

**FAIRFIELD TOWNSHIP SCHOOL
Science Curriculum Guide Grade 4**

Key:

Climate

Equity and Inclusion

SEL

Holocaust

Amistad

Career Readiness, Life Literacies, and Key Skills

Subject: Science	Grade Level: 4
Unit 1: Energy and motion; Human uses of Energy	Pacing: 8 Weeks
Essential Questions	Enduring Understandings
<p>What is energy and how is it related to motion?</p> <p>How can you compare the energy of objects?</p> <p>How does starting height affect an object's energy?</p> <p>How does energy affect particles of matter?</p>	<p>The faster a given object is moving, the more energy it possesses. (4-PS3-1) Energy can be moved from place to place by moving objects or through sound, light, or electric currents. (4-PS3-2), (4-PS3-3)</p> <p>Energy is present whenever there are moving objects, sound, light, or heat. When objects collide, energy can be transferred from one object to another, thereby changing their motion. In such collisions, some energy is typically also transferred to the surrounding air; as a result, the air gets heated and sound is produced. (4-PS3-2), (4-PS3-3)</p> <p>Light also transfers energy from place to place. (4-PS3-2)</p> <p>Energy can also be transferred from place to place by electric currents, which can then be used locally to produce motion, sound, heat, or light. The currents may have been produced to begin with by transforming the energy of motion into electrical energy. (4-PS3-2)</p>

<p>How does energy transfer between objects?</p> <p>What affects energy transfer?</p> <p>How does heat move?</p> <p>What materials are good/bad conductors of heat?</p> <p>How does electric energy flow in circuits?</p> <p>How do we convert energy to meet our needs?</p> <p>How are energy resources used?</p> <p>How is electrical power generated from chemical energy?</p> <p>How do people extract and use natural resources?</p>	<p>When Objects collide, the contact forces transfer energy so as to change the objects' motions. (4- PS3-3)</p> <p>The expression “produce energy” typically refers to the conversion of stored energy into a desired form for practical use. (4-PS3-4)</p> <p>Energy and fuels that humans use are derived from natural sources, and their use affects the environment in multiple ways. Some resources are renewable over time, and others are not. (4-ESS3- 1)</p> <p>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)</p>
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<p>Where do fossil fuels come from?</p> <p>What is the difference between renewable and nonrenewable energy sources?</p> <p>Is renewable energy all around?</p> <p>How does the use of different natural energy resources affect the environment?</p> <p>How can the use of energy damage ecosystems?</p>	
<p>NJSL Standards</p>	<p>Classroom Applications</p>
<p>• 4-PS3-1 Use evidence to construct an explanation relating the speed of an object to the energy of that object.</p> <p>• 4-PS3-2 Make observations to provide evidence that</p>	<p><u>Science activities and Quests:</u></p> <p>Students will create a ramp to see if predictions on speed are correct</p> <p>Students will plan and design a moving toy to race against each other with given parameters</p> <p>Students will predict, model, and record results of two objects colliding and their energy transfer</p> <p>Students will design and create a circuit to make a bulb light</p>

energy can be transferred from place to place by sound, light, heat, and electric currents.

- 4-PS3-3 Ask questions and predict outcomes about the changes in energy that occur when objects collide.
- 4-PS3-4 Apply scientific ideas to design, test, and refine a device that converts energy from one form to another
- 4-ESS3-1 Obtain and combine information to describe that energy and fuels are derived from natural resources and their uses affect the environment
- 3-5-ETS1-1 Define a simple design

Students will create an electric circuit/alert system to help prevent collisions

Students will use potato energy to light a bulb

Students will simulate drilling for oil

Students will use a battery and solar energy to produce motion/make a motor work

Students will build a windmill to observe and record how wind direction affects the windmill's movements

Students will simulate an oil spill clean up

Students will study the career of an Electrical Engineer

Vocabulary: energy, potential energy, kinetic energy, speed, transfer, transform, collision, simulate, heat, radiation, light, sound, wave, generate, fuel, combustion, turbine, generator, battery, device, primary, fossil fuel, coal, petroleum, natural gas, nuclear fuel, uranium, outcome, geothermal energy, hydropower, emission, pollutant, scrubber, greenhouse gas, impact

Elevate Science text/workbook

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

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

<p>problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.</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>
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Connections to other content areas, including Career Readiness, Life Literacies, and Key Skills :

Connections to NJSL - English Language Arts

- RI.4.1 Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text. (4-PS3-1)
- RI.4.3 Explain events, procedures, ideas, or concepts in a historical, scientific, or technical text, including what happened and why, based on specific information in the text. (4-PS3-1)
- RI.4.9 Integrate information from two texts on the same topic in order to write or speak about the subject knowledgeably. (4-PS3-1)
- W.4.2 Write informative/explanatory texts to examine a topic and convey ideas and information clearly. (4-PS3-1)
- W.4.7 Conduct short research projects that build knowledge through investigation of different aspects of a topic. (4-PS3-2), (4-PS3-3), (4-PS3-4) (4-ESS3-1)
- W.4.8 Recall relevant information from experiences or gather relevant information from print and digital sources; take notes and categorize information and provide a list of sources. (4-PS3-1), (4-PS3-2), (4-PS3-3), (4-PS3-4) (4-ESS3-1)
- W.4.9 Draw evidence from literary or informational texts to support analysis, reflection, and research. (4-PS3-1)

Connections to NJSL - Mathematics

- 4.OA.A.3 Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding. (4-PS3-4)

- MP.2 Reason abstractly and quantitatively. (4-ESS3-1), (4-ESS3-2)
- MP.4 Model with mathematics. (4-ESS3-1), (4-ESS3-2)
- 4.OA.A.1 Interpret a multiplication equation as a comparison, e.g., interpret $35 = 5 \times 7$ as a statement that 35 is 5 times as many as 7 and 7 times as many as 5. Represent verbal statements of multiplicative comparisons as multiplication equations. (4-ESS3-1), (4-ESS3-2)
- MP.5 Use appropriate tools strategically. (3-5-ETS1-1)
- 3-5.OA Operations and Algebraic Thinking (3-5-ETS1-1)

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).

Climate change activity:

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

Climate change lessons:

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

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. ...
- 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>

PRIDE Day STEM Activity:

<https://prideinstem.org/lgbtstemday/>

Unit Resources:

Savvas Elevate Science for 4th Grade, Topic 1 : Energy and Motion p. 1-49

Topic 2: Human uses of Energy p.50-99

STEM Quest PBL

Websites:

<https://www.fs.usda.gov/ccrc/index.php/>

<http://strandmaps.nsdl.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
- Topic Tests

FAIRFIELD TOWNSHIP SCHOOL
Science Curriculum Guide Grade 4 Unit 2

Subject: Science

Grade Level: 4

Unit 2: Waves and Information; Earth's Features	Pacing: 8 weeks
Essential Questions	Enduring Understandings
<p>How do we use waves to communicate?</p> <p>What are the basic properties of waves?</p> <p>How do waves cause objects to move?</p> <p>How does a wave move?</p> <p>What patterns can waves make?</p> <p>How do wave patterns move?</p> <p>How is light reflected?</p> <p>How does your eye see color?</p> <p>How can information from waves be translated?</p>	<p>Waves, which are regular patterns of motion, can be made in water by disturbing the surface. When waves move across the surface of deep water, the water goes up and down in place; there is no net motion in the direction of the wave except when the water meets a beach. (4-PS4-1)</p> <p>Waves of the same type can differ in amplitude (height of the wave) and wavelength (spacing between wave peaks). (4-PS4-1)</p> <p>An object can be seen when light reflected from its surface enters the eyes. (4-PS4-2)</p> <p>Digitized information can be transmitted over long distances without significant degradation. High-tech devices, such as computers or cell phones, can receive and decode information— convert it from digitized form to voice—and vice versa. (4-PS4-3)</p> <p>Different solutions need to be tested in order to determine which of them best solves the problem, given the criteria and the constraints. (secondary to 4-PS4-3)</p> <p>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)</p> <p>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)</p>

<p>How can rain affect land?</p> <p>How can you use maps to understand earth's features?</p> <p>How do tools help us?</p> <p>Where are major landforms?</p> <p>How can you classify minerals?</p> <p>How do rocks change?</p> <p>How can a rock wear away?</p> <p>How does water affect landforms?</p>	<p>Rainfall helps to shape the land and affects the types of living things found in a region. Water, ice, wind, living organisms, and gravity break rocks, soils, and sediments into smaller particles and move them around. (4-ESS2- 1)</p> <p>The locations of mountain ranges, deep ocean trenches, ocean floor structures, earthquakes, and volcanoes occur in patterns. Most earthquakes and volcanoes occur in bands that are often along the boundaries between continents and oceans. Major mountain chains form inside continents or near their edges. Maps can help locate the different land and water features areas of Earth. (4-ESS2-2)</p> <p>Living things affect the physical characteristics of their regions. (4- ESS2-1)</p> <p>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)</p>
<p>NJSL Standards</p>	<p>Classroom Applications</p>
<p>• 4-PS4-1 Develop a model of waves to describe patterns in terms of amplitude and wavelength and that waves can cause objects to move.</p>	<p>Science Classroom Activities/Quests:</p> <p>Students will model a wave to determine how it carries energy</p> <p>Students will study Morse Code and Braille and create their own code</p> <p>Students will create waves in water and observe and record the pattern that was made</p> <p>Students will create a communication system using sound</p>

<ul style="list-style-type: none"> • 4-PS4-2 Develop a model to describe that light reflecting from objects and entering the eye allows objects to be seen. • 4-PS4-3 Generate and compare multiple solutions that use patterns to transfer information. • 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. • 4-ESS2-1 Make observations and/or measurements to provide evidence of the effects of weathering or the 	<p>Students will conduct an experiment to see how light moves and changes and create a communication system using light patterns</p> <p>Students will study the career of an Intelligence Analyst</p> <p>Students will design a desert trail</p> <p>Students will use sponges to model how the earth's place might interact</p> <p>Students will make models of landforms</p> <p>Students will study the career of a Geologist</p> <p><u>Vocabulary:</u> wave, amplitude, wavelength, frequency, transverse, crest, trough, longitudinal, transfer, wave pattern, circular wave, plane wave, superposition, ray, reflect, refract, absorb, system, signal, transmitter, antenna, receiver, digital, analog, range, symbol, legend, compass rose, canyon, butte, fault, trench, patterns, igneous, sedimentary, metamorphic, characteristic, weathering, erosion, evidence</p> <p>Teaching Strategies/Materials:</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, s Quests:student computers/laptops, PowerPoint, Websites, etc.), supplemental books, visual aids, manipulatives, supplemental materials for investigations</p>
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rate of erosion by water, ice, wind, or vegetation.

• 4-ESS2-2 Analyze and interpret data from maps to describe patterns of Earth's features.

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.

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.

Connections to NJSL – English Language Arts

• RI.4.7 Interpret information presented visually, orally, or quantitatively (e.g., in charts, graphs, diagrams, time lines, animations, or interactive elements on Web pages) and explain how the information contributes to an understanding of the text in which it appears. (4-ESS2-2)

• W.4.7 Conduct short research projects that build knowledge through investigation of different aspects of a topic. (4-ESS2-1)

• W.4.8 Recall relevant information from experiences or gather relevant information from print and digital sources; take notes and categorize information, and provide a list of sources. (4-ESS2-1)

• W.5.9 Draw evidence from literary or informational texts to support analysis, reflection, and research. (3-5-ETS1-1)

Mathematics –Connections to NJSL – Mathematics

- MP.2 Reason abstractly and quantitatively. (4-ESS2-1)
 - MP.4 Model with mathematics. (4-ESS2-1)
 - MP.5 Use appropriate tools strategically. (4-ESS2-1)
 - 4.MD.A.1 Know relative sizes of measurement units within one system of units including km, m, cm; kg, g; lb, oz.; l, ml; hr, min, sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a two-column table. (4-ESS2-1)
 - 4.MD.A.2 Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale. (4-ESS2-1), (4-ESS2-2)
- *3-5.OA Operations and Algebraic Thinking (3-5-ETS1-1)

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 4th Grade Topic 3: Waves and Information p. 100-149

Savvas Elevate Science for 3rd Grade Topic 4: Earths Features p.150-201

Hands-on & Virtual Labs

STEM Quest PBL

List of books to be used:

*See media center for additional resources

Websites:

<https://www.fs.usda.gov/ccrc/index.php/>

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
Science Curriculum Guide Grade 4 Unit 3**

Subject: Science

Grade Level: 4

Unit 3: Earth's Natural Hazards; The History of Planet Earth	Pacing: 8 weeks
Essential Questions	Enduring Understandings
<p>What impact do natural hazards have?</p> <p>How can you reduce the impact of hazards?</p> <p>How can a large wave affect land?</p> <p>What happens during a tsunami?</p> <p>What causes earthquakes?</p> <p>How does snow sliding quickly down a mountain impact people?</p> <p>How much rainfall is enough?</p> <p>What evidence can you find that earth's surface has changed?</p> <p>Where are fossils found in rock layers?</p>	<p>A variety of hazards result from natural processes (e.g., earthquakes, tsunamis, volcanic eruptions). Humans cannot eliminate the hazards but can take steps to reduce their impacts. (4- ESS3-2)</p> <p>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)</p> <p>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)</p> <p>Local, regional, and global patterns of rock formations reveal changes over time due to earth forces, such as earthquakes. The presence and location of certain fossil types indicate the order in which rock layers were formed. (4-ESS1-1)</p>

<p>What patterns do fossils follow?</p> <p>How can rock layers show change?</p> <p>How can layers of rock change?</p> <p>How can rocks and fossils describe a location?</p> <p>How can you correlate rock layers?</p>	
<p>NJSL Standards</p>	<p>Classroom Applications</p>
<ul style="list-style-type: none"> • 4-ESS3-2 Generate and compare multiple solutions to reduce the impacts of natural Earth processes and climate change have on humans • 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 	<p>Science activities and quests:</p> <p>Students will develop a model of water going down a slope and observe and record their findings to find a solution</p> <p>Students will build a model shore and record the damage done when hit by large waves</p> <p>Students will design an earthquake danger map</p> <p>Students will model an avalanche and record the results</p> <p>Students will build an earthquake-safe structure</p> <p>Students will choose a natural hazard and develop a solution to reduce the damage they cause</p>

constraints of the problem

- 4-ESS1-1 Identify evidence from patterns in rock formations and fossils in rock layers to support an explanation for changes in a landscape over time.

Students will study the career of a Volcanologist

Students will examine and sequence fossils to find the patterns they follow

Students will use a ruler to measure and contain the thickness of canyon walls that contain layers such as Paleozoic and Mesozoic

Student will create a model of a carbon imprint fossil

Students will create a model of the earth's layers to show change over time

Students will study the career of a Museum Fact Checker

Vocabulary: fault, earthquake, tsunami, volcano, eruption, hazard, flood, drought, avalanche, landslide, outcome, wildfire, potential, fossil, strata, horizontal, key bed, sample

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

Connections to NJSLS - English Language Arts

- RI.4.1 Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text. (4-ESS3-2)
- RI.4.9 Integrate information from two texts on the same topic in order to write or speak about the subject knowledgeably. (4-ESS3-2)
- W.4.7 Conduct short research projects that build knowledge through investigation of different aspects of a topic. (4-ESS1-1)
- W.4.8 Recall relevant information from experiences or gather relevant information from print and digital sources; take notes and categorize information and provide a list of sources. (4-ESS1-1)
- W.4.9 Draw evidence from literary or informational texts to support analysis, reflection, and research. (4-ESS1-1)

Connections to NJSLS – Mathematics

- MP.2 Reason abstractly and quantitatively. (4-ESS3-1), (4-ESS3-2)
- MP.4 Model with mathematics. (4-ESS3-1), (4-ESS3-2)
- 4.OA.A.1 Interpret a multiplication equation as a comparison, e.g., interpret $35 = 5 \times 7$ as a statement that 35 is 5 times as many as 7 and 7 times as many as 5. Represent verbal statements of multiplicative comparisons as multiplication equations. (4-ESS3-1), (4-ESS3-2)
- + 4.MD.A.1 Know relative sizes of measurement units within one system of units including km, m, cm; kg, g; lb, oz.; l, ml; hr, min, sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a two-column table. (4-ESS1-1)

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 4th Grade, Topic 5: Earth's Natural Hazards p. 202-241

Savvas Elevate Science for 4th Grade, Topic 6: The History of Planet Earth p.242-275

Hands-on & Virtual Labs

STEM Quest PBL

List of books to be used:

Websites:

<https://www.fs.usda.gov/ccrc/index.php/>

<http://strandmaps.nsdl.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/>

SEL -

<https://www.brainpop.com/social-emotional-learning/>

SEL Biographies: <https://www.brainpop.com/social-emotional-learning/>

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
- Topic Tests

Subject: Science	Grade Level: 4
Unit 4: Structures and Functions; Human Body Systems	Pacing: 8 weeks
Essential Questions	Enduring Understandings
<p>How do plant and animal structures support growth and survival?</p> <p>How do your eyes respond to differences in lighting?</p> <p>What parts are inside a flower?</p> <p>What are some functions of internal leaf structures?</p> <p>How are leaf coverings different?</p> <p>Which structures do flowering plants use to reproduce?</p> <p>What do exoskeletons do?</p>	<p>Plants and animals have both internal and external structures that serve various functions in growth, survival, behavior, and reproduction. (4-LS1-1)</p> <p>Different sense receptors are specialized for particular kinds of information, which may be then processed by the animal's brain. Animals are able to use their perceptions and memories to guide their actions. (4-LS1-2)</p>

How do animals use sensory information to respond to their environments?

How can plants and animals adapt to survive in different environments?

Which body parts work together to do a task?

How does the heart help move blood through the body?

How is oxygen moved through the body?

What are the functions of the skeleton, muscles, and skin?

How do the skeletal and muscular systems interact to allow movement?

What are the functions of the brain and sensory organs?

How does the digestive system function?	
NJSL Standards	Classroom Applications
<ul style="list-style-type: none"> • 4-LS1-1 Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction. • 4-LS1-2 Use a model to describe that animals receive different types of information through their senses, process the information in their brain, and respond to the information in different ways. 	<p>Science Activities and quests:</p> <p>Students will predict and record results of how the human eye reacts to light</p> <p>Students will compare and contrast the bark on different trees</p> <p>Students will dissect a flower and record its parts</p> <p>Students will use celery to observe a plants vascular system in action</p> <p>Students will use leaves and study their coverings to determine how each plant can survive in different environments</p> <p>Students will compare and contrast the stomachs of two animals</p> <p>Students will design a protective insect shell</p> <p>Students will conduct an experiment on how to only use sound to locate an object</p> <p>Students will design a model of an eye and describe its constraints</p> <p>Students will conduct an experiment to see how earthworms respond to stimuli</p> <p>Students will study the career of a Nature Photographer</p> <p>Students will observe and record what body parts are being used when doing a given task</p> <p>Students will use various materials to create a model on how someone breathes</p>

Students will build a model of the circulatory system

Students will build a model of a bone to test its strength

Students will observe and record what parts of the body are more sensitive than others

Students will create a model of how intestines are arranged inside a human body

Vocabulary: structure, ovary, function, vascular system, external, internal, cuticle, sepal, stamen, pistil, classify, skeleton, heart, lungs, gills, brain, interpret, exoskeleton, characteristic, extinct, stimulus, organ system, organ, tissue, lungs, diaphragm, heart, function, sensory organ, respond, small intestine, large intestine, pancreas, liver, stomach, excretory system, kidneys, bladder, connect,

Teaching Strategies and 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:

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 4th Grade, Topic 7: Structures and Function: p. 276- 333

Topic 8: Human Body Systems: p. 334- 383

Hands-on & Virtual Labs

STEM Quest PBL

List of Books to be read:

Websites:

<https://www.fs.usda.gov/ccrc/index.php/>

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
- Topic Tests
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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.