career success.

Unit Resources:

Pearson Realize Interactive Science for Second Grade, Chapter 1: Matter (What are some properties of matter?, Lesson 2: What are solids, liquids, and gases?, Lesson 3: What are some ways matter can change?, Lesson 4: How can water change?)

Hands-on & Virtual Labs

STEM Quest PBL

List of books to be used:

Working With Materials: Changing Materials by Chris Oxlade

Matter by Christine Webber

Water by Charlotte Guillain

Materials by Clive Gifford

What is a Gas? by Jennifer Boothroyd

What is a Solid? by Jennifer Boothroyd

What is a Liquid? by Jennifer Boothroyd

Solids, Liquids and Gases by Charnan Simon

What is the world made of? : all about solids, liquids, and gases by Kathleen Weidner Zoehfeld

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

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
- Chapter Test

FAIRFIELD TOWNSHIP SCHOOL
Science Curriculum Guide Grade 2 Unit 2

Subject: Science

Grade Level: 2

Unit 2: Interdependent Relationships in Ecosystems	Pacing: 9 weeks
Essential Questions	Enduring Understandings
<ul style="list-style-type: none"> ● Do plants need water and sunlight to grow? ● What role do animals play in dispersing seeds and pollination? ● How is life diverse in different habitats? ● What is biodiversity? ● What is the relationship between producers, consumers and decomposers? ● What types of organisms live on land? ● What types of organisms live in water? ● How do organism structures relate to their ecosystem? ● How do humans impact biodiversity? 	<p>LS2.A: Interdependent Relationships in Ecosystems</p> <ul style="list-style-type: none"> ● Plants depend on water and light to grow. (2-LS2-1) (W.2.7) (W.2.8) (MP.2) (MP.4) (MP.5) ● Plants depend on animals for pollination or to move their seeds around. (2-LS2-2) (SL.2.5) (MP.4) (2.MD.D.10) <p>LS4.D: Biodiversity and Humans</p> <ul style="list-style-type: none"> ● There are many different kinds of living things in any area, and they exist in different places on land and in water. (2-LS4-1) (W.2.7) (W.2.8) (MP.2) (MP.4) (2.MD.D.10) <p>ETS1.B: Developing Possible Solutions</p> <ul style="list-style-type: none"> ● 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 2-LS2-2)
NJSL Standards	Classroom Applications
<p>2-LS2-1. Plan and conduct an investigation to determine if plants need sunlight and water to grow.</p> <ul style="list-style-type: none"> ● Assessment 	<p>Plan and conduct an investigation collaboratively to produce data to serve as the basis for evidence to answer a question. (2-LS2-1) (W.2.7) (W.2.8) (MP.2) (MP.4) (MP.5)</p> <ul style="list-style-type: none"> ● The characteristics of plants. ● The needs of plants. ● Describe what plants need to survive.

<p>Boundary: Assessment is limited to testing one variable at a time.</p> <p>2-LS2-2. Develop a simple model that mimics the function of an animal in dispersing seeds or pollinating plants.</p> <p>2-LS4-1. Make observations of plants and animals to compare the diversity of life in different habitats.</p> <ul style="list-style-type: none"> ● Emphasis is on the diversity of living things in each of a variety of different habitats. ● Assessment Boundary: Assessment does not include specific animal and plant names in specific habitats. 	<ul style="list-style-type: none"> ● Describe photosynthesis. ● The inputs and outputs of photosynthesis. <p>Develop a simple model based on evidence to represent a proposed object or tool. (2-LS2-2) (SL.2.5) (MP.4) (2.MD.D.10)</p> <ul style="list-style-type: none"> ● How pollination occurs. ● How dispersal occurs. ● Develop a simple model to show how animals disperse seeds or pollinate plants. <p>Make observations (firsthand or from media) to collect data which can be used to make comparisons. (2-LS4-1) (W.2.7) (W.2.8) (MP.2) (MP.4) (2.MD.D.10)</p> <ul style="list-style-type: none"> ● Events have causes that generate observable patterns. (2-LS2-1) ● The characteristics of animals. ● The needs of animals. ● The diversity of animal habitats ● Compare and contrast diversity of life in different habitats. ● The meaning of biodiversity. ● That biodiversity is key to the planet's health as a system. ● The roles of producers, consumers and decomposers on land and in water. ● Characteristics of several ecosystems. ● Organisms and their environments are directly related. How humans affect biodiversity. ● Identify traits of organisms which help them survive in their environment ● Sort organisms into producers, consumers and decomposers. ● Sort animals into herbivores, carnivores and omnivores. <p>Scientists look for patterns and order when making observations about the world. (2-LS4-1) (W.2.7) (W.2.8) (MP.2) (MP.4) (2.MD.D.10)</p> <ul style="list-style-type: none"> ● See above
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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 21st Century Skills:

ELA/Literacy-

W.2.7 Participate in shared research and writing projects (e.g., read a number of books on a single topic to produce a report; record science observations).

W.2.8 Recall information from experience or gather information from provided sources to answer a question.

SL.2.5 Create audio recordings of stories or poems; add drawings or other visual displays to stories or recounts of experiences when appropriate to clarify ideas, thoughts, and feelings.

Mathematics-

MP.2 Reason abstractly and quantitatively

MP.4 Model with mathematics.

MP.5 Use appropriate tools strategically.

2. MD.D.10 Draw a picture graph and a 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.

21st Century Skills –

9.2.4.

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

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

9.2.4. A.3 Investigate both traditional and nontraditional careers and relate information to personal likes and dislikes.

9.2.4. A.4 - Explain why knowledge and skills acquired in the elementary grades lay the foundation for future academic and career success.

Unit Resources:

Pearson Realize Interactive Science for Second Grade, Chapter 2: Plants & Animals (Lesson 1: What are the parts of a plant?, Lesson 2: What are some kinds of animals/, Lesson 3: What are some parts of animals?, Lesson 4: Where do plants and animals live?, Lesson 5: How do living things get food?)

Hands-on & Virtual Labs

STEM Quest PBL

List of books to be used:

Growing Things Variety Pack:

Plant Life Cycles: Variety Pack:

Life Cycle of Living Things: Variety Pack:

Animal Habitats: Variety Pack

*See media center for additional resources

Websites:

Education.com

Easyscienceforkids.org

Kidsgrowingstrong.org/Plant Needs

Ducksters.com/science/photosynthesis.php

Animalatlas.tv

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
- Chapter Test

FAIRFIELD TOWNSHIP SCHOOL
Science Curriculum Guide Grade 2 Unit 3

Subject: Science	Grade Level: 2
Unit 3: Earth's Systems: Processes that Shape the Earth	Pacing: 9 Weeks
Essential Questions	Enduring Understandings

<ul style="list-style-type: none"> • How does change come about to the earth and what are the causes of these changes? • What types of events occur in cycles? • What types of events have a beginning and an end? • What type of events on Earth happen very quickly? 4 • What types of events on Earth happen very slowly? • What are the effects of wind & water on the land? • What are landforms that help prevent wind and water erosion? • How does wind and water shape the land? • How can the effects of wind and water erosion be controlled or reduced? • Where is water found on Earth? • How can we find water on earth? • In what forms does water exist? • How does water cycle through its different 	<p>ESS1.C: The History of Planet Earth</p> <ul style="list-style-type: none"> • Some events happen very quickly; others occur very slowly, over a time period much longer than one can observe. (2-ESS1-1) (RI.2.1) (RI.2.3) (RI.2.9) (W.2.6) (W.2.7) (W.2.8) (SL.2.2) (MP.4) (2.NBT.A) <p>ESS2.A: Earth Materials and Systems</p> <ul style="list-style-type: none"> • Wind and water can change the shape of the land (2-ESS2-1) (RI.2.3) (MP.2) (MP.4) (MP.5) (2.MD.B.5) <p>ESS2.B: Plate Tectonics and Large-Scale System Interactions</p> <ul style="list-style-type: none"> • Maps show where things are located. One can map the shapes and kinds of land and water in any area. (2-ESS2-2) (MP.2) (2.NBT.A.3) <p>ESS2.C: The Roles of Water in Earth's Surface Processes</p> <ul style="list-style-type: none"> • Water is found in the ocean, rivers, lakes, and ponds. Water exists as solid ice and in liquid form. (2-ESS2-3) (W.2.6) <p>ETS1.C: Optimizing the Design Solution</p> <ul style="list-style-type: none"> • Because there is always more than one possible solution to a problem, it is useful to compare and test designs. (secondary to 2-ESS2-1)
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forms?	
NJSL Standards	Classroom Applications
<p>2-ESS1-1. Use information from several sources to provide evidence that Earth events can occur quickly or slowly.</p> <ul style="list-style-type: none"> • Examples of events and timescales could include volcanic explosions and earthquakes, which happen quickly and erosion of rocks, which occurs slowly. • Assessment Boundary: Assessment does not include quantitative measurements of timescales. <p>2-ESS2-1. Compare multiple solutions designed to slow or prevent wind or water from changing the shape of the land.</p> <ul style="list-style-type: none"> • Examples of solutions could include different designs of dikes and windbreaks to hold back wind and water, and different designs 	<p>Objectives: Use information from several sources to provide evidence that Earth events can occur quickly or slowly. (2-ESS1-1) (RI.2.1) (RI.2.3) (RI.2.9) (W.2.6) (W.2.7) (W.2.8) (SL.2.2) (MP.4) (2.NBT.A)</p> <ul style="list-style-type: none"> • Describe what a cycle is and give examples. • Describe events that have a beginning and an an end. • Describe events that happen quickly. • Describe events that happen very slowly. • Be able to describe events occur in cycles, such as day and night. • Identify events have a beginning and an end, like a volcanic eruption. • Explain that the impact of events can happen very quickly. • Describe that events can happen very slowly over a time period much longer than anyone can observe. <p>Compare multiple solutions designed to slow or prevent wind or water from changing the shape of the land. (2-ESS2-1) (RI.2.3) (MP.2) (MP.4) (MP.5) (2.MD.B.5)</p> <ul style="list-style-type: none"> • Explain how wind shapes the land. • Explain how water shapes the land. • Describe how wind erosion is reduced • Describe how water erosion is reduced. • What the effects of wind and water are on the land. • How wind erosion creates landforms • How water erosion creates landforms • Animals use landforms as homes. <p>Develop a model to represent the shapes and kinds of land and bodies of water in an area. (2-ESS2-2) (MP.2) (2.NBT.A.3)</p> <ul style="list-style-type: none"> • Describe some of the distinguishing characteristics of oceans, rivers, lakes, and ponds. • Recognize and name different bodies of water in pictures and on maps. • Describe some of the distinguishing characteristics of oceans, rivers, lakes, and ponds.

for using shrubs, grass, and trees to hold back the land.

2-ESS2-2.

Develop a model to represent the shapes and kinds of land and bodies of water in an area.

- Assessment Boundary:
Assessment does not include quantitative scaling in models.

2-ESS2-3.

Obtain information to identify where water is found on Earth and that it can be a solid or liquid.

- Recognize and name different bodies of water in pictures and on maps

Obtain information to identify where water is found on Earth and that it can be solid or liquid. (2-ESS2-3) (W.2.6)

- Describe where water may exist as a liquid or as a solid (ice).
- Draw and discuss the steps of the water cycle.
- Water is found in oceans, rivers, lakes, and ponds.
- We can use a map to find where water is located on Earth.
- Water exists in liquid or ice forms.
- Water cycles through its different forms via the water cycle.
- Water is found in oceans, rivers, lakes, and ponds.
- We can use a map to find where water is located on Earth.
- Water exists in liquid or ice forms.
- Describe where water may exist as a liquid or as a solid (ice).
- Draw and discuss the steps of the water cycle.

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 21st Century Skills:

ELA/Literacy –

RI.2.1 Ask and answer such questions as who? what? where? when? why? and how? to demonstrate understanding of details in a text.

RI.2.3 Describe the connection between a series of historical events, scientific ideas or concepts, or steps in the technical procedures in a text.

RI.2.9 Compare and contrast the most important points presented by two texts on the same topic.

W.2.6 With guidance and support from adults, use a variety of digital tools to produce and publish writing, including in collaboration with peers.

W.2.7 Participate in shared research and writing projects (e.g., read a number of books on a single topic to produce a report; record science observations).

W.2.8 Recall information from experiences or gather information from provided sources to answer a question.

SL.2.2 Recount or describe key ideas or details from a text read aloud for information presented orally or through other media.

SL.2.5 Create audio recordings of stories or poems; add drawings or other visual displays to stories or recounts of experiences when appropriate to clarify ideas, thoughts, and feelings.

Mathematics –

MP.2 Reason abstractly and quantitatively. (2-ESS2-1), (2-ESS2-1), (2-ESS2-2)

MP.4 Model with mathematics. (2-ESS1-1), (2-ESS2-1) MP.5 Use appropriate tools strategically (2-ESS2-1)

2.NBT.A Understand place value (2-ESS1-1)

2. NBT.A.3 Read and write numbers to 1000 using base-ten numerals, number names, and expanded form. (2-ESS2-2)

2.MD.B.5 Use addition and subtraction within 100 to solve word problems involving length that are given in the same units, e.g., by using drawings (such as drawings of rulers) and equations with a symbol for the unknown number to represent the problem (2-ESS2-1)

21st Century Skills –

9.2.4.

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

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

9.2.4. A.3 Investigate both traditional and nontraditional careers and relate information to personal likes and dislikes.
9.2.4. A.4 - Explain why knowledge and skills acquired in the elementary grades lay the foundation for future academic and career success.

Unit Resources:

Pearson Realize Interactive Science for Second Grade, Chapter 3: Earth's Materials (Lesson 1: What are some kinds of land and water?, Lesson 2: What changes land?, Lesson 3: What is a fossil?)
Hands-on & Virtual Labs
STEM Quest PBL

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

FAIRFIELD TOWNSHIP SCHOOL
Science Curriculum Guide Grade 2 Unit 4

Subject: Science	Grade Level: 2
Unit 4: Engineering Design	Pacing: 10 weeks
Essential Questions	Enduring Understandings
<ul style="list-style-type: none"> ● How have objects or tools been developed in the past to solve a 	ETS1.A: Defining and Delimiting Engineering Problems <ul style="list-style-type: none"> ● A situation that people want to change or create can be approached as a problem to be solved through engineering. (K-2-ETS1-1)

<p>simple problem?</p> <ul style="list-style-type: none"> • What simple problem can I solve by developing a new object or tool? • Compare the strengths and weaknesses of two objects or tools that are designed to solve the same problem. 	<ul style="list-style-type: none"> • Asking questions, making observations, and gathering information are helpful in thinking about problems. (K-2-ETS1-1) • Before beginning to design a solution, it is important to clearly understand the problem. (K-2-ETS1-1) <p>ETS1.B: Developing Possible Solutions</p> <ul style="list-style-type: none"> • 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) <p>ETS1.C: Optimizing the Design Solution</p> <ul style="list-style-type: none"> • Because there is always more than one possible solution to a problem, it is useful to compare and test designs. (K-2-ETS1-3)
<p>NJSL Standards</p>	<p>Classroom Applications</p>
<p>K-2-ETS1-1. Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.</p> <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.</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>Analyze data from tests of an object or tool to determine if it works as intended. (K-2-ETS1-3)</p> <p>Teaching Strategies/Materials: 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,</p>

<p>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>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>
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Connections to other content areas, including 21st Century Skills:

ELA/Literacy:

RI.2.1 Ask and answer such questions as who, what, where, why, and how to demonstrate understanding of key details in a text. (K-2-ETS1-1)

W.2.6 With guidance and support from adults, use a variety of digital tools to produce a publish writing, including in collaboration with peers. (K-2-ETS1-1), K-2-ETS1-3)

W.2.8 Recall information from experiences or gather information from provided sources to answer a question. (K-2-ETS1-1) (K-2-ETS1-3)

SL.2.5 Create audio recordings of stories or poems; add drawings or other visual displays to stories or recounts of experiences when appropriate to clarify ideas, thoughts, and feelings. (K-2-ETS1-2)

Mathematics-

2. MD.D.10 Draw a picture graph or bar graph (with single-unit scale) to represent a date 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)

21st Century Skills –

9.2.4.

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

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

9.2.4. A.3 Investigate both traditional and nontraditional careers and relate information to personal likes and dislikes.

9.2.4. A.4 - Explain why knowledge and skills acquired in the elementary grades lay the foundation for future academic and career success.

Unit Resources:

Pearson Realize Interactive Science for Second Grade, Skills Handbook Part 1: The Nature of Science, Skills Handbook Part 2: Technology & Tools

Hands-on & Virtual Labs
STEM Quest PBL

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

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>)
- Unit Test
- Lesson Check
- Lesson Quiz
- Performance Expectations Activities
- Chapter Test