Grade 4 Science Curriculum

Content Area: **Science**
Course(s):
Time Period:
Length: **One Academic Year**
Status: **Published**

Statement of Purpose

The enclosed Science curriculum is intended for fourth grade students for one academic year. Students will begin the curriculum by learning about the Earth's structure and the idea that the Earth's surface is always changing. Students will then explore energy in various forms and examine how energy is changed from one form to another. In the next unit, students will learn about the natural resources and natural hazards and how they affect both human activity and the Earth. In the final unit of this curriculum, students will discover that both plants and animals have internal and external structures that serve various functions in growth, survival, behavior, and reproduction. Through hands-on labs, nonfiction texts, and teacher and video demonstrations in each unit, this curriculum will allow a fourth-grade student to develop as a curious scientist and critical thinker in the areas of Earth Science, Physical Science, and Life Science.

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Unit 1: Changing Earth

Content Area: **Science**
Course(s):
Time Period: **September**
Length: **Trimester 1**
Status: **Published**

Summary of the Unit

In this unit of study, students will formulate an understanding that the Earth's surface is always changing du to tectonic plate movement as well as weathering and erosion. The presence and location of certain fossil types can give scientists clues as to what Earth was like many years ago. Through mapping and analyzing patterns of Earth's features, students will conclude that many of Earth's features exist at the boundaries of plates.

The 2020 NJSLS standards for science covered in this unit are 4-ESS1-1, 4-ESS2-1, 4-ESS2-2.

- ESS1-1 Earth's Place in the Universe: Identify evidence from patterns in rock formations and fossils in rock layers to support an explanation for changes in a landscape over time
- ESS2-1 Earth's Systems: Make observations and/or measurements to provide evidence of the effects of weathering or the rate of erosion by water, ice, wind, or vegetation.
- ESS2-2 Earth's Systems: Analyze and interpret data from maps to describe patterns of Earth's features.

Enduring Understandings

- The Earth's surface is always changing.
- Fast and slow changes on the Earth's surface are due to the movement of tectonic plates, weathering, and erosion.
- The geosphere, biosphere, hydrosphere, and atmosphere are all interconnected.
- Fossil discoveries prove that the Earth's surface is always changing, as they can give scientists important clues into Earth's past.

Essential Questions

- What are tectonic plates and how can they explain why the Earth's surface is always changing?
- How are the Earth's four systems interconnected?
- What are fossils and how can they teach us about Earth's past?

Summative Assessment and/or Summative Criteria

PART 1: Tectonic Plates. Students who understand the concepts are able to:

- Support an explanation using patterns as evidence.
- Analyze and interpret data to make sense of phenomena using logical reasoning.
- Analyze and interpret data from maps to describe patterns of Earth's features. Maps can include:
    - Topographic maps of Earth's land
    - Topographic maps of Earth's ocean floor
    - Locations of mountains
    - Locations of continental boundaries
    - Locations of volcanoes and earthquakes

PART 2: Weathering and Erosion. Students who understand the concepts are able to:

- Identify, test, and use cause-and-effect relationships in order to explain change.
- Make observations and/or measurements to produce data to serve as the basis for evidence for an explanation of a phenomenon.
- Make observations and/or measurements to produce evidence of the effects of weathering or the rate of erosion by water, ice, wind, or vegetation. Examples of variables to test could include:
    - Angle of slope in the downhill movement of water
    - Amount of vegetation
    - Speed of the wind
    - Relative rate of deposition
    - Cycles of freezing and thawing of water
    - Cycles of heating and cooling
    - Volume of water flow

PART 3: Fossil Evidence. Students who understand the concepts are able to:

- Support explanations using patterns as evidence.
- Identify the evidence that supports particular points in an explanation.
- Identify evidence from patterns in rock formations and fossils in rock layers to support an explanation for changes in a landscape over time. Examples of evidence from patterns could include:
    - Rock layers with marine shell fossils above rock layers with plant fossils and no shells, indicating a change from land to water over time.
    - A canyon with different rock layers in the walls and a river in the bottom, indicating that over time a river cut through the rock.

Formative Assessments: To be administered at the close of each topic. Grade according to rubric.

1. Quiz 1: Tectonic Plates
2. Quiz 2: Weathering and Erosion
3. Quiz 3: Fossils

Summative Assessment:

1. "Changing Earth" Culminating Project

Resources

- **Model Curriculum Science**http://www.state.nj.us/education/modelcurriculum/sci/
- **Science Standards**https://www.nj.gov/education/standards/science/Index.shtml
- **Next Generation Science Standards**http://www.nextgenscience.org/ **&**http://www.nextgenscience.org/resources/bundling-ngss

Unit Plan

PART 1: Tectonic Plates – 11 days

Topic/Selection Time frame	General Objectives	Instructional Activities	Benchmarks/ Assessments	Standards
Changes Inside Earth (2 days)	SWBAT label the four layers of Earth (crust, mantle, outer core, inner core). SWBAT describe what makes up each of the Earth's four layers.	• Read pages 2-4 from "Changing Earth" student reader • Demonstrate Earth's layers with a model Extension: • https://neal.fun/deep-sea/ Even though the Earth's crust is the thinnest layer, observe how deep the ocean really is!	Layers of the Earth graphic organizer or 3-D model	ESS2-2B 8.1.5.A.3 MP.5 W.4.8 W.4.9
Earth's Changing Surface (1 day)	SWBAT define Pangaea as a supercontinent (one large landmass) that covered the Earth millions of years ago. SWBAT explain that Earth's surface is always changing based on evidence of Pangaea.	• Use a world map to observe physical similarities between continents. Then show fossil evidence for Pangaea. • Use online interactive or paper puzzle to build Pangaea. • Discuss: Why do you think Pangaea broke apart?	Pangaea puzzle	ESS2-2B

Moving Plates and Mountains (3 days) *LAB: How Do Mountains Form?	SWBAT explain that Earth's surface is always changing due to the theory of plate tectonics. SWBAT demonstrate how mountains form by modeling the collision of tectonic plates, called "convergent boundaries".	Pre-Lab: • Discuss: Why is Iceland splitting apart? • Read pages 5-7 from "Changing Earth" student reader. • Use online interactive (https://www.amnh.org/explore/ology/earth/plates-on-the-move2/game) or paper puzzle to explore Earth's tectonic plates. LAB activity: • Show video or animation that depicts the formation of the Himalayan mountains at the collision of the Indian and Eurasian plates. • Have students work in small groups to create the Himalayan mountains using cardboard pieces and clay.	"How Do Mountains form?" Lab	ESS2-2B RI.4.7 W.4.8 W.4.9 MP.5
Moving Plates and Earthquakes (2 days)	SWBAT explain that seismic and volcanic activity often occur at tectonic plate boundaries.	• Use a map of earthquakes (revealing tectonic plate boundaries) to conclude that seismic activity occurs at tectonic plate boundaries. • Read pages 8-9 from "Changing Earth" student reader • Independently, students will highlight the Ring of Fire on a map.	Earthquake / Volcano map activity	ESS2-2B RI.4.7 W.4.8 W.4.9 MP.5
Plate Boundaries (1 day)	SWBAT compare and contrast the three types of tectonic plate boundaries (convergent, divergent, transform) and describe the geological activity at each. SWBAT explain that Earth's surface is always changing due to plate	• Define convergent, divergent, and transform boundaries and discuss what happens at each • Use Discovery Education videos and interactives.	Plate Boundaries Quick Check	ESS2-2B

	tectonics.			
Review of Tectonic Plates (1 day)	SWBAT apply the theory of plate tectonics to explain that Earth's surface is always changing.	• Have students work independently or with partners to complete the study guide.	Tectonic Plates Quiz	ESS2-2B
Tectonic Plates Quiz (1 day)	SWBAT apply the theory of plate tectonics to explain that Earth's surface is always changing.	• Tectonic Plates Quiz	Tectonic Plates Quiz	ESS2-2B

PART 2: Weathering and Erosion – 9 days

Topic/Selection Time frame	General Objectives	Instructional Activities	Benchmarks/ Assessments	Standards
Changes on Earth's Surface (1 day)	SWBAT conclude that, in addition to plate tectonics, weathering and erosion are at play in the development of different landforms.	• Read pages 10-11 from "Changing Earth" student reader	Weathering and Erosion graphic organizer	ESS2-1A 8.1.5.A.3
Weathering and Erosion (3 days) *LAB: Sugar Cube Weathering	SWBAT describe the effects of weathering and erosion by water, ice, wind, and vegetation.	• Discuss change in Statue of Liberty coloration • Read pages 12-15 from "Changing Earth" student reader • Complete "Forces that Shape Earth" interactive on Discovery Education LAB activity: • Show the difference between physical and chemical changes using sugar cubes	"Sugar Cube Weathering" Lab	ESS2-1A MP.5

		(physical-broken down by heavy book; chemical-broken down by vinegar)		
Human Impacts on the Environment (2 days)	SWBAT define biogeology as the idea that living things can affect the physical characteristics of their regions. SWBAT describe at least two ways that humans impact the environment.	• Define and discuss deforestation, pollution, construction, overfishing, oil spills • Achieve3000	Achieve3000 student reports	ESS2-1E RI.4.7 W.4.8 W.4.9
Earth's Four Systems (2 days)	SWBAT describe what makes up each of Earth's four systems (geosphere, hydrosphere, atmosphere, biosphere). SWBAT explain that Earth's four systems are interconnected.	• Discuss words that begin with geo-, hydro-, atmo-, and bio-. • Examine scenes containing evidence of all four of Earth's systems and explain how they are all connected	Earth's Systems graphic organizer	ESS2-1A ESS2-1E 8.1.5.A.3 MP.5
Weathering and Erosion Review (1 day)	SWBAT describe the effects of weathering and erosion by water, ice, wind, and vegetation. SWBAT describe at least two ways that humans impact the environment.	• Have students work independently or with partners to complete the study guide.	Weathering and Erosion Quiz	ESS2-1A ESS2-1E
Weathering and Erosion Quiz (1 day)	SWBAT describe the effects of weathering and erosion by water, ice, wind, and vegetation. SWBAT describe at least two ways that humans impact the environment.	• Weathering and Erosion Quiz	Weathering and Erosion Quiz	ESS2-1A ESS2-1E

PART 3: Fossil Evidence – 11 days

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Topic/Selection Time frame	General Objectives	Instructional Activities	Benchmarks/ Assessments	Standards

Changing Rocks (2 days)	SWBAT identify that rocks make up Earth's layers and plates. SWBAT describe where fossils are found (in the Earth's crust; usually in sedimentary rocks).	• Discuss: Which layer of Earth are rocks located? What is geology and paleontology? Why is studying rocks important? • Read pages 16-18 from "Changing Earth" student reader. • Demonstrate/ discuss the formation of fossils and where they are found.	Formation of Fossils graphic organizer	ESS1-1C W.4.8 W.4.9 8.1.5.A.3 MP.5
Fossils and Relative Time (3 days) *LAB: Rock Layers	SWBAT describe the Law of Superposition as a law that states that the lowest rock layer is usually the oldest. SWBAT draw conclusions about Earth's past using real-world fossil discoveries.	LAB: • Discuss: Which came first, fish or dinosaurs? • Demonstrate the formation of rock layers and define the Law of Superposition. Then, show rock layers where a fish fossil is lower than a dinosaur fossil and discuss student conclusions. Post-Lab: • Achieve 3000	"Rock Layers" Lab Achieve3000 student reports	ESS1-1C RI.4.7 W.4.8 W.4.9 4.MD.A.1 4.MD.A.2 MP.5
Review of Fossils (1 day)	SWBAT explain that the Earth's surface is always changing, using evidence from patterns in rock formations and fossils in rock layers.	• Have students work independently or with partners to complete the study guide.	Fossils Quiz	ESS1-1C
Fossils Quiz (1 day)	SWBAT explain that the Earth's surface is always changing, using evidence from patterns in rock formations and fossils in rock layers.	• Fossils Quiz	Fossils Quiz	ESS1-1C
Earth Science Choice Board (4 days)	SWBAT create a project that depicts Earth's changing surface due to tectonic plates, weathering, and erosion.	• "Changing Earth" Culminating Project	"Changing Earth" Culminating Project	ESS1-1C ESS2-1A ESS2-1E ESS2-2B

SCI.4.ESS1.C	The History of Planet Earth
SCI.4.ESS2.A	Earth Materials and Systems
SCI.4.ESS2.B	Plate Tectonics and Large-Scale System Interactions
SCI.4.ESS2.E	Biogeology
SCI.4-ESS2	Earth's Systems
SCI.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.
SCI.4-ESS2-2	Analyze and interpret data from maps to describe patterns of Earth's features.
SCI.4-ESS1	Earth's Place in the Universe
SCI.4-ESS2-1	Make observations and/or measurements to provide evidence of the effects of weathering or the rate of erosion by water, ice, wind, or vegetation.
	Analyzing data in 3–5 builds on K–2 experiences and progresses to introducing quantitative approaches to collecting data and conducting multiple trials of qualitative observations. When possible and feasible, digital tools should be used.
	Planning and carrying out investigations to answer questions or test solutions to problems in 3–5 builds on K–2 experiences and progresses to include investigations that control variables and provide evidence to support explanations or design solutions.
	Patterns
	Constructing explanations and designing solutions in 3–5 builds on K–2 experiences and progresses to the use of evidence in constructing explanations that specify variables that describe and predict phenomena and in designing multiple solutions to design problems.
	Cause and Effect
	Planning and Carrying Out Investigations
	Analyzing and Interpreting Data
	Constructing Explanations and Designing Solutions
	Patterns

Suggested Modifications for Special Education, ELL and Gifted Students

Consistent with individual plans, when appropriate.

For ELL students:

- Structure lessons around questions that are authentic, relate to students' interests, social/family background and knowledge of their community.
- Provide opportunities for students to connect with people of similar backgrounds (e.g. conversations via digital tool such as SKYPE, experts from the community helping with a project, journal articles, biographies).
- Provide ELL students with multiple literacy strategies.

For special education students:

- Provide multiple grouping opportunities for students to share their ideas and to encourage work among various backgrounds and cultures (e.g. multiple representation, multimodal experiences).
- Provide students with multiple choices for how they can represent their understandings (e.g. multisensory techniques-auditory/visual aids; pictures, illustrations, graphs, charts, data tables, multimedia, modeling).

For gifted students:

- Engage students with a variety of Science and Engineering practices to provide them with multiple entry points and multiple ways to demonstrate their understandings.
- Use project-based science learning to connect science with observable phenomena.
- Structure the learning around explaining or solving a social or community-based issue.
- Collaborate with after-school programs or clubs to extend learning opportunities.

Suggested Technological Innovations/Use

Recommended websites:

- **Discovery Education**http://google.discoveryeducation.com/
- **BrainPOP** https://www.brainpop.com/
- **Mystery Science** https://mysteryscience.com/
- **Achieve3000** www.clever.com/
- **TrueFlix** https://digital.scholastic.com/resources/slp/#/login?productCode=tfx&state=L3NwbGFzaD9hdXRoQ3R4PQ%3D%3D&ref=MTY1NzU1NTU4MXxodHRwOi8vc2RtLXRmeC5kaWdpdGFsLnNjaG9sYXN0aWMuY29tL3NwbGFzaA%3D%3D
- **Tectonic Plates interactive:** https://www.amnh.org/explore/ology/earth/plates-on-the-move2/game
- **Tectonic Plates puzzle:** http://planeta42.com/geography/tectonicplatespuzzle/
- **Live interactive map of earthquakes and volcanoes:** https://earthquakes.volcanodiscovery.com/
- **How deep is the ocean interactive:** https://neal.fun/deep-sea/
- **Volcanoes** https://volcano.si.edu/
- **History of Earth interactive** https://dinosaurpictures.org/ancient-earth#66

Other interactive science lessons and games:

- **NGSS Classroom Lessons** https://ngss.nsta.org/Classroom-Resources.aspx
- **Science4Us** https://www.science4us.com/demo/
- **Turtle Diary** https://www.turtlediary.com/games/fourth-grade/science.html-
- **Generation Genius** https://www.generationgenius.com/

Cross Curricular/21st Century Connections

21st Century Life and Career Skills

- 9.1: All students will demonstrate the creative, critical thinking, collaboration, and problem-solving skills needed to function successfully as both global citizens and workers in diverse ethnic and organizational cultures.
- 9.2: Personal Financial Literacy: All students will develop skills and strategies that promote personal and financial responsibility related to financial planning, savings, investment, and charitable giving in the global economy.

- 9.3: Career Awareness, Exploration, and Preparation: All students will apply knowledge about and engage in the process of career awareness, exploration, and preparation in order to navigate the globally competitive work environment of the information age.

ELA/Literacy Standards

- 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.
- W.4.7 Conduct short research projects that build knowledge through investigation of different aspects of a topic
- W.4.8 Recall relevant information from experiences or gather information from print and digital sources, take notes and categorize information, and provide a list of sources.
- W.4.9 Draw evidence from literary or informational texts to support analysis, reflection, and research.

Mathematical Practices

- MP.2 Reason abstractly and quantitatively.
- MP.4 Model with mathematics.
- MP.5 Use appropriate tools strategically.

Mathematics Standards

- 4.MD.A.1 Know relative sizes of measurement units within one system of units. 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.MD.A.2 Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses o 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 a number line diagrams that feature a measurement scale.

Technology Standards

- 8.1.5.A.3 Use a graphic organizer to organize information about problem or issue.

Unit 2: Energy

Content Area: **Science**
Course(s):
Time Period: **2nd Trimester**
Length: **Trimester 2**
Status: **Published**

Summary of the Unit

In this unit of study, students will define energy as the ability to do work and recognize that energy is present whenever an object is moving or has the potential to move. This motion or potential motion will be introduced as the kinetic and potential energy of a system. Students will discover that the total mechanical energy of a system remains constant. They will explore energy in various forms including chemical, nuclear, electrical, heat, motion, sound, and light and examine how energy is changed from one form to another.

The 2020 NJSLS standards for science covered in this unit are 4-PS3, 4-PS4, and ETS-1.

- PS3-1 Energy: Use evidence to construct an explanation relating the speed of an object to the energy of that object.
- PS3-2 Energy: Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents.
    - ETS-1 Engineering Design (Circuits): Different solutions need to be tested in order to determine which of them best solves the problem, given the criteria and the constraints.
- PS3-3 Energy: Ask questions and predict outcomes about the changes in energy that occur when objects collide.
- PS3-4 Energy: Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.
- 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.
- 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.

Enduring Understandings

- Energy is the ability to make things move or change. There are different kinds of energy.
- Energy can neither be created nor destroyed; it can only change form. (The transfer of energy through electric currents in particular can result in motion, sound, heat, or light.)
- Energy can be kinetic or potential. The faster a given object is moving, the more kinetic energy it possesses.
- Force is a way that energy can be transferred. 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.

Essential Questions

- How does energy move or transfer from one form to another?
- What is the relationship between the speed of an object and its energy?
- In what ways does energy change when objects collide?
- How can scientific ideas be applied to design, test, and refine a device that converts energy from one form to another?
- What can waves reveal about the energy produced?

Summative Assessment and/or Summative Criteria

PART 1: Circuits. Students who understand the concepts are able to:

- Make observations to produce data that can serve as the basis for evidence for an explanation of a phenomenon or for a test of a design solution.
- Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents.

PART 2: Forms of Energy. Students who understand the concepts are able to:

- Make observations to produce data that can serve as the basis for evidence for an explanation of a phenomenon or for a test of a design solution.
- Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents.

PART 3: Collisions, Forces, and Waves. Students who understand the concepts are able to:

- Describe the various ways that energy can be transferred between objects.
- 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.
- Generate and compare multiple solutions that use patterns to transfer information. Examples of solutions could include: ü Drums sending coded information through sound waves; ü Using a grid of ones and zeroes representing black and white to send.

Formative Assessments: To be administered at the close of each topic. Grade according to rubric.

1. Quiz 1: Circuits
2. Quiz 2: Forms of Energy
3. Quiz 3: Collisions, Forces, and Waves

Summative Assessment:

- “Energy Works” Culminating Project

Resources

- Model Curriculum Sciencehttp://www.state.nj.us/education/modelcurriculum/sci/
- Science Standardshttps://www.nj.gov/education/standards/science/Index.shtml
- Next Generation Science Standardshttp://www.nextgenscience.org/ &http://www.nextgenscience.org/resources/bundling-ngss

Unit Plan

PART 1: Circuits – 12 days

Topic/Selection Time frame	General Objectives	Instructional Activities	Benchmarks/ Assessments	Standards
Introduction to Energy & Energy Hunt (2 days)	SWBAT name two facts they already know about energy by creating an energy flow chart. SWBAT recognize different forms of energy in their classrooms in order to understand that energy comes in many different forms (including light, heat, sound, and motion).	• "Where do you get your energy?" Brainstorm food sources on left side and how we use our energy on the right side. Discussion Questions: Where does your body get the energy it needs to live, grow, work, and play? Animals? Plants? Why does your body need energy? What are some of the ways you use energy? • Discuss examples of energy around the room. List all the forms of energy/ things that use energy. Develop a working definition for energy based upon similarities.	Energy flow chart Energy hunt list	PS3-2
What Is Energy? and Forms of Energy (2 days)	SWBAT define energy as the ability to make things move or change. SWBAT identify and describe at least three forms of energy (heat, light, sound, chemical, mechanical,	• Read pages 2-3 from "Energy Works" student reader. • The next day, read pages 4-5 from "Energy Works" student reader. • Explore BrainPOP or		PS3-2

	electrical). SWBAT begin to explain that energy can transfer from one form into another.	Discovery Education videos about forms of energy.		
Kinetic and Potential Energy (1 day)	SWBAT define kinetic energy as the energy of motion and potential energy as stored energy.	• Read pages 6-7 from "Energy Works" student reader.		PS3-2
Energy Transfers and Energy Changes (4 days) *Lab 1: Circuits *Lab 2: Conductors vs. Insulators	SWBAT explain how energy transfers within and between objects. SWBAT test closed and open simple circuits and compare results. SWBAT give examples of conductors and insulators.	• Read pages 8-9 from "Energy Works" student reader. LAB 1 activity: • Build a circuit and discuss how energy transfers throughout the system. LAB 2 activity: • Conductors vs. Insulators		PS3-2 PS3-4 ETS-1
Complex Circuits (2 days) *Lab: Series vs. Parallel Circuits	SWBAT differentiate between series and parallel circuits.	• Define series and parallel circuits. Use online circuit simulation to demonstrate. phet.colorado.edu LAB activity: • Build a series circuit, then a parallel circuit. Extension activity: • Electricity can be transferred into light, sound, heat, or motion through a circuit. List or research real-world examples of each output.		PS3-2 PS3-4 ETS-1
Review of Circuits (1 day)	SWBAT build circuits in order to explain how complete circuits work as well as how to fix incomplete circuits.	• Use online circuit simulation phet.colorado.edu • Have students work independently or with partners to complete the study guide.	Circuits Quiz	PS3-2 PS3-4 ETS-1

Circuits Quiz (1 day)	SWBAT build circuits in order to explain how complete circuits work as well as how to fix incomplete circuits.	• Circuits Quiz	Circuits Quiz	PS3-2 PS3-4 ETS-1

PART 2: Forms of Energy – 9 days

Topic/Selection Time frame	General Objectives	Instructional Activities	Benchmarks/ Assessments	Standards

More About Kinetic and Potential Energy (1 day)	SWBAT define kinetic and potential energy.	• Define kinetic and potential energy.
		• Hands-on activity ideas
		  ○ Rattle snake eggs (elastic potential energy)
		  ○ Race car (gravitational potential energy)
				PS3-2

Conservation of Energy & Total Mechanical Energy (4 days)	SWBAT explore and explain how energy cannot be created nor destroyed as stated in the Law of Conservation of Energy.	• Use online energy skate park simulation phet.colorado.edu • Define the Law of Conservation of Energy		PS3-2
Energy Transformations (2 days)	SWBAT describe two ways that energy transfers from one form to another.	• Students will create Google slides or a project providing real-world examples for how energy transfers from one form to another.		PS3-2
Forms of Energy Review (1 day)	SWBAT define energy as the ability to do work. SWBAT identify forms of energy (chemical, heat, light, etc.) and explain how these forms can transfer from one form into another form.	• Have students work independently or with partners to complete the study guide.	Forms of Energy Quiz	PS3-2

Forms of Energy Quiz (1 day)	SWBAT define energy as the ability to do work. SWBAT identify forms of energy (chemical, heat, light, etc.) and explain how these forms can transfer from one form into another form.	• Forms of Energy Quiz	Forms of Energy Quiz	PS3-2

PART 3: Collisions, Forces, and Waves – 13 days

Topic/Selection Time frame	General Objectives	Instructional Activities	Benchmarks/ Assessments	Standards
Collisions (2 days)	SWBAT explain that energy can be transferred between objects.	• Can energy transfer between objects? • Marble/ billiard ball video or demonstration		PS3-1 PS3-3 PS3-4
Forces (3 days) *Lab: Paper Clip Magnetism	SWBAT differentiate between a direct and an indirect force.	• Define direct and indirect forces. Give examples of each. LAB activity: • Students will explore how magnetism, an indirect/ invisible force, can have a powerful effect on its surroundings.		PS3-1 PS3-3 PS3-4
Waves (2 days)	SWBAT describe that energy travels in waves.	• Discuss that energy moves in waves. Complete a wave simulation. Extension activity: • Wave Combinator (BrainPOP game) – students adjust amplitude, wavelength, and offset to create matching waves.		PS3-1 PS3-3 PS3-4
Review of Collisions, Forces, and Waves (1 day)	SWBAT explain that the Earth's surface is always changing, using evidence from patterns in rock formations and	• Have students work independently or with partners to complete the study guide.	Collisions, Forces, and Waves Quiz	PS3-1 PS3-3 PS3-4

	fossils in rock layers.			
Collisions, Forces, and Waves Quiz (1 day)	SWBAT explain that the Earth's surface is always changing, using evidence from patterns in rock formations and fossils in rock layers.	• Collisions, Forces, and Waves Quiz	Collisions, Forces, and Waves Quiz	PS3-1 PS3-3 PS3-4
Physical Science Choice Board (4 days)	SWBAT create a project that depicts how energy is neither created nor destroyed; it only changes form.	• "Energy" Culminating Project	"Energy" Culminating Project	PS3-1 PS3-3 PS3-4

SCI.4.PS3.A	Definitions of Energy
SCI.4.PS3.B	Conservation of Energy and Energy Transfer
SCI.4.PS3.C	Relationship Between Energy and Forces
SCI.4.PS3.D	Energy in Chemical Processes and Everyday Life
SCI.4.PS4.A	Wave Properties
SCI.4.PS4.B	Electromagnetic Radiation
SCI.4.PS4.C	Information Technologies and Instrumentation
SCI.4.ETS1.A	Defining Engineering Problems
SCI.4.ETS1.C	Optimizing the Design Solution
SCI.4-PS3-1	Use evidence to construct an explanation relating the speed of an object to the energy of that object.
SCI.4-PS3-3	Ask questions and predict outcomes about the changes in energy that occur when objects collide.
SCI.4-PS3-2	Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents.
SCI.4-PS3-4	Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.
SCI.4-PS3	Energy
SCI.4-PS4-3	Generate and compare multiple solutions that use patterns to transfer information.
SCI.4-PS4-2	Develop a model to describe that light reflecting from objects and entering the eye allows objects to be seen.
SCI.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.
SCI.4-PS4	Waves and their Applications in Technologies for Information Transfer
	Constructing Explanations and Designing Solutions
	Modeling in 3–5 builds on K–2 experiences and progresses to building and revising simple models and using models to represent events and design solutions.
	Constructing Explanations and Designing Solutions
	Energy and Matter
	Developing and Using Models

Constructing explanations and designing solutions in 3–5 builds on K–2 experiences and progresses to the use of evidence in constructing explanations that specify variables that describe and predict phenomena and in designing multiple solutions to design problems.

Constructing Explanations and Designing Solutions

Cause and Effect

Planning and carrying out investigations to answer questions or test solutions to problems in 3–5 builds on K–2 experiences and progresses to include investigations that control variables and provide evidence to support explanations or design solutions.

Patterns

Asking questions and defining problems in grades 3–5 builds on K–2 experiences and progresses to specifying qualitative relationships.

Constructing explanations and designing solutions in 3–5 builds on K–2 experiences and progresses to the use of evidence in constructing explanations that specify variables that describe and predict phenomena and in designing multiple solutions to design problems.

Constructing explanations and designing solutions in 3–5 builds on K–2 experiences and progresses to the use of evidence in constructing explanations that specify variables that describe and predict phenomena and in designing multiple solutions to design problems.

Energy and Matter

Planning and Carrying Out Investigations

Developing and Using Models

Energy and Matter

Asking Questions and Defining Problems

Modeling in 3–5 builds on K–2 experiences and progresses to building and revising simple models and using models to represent events and design solutions.

Energy and Matter

Patterns

Suggested Modifications for Special Education, ELL and Gifted Students

Consistent with individual plans, when appropriate.

For ELL students:

- Structure lessons around questions that are authentic, relate to students' interests, social/family background and knowledge of their community.
- Provide opportunities for students to connect with people of similar backgrounds (e.g. conversations via digital tool such as SKYPE, experts from the community helping with a project, journal articles, biographies).
- Provide ELL students with multiple literacy strategies.

For special education students:

- Provide multiple grouping opportunities for students to share their ideas and to encourage work among various backgrounds and cultures (e.g. multiple representation, multimodal experiences).

- Provide students with multiple choices for how they can represent their understandings (e.g. multisensory techniques-auditory/visual aids; pictures, illustrations, graphs, charts, data tables, multimedia, modeling)

For gifted students:

- Engage students with a variety of Science and Engineering practices to provide them with multiple entry points and multiple ways to demonstrate their understandings.
- Use project-based science learning to connect science with observable phenomena.
- Structure the learning around explaining or solving a social or community-based issue.
- Collaborate with after-school programs or clubs to extend learning opportunities.

Suggested Technological Innovations/Use

Recommended websites:

- Discovery Educationhttp://google.discoveryeducation.com/
- BrainPOP https://www.brainpop.com/
- Mystery Science https://mysteryscience.com/
- Achieve3000 www.clever.com/
- TrueFlix https://digital.scholastic.com/resources/slp/#/login?productCode=tfx&state=L3NwbGFzaD9hdXRoQ3R4PQ%3D%3D&ref=MTY1NzU1NTU4MXxodHRwOi8vc2RtLXRmeC5kaWdpdGFsLnNjaG9sYXN0aWMuY29tL3NwbGFzaA%3D%3D
- Virtual circuit lab: https://phet.colorado.edu/sims/html/circuit-construction-kit-dc-virtual-lab/latest/circuit-construction-kit-dc-virtual-lab_en.html
- Energy skate park http://phet.colorado.edu/sims/html/energy-skate-park-basics/latest/energy-skate-park-basics_en.html
- Components of a wave - matching game https://www.brainpop.com/games/wavecombinator/

Other interactive science lessons and games:

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- Science4Us https://www.science4us.com/demo/
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Cross Curricular/21st Century Connections

21st Century Life and Career Skills

- 9.1: All students will demonstrate the creative, critical thinking, collaboration, and problem-solving skills needed to function successfully as both global citizens and workers in diverse ethnic and

organizational cultures.
- 9.2: Personal Financial Literacy: All students will develop skills and strategies that promote personal and financial responsibility related to financial planning, savings, investment, and charitable giving in the global economy.
- 9.3: Career Awareness, Exploration, and Preparation: All students will apply knowledge about and engage in the process of career awareness, exploration, and preparation in order to navigate the globally competitive work environment of the information age.

ELA/Literacy Standards

- 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.
- W.4.7 Conduct short research projects that build knowledge through investigation of different aspects of a topic
- W.4.8 Recall relevant information from experiences or gather information from print and digital sources, take notes and categorize information, and provide a list of sources.
- W.4.9 Draw evidence from literary or informational texts to support analysis, reflection, and research.

Mathematical Practices

- MP.2 Reason abstractly and quantitatively.
- MP.4 Model with mathematics.
- MP.5 Use appropriate tools strategically.

Mathematics Standards

- 4.MD.A.1 Know relative sizes of measurement units within one system of units. 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.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.

Technology Standards

- 8.1.5.A.3 Use a graphic organizer to organize information about problem or issue.

Unit 3: Earth and Human Activity

Content Area: **Science**
Course(s):
Time Period: **3rd Trimester**
Length: **5 weeks (about 25 days)**
Status: **Published**

Summary of the Unit

In this unit of study students will develop an understanding that the Earth's systems are all interconnected and that human activity impacts the Earth while the Earth also impacts human activity. In the first half of the unit, students will study natural resources, both renewable and nonrenewable, and their effects on the environment. In the second half of the unit, students will study the causes and effects of natural hazards. The standards covered in this unit are 4-ESS3-1 and 4-ESS3-2.

The 2020 NJSLS standards for science covered in this unit are 4-ESS3-1, 4-ESS3-2, and ETS-1.

- ESS3-1 Natural Resources: Obtain and combine information to describe that energy and fuels are derived from natural resources and their uses affect the environment.
- ESS3-2 Natural Hazards: Generate and compare multiple solutions to reduce the impacts of natural Earth processes and climate change have on humans.

ETS-1 Engineering Design (Earthquake Resistant Buildings): Testing a solution involves investigating how well it performs under a range of likely conditions.

Enduring Understandings

- Earth's systems are all interconnected and human activity impacts the Earth just as the Earth's natural processes impact human activity.
- 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.

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.

Essential Questions

Part 1: Natural Resources

- Where do humans derive energy from?
- What does it mean to produce energy?
- How can energy be converted from one form to another?
- What are the similarities and differences between renewable and non-renewable energy?

- How does human energy use impact the environment?

Part 2: Natural Hazards

- What is a natural hazard?
- Can natural hazards be prevented?
- How do earthquakes, volcanoes, and tsunamis form and how are they monitored?
- How does earthquake engineering create earthquake resistant buildings?

Summative Assessment and/or Summative Criteria

PART 1: Natural Resources. Students who understand the concepts are able to:

- Obtain and combine information to describe that energy and fuels are derived from natural resources and their uses affect the environment.

PART 2: Natural Hazards. Students who understand the concepts are able to:

- Generate and compare multiple solutions to reduce the impacts of natural Earth processes and climate change have on humans.
- Testing a solution involves investigating how well it performs under a range of likely conditions.

Formative Assessments: To be administered at the close of each topic. Grade according to rubric.

1. Quiz 1: Natural Resources
2. Quiz 2: Natural Disasters

Summative Assessment:

Natural Hazard Brochure/ Project

Resources

- Model Curriculum Sciencehttp://www.state.nj.us/education/modelcurriculum/sci/
- Science Standardshttps://www.nj.gov/education/standards/science/Index.shtml
- Next Generation Science Standardshttp://www.nextgenscience.org/ &http://www.nextgenscience.org/resources/bundling-ngss

Unit Plan

PART 1: Natural Resources – 12 days

Topic/Selection Time frame	General Objectives	Instructional Activities	Benchmarks/ Assessments	Standards
Human Energy Use (1 day)	SWBAT explain what Energy is and where is comes from for humans.	• Students will create a KWL chart of how we get energy and where it comes from.	Human Energy Use Classwork and homework	ESS3-1
Non-Renewable Energy (2 days)	SWBAT to explore what renewable resources are and create a list of renewable energy sources	• Read pages 10-11 from "Energy Works" student reader.	Non-Renewable Energy Classwork	ESS3-1
Renewable Energy (2 days)	SWBAT to explore what renewable resources are and create a list of renewable energy sources	• Read pages 12-13 from "Energy Works" student reader.	Renewable Energy sources classwork and homework Achieve 3000 article	ESS3-1
Engineering Practices and Careers (2 days) *Lab 1: Wind Turbines	SWBAT differentiate between renewable and non-renewable resources such as fossil fuel, coal, etc.	• Students will create an Interactive notebook component of various renewable and non-renewable resources. • Students will build wind turbines and explore the pros and cons of wind energy.	Interactive notebook page Lab sheet	ESS3-1
Environmental Impacts (3 days)	SWBAT explore where energy and fuels come from and research how they affect the environment.	• Research Project (notes, sources, research) Students will work with a partner or partners to research various impacts on the environment such as acid rain, global warming, etc. Students will create a Google slide	Google slide presentation	ESS3-1

		presentation.		
Review of Natural Resources (1 day)	Assess knowledge of energy sources and renewable and non-renewable resources.	Complete study guide.	Study guide Quiz	ESS3-1
Natural Resources Quiz (1 day)	Assess knowledge of energy sources and renewable and non-renewable resources.	Students will test their knowledge of energy and natural resources and take a quiz.	Quiz	ESS3-1

PART 2: Natural Hazards – 14 days

Topic/Selection Time frame	General Objectives	Instructional Activities	Benchmarks/ Assessments	Standards
Natural Hazards (2 days)	SWBAT develop a list of natural hazards and classify them as happening "below" or "above" the Earth's surface.	BrainPOP video Develop a class list of natural Earth processes. Discuss causes – below or above Earth's surface? Discuss effects on human activity.	BrainPOP quiz	ESS3-2
Climate Change (1 day)	SWBAT identify natural hazards that occur in the atmosphere.	Review list of natural hazards and focus on the ones that are caused by disturbances above the Earth's surface. Discuss climate change as a factor. Tornado video Thunderstorm video Blizzard video	BrainPOP quiz	ESS3-2
Earthquakes (2 days) *Lab 1: Earthquake Safety	SWBAT map and analyze earthquake data in order to predict where earthquakes are most likely to occur.	BrainPOP video Map earthquake locations and evaluate seismic data. Seismograph: Students will design, build and test a seismograph	BrainPOP quiz Lab worksheet	ESS3-2 ETS-1
Volcanoes (1 day)	SWBAT explain volcano formation in	BrainPOP video	BrainPOP quiz	ESS3-2

	terms of plate tectonics	Demo Hotspots Pompeii Video		
Tsunamis (1 day)	SWBAT explain that tsunamis result from the displacement of a large volume of water usually as a result of some type of underwater natural disaster.	BrainPOP video	BrainPOP quiz	ESS3-2
Minimizing Damage (1 day)	SWBAT determine safety procedures for natural hazards.	Disaster Master website https://www.ready.gov/ kids/games/data/dm-english/	Exit ticket – What did you learn about how to stay safe in a natural disaster?	ESS3-2
Natural Hazard Brochure or Project (5 days)	SWBAT create a brochure or project explaining the causes and effects of a natural hazard of choice.	Students will choose a natural hazard of choice. Students will conduct a research project on the causes and effects of the natural hazard.	Natural Hazard project rubric	ESS3-2 ETS-1
Review of Natural Hazards (1 day)	SWBAT identify natural hazards and explain their causes and effects.	Complete study guide.	Study guide Quiz	ESS3-2
Natural Hazards Quiz (1 day)	SWBAT identify natural hazards and explain their causes and effects.	Students will test their knowledge of energy and natural resources and take a quiz.	Quiz	ESS3-2

SCI.4.ESS3.A	Natural Resources
SCI.4.ESS3.B	Natural Hazards
SCI.4.ETS1.B	Developing Possible Solutions
SCI.4-ESS3-1	Obtain and combine information to describe that energy and fuels are derived from natural resources and their uses affect the environment.
SCI.4-ESS3	Earth and Human Activity
SCI.4-ESS3-2	Generate and compare multiple solutions to reduce the impacts of natural Earth

processes and climate change have on humans.

Constructing Explanations and Designing Solutions

Obtaining, evaluating, and communicating information in 3–5 builds on K–2 experiences and progresses to evaluating the merit and accuracy of ideas and methods.

Constructing explanations and designing solutions in 3–5 builds on K–2 experiences and progresses to the use of evidence in constructing explanations that specify variables that describe and predict phenomena and in designing multiple solutions to design problems.

Cause and Effect

Obtaining, Evaluating, and Communicating Information

Cause and Effect

Suggested Modifications for Special Education, ELL and Gifted Students

Consistent with individual plans, when appropriate.

For ELL students:

- Structure lessons around questions that are authentic, relate to students' interests, social/family background and knowledge of their community.
- Provide opportunities for students to connect with people of similar backgrounds (e.g. conversations via digital tool such as SKYPE, experts from the community helping with a project, journal articles, biographies).
- Provide ELL students with multiple literacy strategies.

For special education students:

- Provide multiple grouping opportunities for students to share their ideas and to encourage work among various backgrounds and cultures (e.g. multiple representation, multimodal experiences).
- Provide students with multiple choices for how they can represent their understandings (e.g. multisensory techniques-auditory/visual aids; pictures, illustrations, graphs, charts, data tables, multimedia, modeling).

For gifted students:

- Engage students with a variety of Science and Engineering practices to provide them with multiple entry points and multiple ways to demonstrate their understandings.
- Use project-based science learning to connect science with observable phenomena.
- Structure the learning around explaining or solving a social or community-based issue.
- Collaborate with after-school programs or clubs to extend learning opportunities.

Suggested Technological Innovation/Use

Recommended websites:

- Discovery Educationhttp://google.discoveryeducation.com/
- BrainPOP https://www.brainpop.com/
- Mystery Science https://mysteryscience.com/
- Achieve3000 www.clever.com/
- TrueFlix https://digital.scholastic.com/resources/slp/#/login?productCode=tfx&state=L3NwbGFzaD9hdXRoQ3R4PQ%3D%3D&ref=MTY1NzU1NTU4MXxodHRwOi8vc2RtLXRmeC5kaWdpdGFsLnNjaG9sYXN0aWMuY29tL3NwbGFzaA%3D%3D
- Disaster Master: https://www.ready.gov/kids/games/data/dm-english/

Other interactive science lessons and games:

- NGSS Classroom Lessons https://ngss.nsta.org/Classroom-Resources.aspx
- Science4Us https://www.science4us.com/demo/
- Turtle Diary https://www.turtlediary.com/games/fourth-grade/science.html-
- Generation Genius https://www.generationgenius.com/

Cross-Curricular/21st Century Connections

21st Century Life and Career Skills

- 9.1: All students will demonstrate the creative, critical thinking, collaboration, and problem-solving skills needed to function successfully as both global citizens and workers in diverse ethnic and organizational cultures.
- 9.2: Personal Financial Literacy: All students will develop skills and strategies that promote personal and financial responsibility related to financial planning, savings, investment, and charitable giving in the global economy.
- 9.3: Career Awareness, Exploration, and Preparation: All students will apply knowledge about and engage in the process of career awareness, exploration, and preparation in order to navigate the globally competitive work environment of the information age.

ELA/Literacy Standards

- 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.
- W.4.7 Conduct short research projects that build knowledge through investigation of different aspects of a topic
- W.4.8 Recall relevant information from experiences or gather information from print and digital sources, take notes and categorize information, and provide a list of sources.
- W.4.9 Draw evidence from literary or informational texts to support analysis, reflection, and research.

Mathematical Practices

- MP.2 Reason abstractly and quantitatively.
- MP.4 Model with mathematics.
- MP.5 Use appropriate tools strategically.

Mathematics Standards

- 4.MD.A.1 Know relative sizes of measurement units within one system of units. 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.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.

Technology Standards

- 8.1.5.A.3 Use a graphic organizer to organize information about problem or issue.

Unit 4: From Molecules to Organisms: Structures and Processes

Content Area: **Science**
Course(s):
Time Period: **3rd Trimester**
Length: **3 weeks (about 15 days)**
Status: **Published**

Summary of the Unit

In this unit students will study plants and animals (organisms). Students will explore and analyze finding that both plants and animals have internal and external structures that serve various functions in growth, survival, behavior, and reproduction. Plants and Animals have different sense receptors that 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.

The 2020 NJSLS standards for science covered in this unit are 4-LS-1 and 4-LS-2.

- 4-LS-1 Structure and Function: Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.
- 4-LS-2 Information Processing: 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.

Summative Assessments and/or Summative Criteria

Formative Assessments: To be administered at the close of each topic. Grade according to rubric.

1. Quiz 1: Structure and Function
2. Quiz 2: Information Processes

Summative Assessment:

1. From Molecules to Organisms Unit Test

Enduring Understandings

- The core 4 function of organisms are: growth, survival, behavior and reproduction.
- Examples of how plant and animal structures, both internally and externally, function to fulfill life processes.
- The difference between instincts and behavior with examples.

- How senses benefit animals in respect to how they respond to their environment.

Essential Questions

- How does organism's structure fit its function?
- How do internal and external structures function to support the survival of plants and animals?
- How are instincts and learned behaviors beneficial to organisms?
- How do senses function to help an animal's survival?
- How are signals sent from receptors to the brain?

Resources

- Model Curriculum Sciencehttp://www.state.nj.us/education/modelcurriculum/sci/
- Science Standardshttps://www.nj.gov/education/standards/science/Index.shtml
- Next Generation Science Standardshttp://www.nextgenscience.org/ &http://www.nextgenscience.org/resources/bundling-ngss

Unit Plan

Topic/Selection Time frame	General Objectives	Instructional Activities	Benchmarks/ Assessments	Standards
Introduction to Structures (1 day)	SWBAT define structures as "body parts."	• What do plants and animals have in common? They have structures "body parts" • Discuss structures of different plants and animals.	Complete homework and classwork questions.	LS-1
Plant Structures (3 days) *Lab 1: Flowering Plants	SWBAT identify three plant structures. SWBAT name the four Core Functions - Growth, Reproduction,	• Every structure has a function. • Read pages 10-13 from "Plant and Animal Structures" student reader. • Flowing Plants Lab on Discovery	Complete homework and classwork questions. Lab sheet	LS-1

	Survival and Behavior.	Education		
Animal Structures Poster (2 days)	SWBAT research and label animal structures. SWBAT recall the core functions.	• Read page 14 from "Plant and Animal Structures" student reader. • Students will create a poster.	Animal Structures Poster	LS-1
Internal vs. External Structures *Lab 2: Squids (5 days)	SWBAT identify structures as internal and external. SWBAT identify two structures of a squid and their function.	• Discuss internal vs. external structures and examples. • Squid Dissection Lab	Squid dissection lab sheet	LS-1 LS-2
Receiving and Sending Signals (2 days)	SWBAT apply the use of senses as it pertains to information from our environment and how we respond to it. SWBAT explain in detail how plants and animals behave while receiving and sending signals.	• Read pages 6-7 from "Plant and Animal Structures" student reader.	Exit ticket	LS-2
Review of Plants and Animals (1 day)	Students will check their understanding of plant and animal processes. Assess knowledge of plant and animal structure and processes.	• Students will work on completing their study guide. We will review the concepts for their unit test. • Unit Test	Study guide Unit test	LS-1 LS-2
Plants and Animals Unit Test (1 day)	Students will check their understanding of plant and animal processes. Assess knowledge of plant and animal	• Students will take a unit test on plants and animals.	Unit test	LS-1 LS-2

	structure and processes.			

SCI.4.LS1.A	Structure and Function
SCI.4.LS1.D	Information Processing
SCI.4-LS1	From Molecules to Organisms: Structures and Processes
SCI.4-LS1-1	Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.
SCI.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.
	Systems and System Models
	Engaging in Argument from Evidence
	Systems and System Models
	Developing and Using Models
	Engaging in argument from evidence in 3–5 builds on K–2 experiences and progresses to critiquing the scientific explanations or solutions proposed by peers by citing relevant evidence about the natural and designed world(s).
	Modeling in 3–5 builds on K–2 experiences and progresses to building and revising simple models and using models to represent events and design solutions.

Suggested Modifications for Special Education, ELL and Gifted Students

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For ELL students:

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- Provide opportunities for students to connect with people of similar backgrounds (e.g. conversations via digital tool such as SKYPE, experts from the community helping with a project, journal articles, biographies).
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For gifted students:

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Technology Standards

- 8.1.5.A.3 Use a graphic organizer to organize information about problem or issue.