Mine Hill Township School District

(4th Grade/Science)

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October 26, 2020

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Subject Area: Science

: Grade 4 **h Science- Soils, Rocks, and**	Brief Summary of Unit: Geology is the study of our planet's earth materials and natural resources. The Soils Landforms Module provides students with firsthand experiences with soils, rocks, and minerals, and mode experiences to study changes to rocks and landforms at Earth's surface. (*Core Ideas - ESS2: Earth's Systems Earth and Human Activity*)

bjective	**Standards**	**Skills – SWBAT**	**Suggested Activities**	**Suggested Assessments**	**P**
ll… by wind, isms, breaks maller erosion and ports ials to ns. s the t rocess new land	4-ESS1-1 4-ESS2-1 4-ESS2-2 4-ESS3-2 3–5-ETS1-1	● Students will be able to identify evidence from patterns in rock formations and fossils in rock layers to support an explanation for changes in a landscape over time. 4-ESS1-1 ● Students will be able to make observations and/or measurements to provide evidence of the effects of weathering or the rate of erosion by water, ice, wind, or vegetation. 4-ESS2-1 ● Students will be able to analyze and interpret data from maps to describe patterns of Earth's features. 4-ESS2-2 ● Students will be able to obtain and combine information to describe that energy and fuels are derived from natural resources and	1. Explore how rocks break into smaller pieces through physical and chemical weathering. 2. Go outdoors to explore and compare properties of local soils and how it's been impacted by weathering. **(Life and Career Skills)** 3. Create stream-table models to observe that water moves earth materials from one location to another. (*Crosscutting Concepts – Systems and Models*) (*Science and Engineering Practices*) 4. Look for erosion around the school yard. (*Crosscutting Concepts – Stability and Change*) 5. Create a topographical map. 6. Use the tools to analyze the impact of the Mount	● I-Checks ● Response sheet ● Summative performance assessment ● Science notebook entry ● Open response problems **(Critical Thinking and Problem Solving)** (formative) ● Performance Assessments ● Teacher-created assessments ● Exit tickets (formative) ● Teacher observations ● Benchmark: Create a project to tell your friends and family how they can help protect land forms, soil and other geographic areas in our community (alternative assessment)	Ap Jur (ap 8 t

		their uses affect the environment. 4-ESS3-2 ● Students will be able to define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost**.** 3–5-ETS1-1	St. Helens eruption. (**Global Awareness**) 7. Make a stepping stone out of natural resources**(Creativity and Innovation)**. 8. Go on field trip to Sandy Hook, New Jersey. 9. Read books about natural disasters (historical fiction I Survived… series) (**Global Awareness**) 10. Map the Ring of Fire		

Components

Themes	__**X**__ Global Awareness _____Financial, Economic, Business, and Entrepreneurial Literacy _____ Civic Litera _____ Health literacy
Skills	___X____ Creativity and Innovation __X___ Critical Thinking and Problem Solving _____ Communication and Co _____ Information Literacy _____ Media Literacy __x__ Life and Career Skills
nary Connections	**ELA/Literacy** – W.4.7 Conduct short research projects that build knowledge through investigation of different aspe topic. (4-ESS1-1) W.4.8 Recall relevant information from experiences or gather relevant information from print and sources; take notes and categorize information, and provide a list of sources. (4-ESS1-1) W.4.9 Draw evidence from informational texts to support analysis, reflection, and research. (4-ESS1-1) RI.4.1 Refer to details and examples in explaining what the text says explicitly and when drawing inferences from the text. (4-ESS3-2) RI.4.9 Integrate info from two texts on the same topic in order to write or speak about the subject knowledgeably. (4-ESS3-2) W.4.7 Co research projects that build knowledge through investigation of different aspects of a topic. (4-ESS3-1) W.4.8 Recal information from experiences or gather relevant information from print and digital sources; take notes and catego information, and provide a list of sources. (4-ESS3-1) W.4.9 Draw evidence from literary or informational texts to su analysis, reflection, and research. (4-ESS3-1) **Mathematics** – MP.2 Reason abstractly and quantitatively. (4-ESS1-1) MP.4 Model with mathematics. (4-ESS1-1) 4. Know relative sizes of measurement units within one system of units including km, m, cm; kg, g; lb, oz.; l, ml; hr, mi

	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)
of Technology	Videos-Weathering and Erosion Soils-“Geology Lab: Stream Tables” “Tutorial—Stream Tables: Slope and Flood” “Vi Investigation: Stream Tables” Online activities Student research Student-created multimedia presentations *NJSLS 8.1 Educational Technology*
	For Teachers: FOSS- Soils, Rocks, and Landforms Kit (Next Generation) Science Learning Log (teacher created) **For Students:** Science Learning Log (student created) FOSS Kit materials (Next Generation) Word Wall FOSSweb Streaming videos FOSS Science Stories eGuide eBook Home/School Connection Letters
Accommodations ations	**Modifications for Special Education/504/At-Risk students:** Provide a model of a topography map to help students understand the elevation of various landforms Use organizers for key terms such as weathering, erosion, chemical weathering etc. Extended time Use think-aloud statements to familiarize students with science terms Use labels on items as required Provide visuals and pictures for science terms Use gestures for simple word problems **Modifications for EL students:** Use videos in native language related to weathering/erosion. Provide translated/visual cards with terms such as weathering, erosion, chemical weathering, etc. Word Wall Provide visuals and pictures for science terms. Provide students with picture to help visualize concepts. Use gestures for simple word problems

	Modeling activities in a small group FOSS ELA connections **Modifications for Gifted students:** Complete a stream table lab to further expand on the concepts of weathering and erosion Online activities

Subject Area: Introduction

: Fourth Grade	**Brief Summary of Unit**: Students will be introduced to the structure of fourth grade science. They will lear strategies and begin to use tools necessary for success in Science. Through the introduction of the science and hands-on experiments the students will use techniques to see details about the world that would othe difficult to observe.
n to Fourth Grade Science	

bjective	**Standards**	**Skills – SWBAT**	**Suggested Activities**	**Suggested Assessments**	**P**
ll… r own rning nce	3-5-ETS1-1 4-LS1-1 4-PS3-2	● Students will be able to define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost. 3-5-ETS1-1 ● Students will be able to construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction. 4-LS1-1 ● Students will be able to make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents. 4-PS3-2 (*Crosscutting Concepts*)	● Complete a teamwork activity: Saving Sammy challenge, Cup challenge **(Communication and Collaboration)**. ● Create a cup pyramid as a group. (*Science and Engineering Practices*) ● Record and compare patterns observed in leaf veins, fingerprints and ink pigments. ● Use mirrors to manipulate light and images. ● Presentation on improving an already-existing invention **(Life and Career Skills)** ● Complete lab report using the scientific method ● Explore the process to patent a new invention (**Financial, Economic,**	● Response sheet ● Summative performance assessment ● Science notebook entry on science routines and strategies/the scientific process (formative) ● Open response problems **(Critical Thinking and Problem Solving)** ● Performance Assessments ● Teacher-created assessments ● Exit tickets (formative) ● Teacher observations ● Benchmark: Science interest survey	Se thr Oc (ap 4-6

			Business, and Entrepreneurial Literacy)		

Components

Themes	_____ Global Awareness ___x___Financial, Economic, Business, and Entrepreneurial Literacy _____ Civic Liter _____ Health literacy
Skills	_____ Creativity and Innovation ___x_ Critical Thinking and Problem Solving ___x_ Communication and Collabor _____ Information Literacy _____ Media Literacy __x___Life and Career Skills
nary Connections	**ELA/Literacy** – RI.4.1 Refer to details and examples in a text when explaining what the text says explicitly and when inferences from the text. (4-PS3-1) RI.4.3 Explain events, procedures, ideas, or concepts in a historical, scientific, or text, including what happened and why, based on specific information in the text. (4- PS3-1) RI.4.9 Integrate inform 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 Condu research projects that build knowledge through investigation of different aspects of a topic. (4-PS3-2),(4-PS3-3),(4- W.4.8 Recall relevant information from experiences or gather relevant information from print and digital sources; t and categorize information, and provide a list of sources. (4-PS3-1),(4-PS3-2),(4-PS3-3),(4-PS3-4) W.4.9 Draw evide literary or informational texts to support analysis, reflection, and research. (4-PS3-1) **Mathematics** – 4.OA.A.3 Solve multistep word problems posed with whole numbers and having whole-number an the four operations, including problems in which remainders must be interpreted. Represent these problems using with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation a estimation strategies including rounding. (4-PS3-4)
of Technology	Online Activities FOSSweb Student research Student-created multimedia presentations *NJSLS 8.1 Educational Technology*
	For Teachers:

	Science Learning Log (teacher created) Teacher created PowerPoint presentations and Smart Notebook presentations FOSS kit- Ideas and Inventions **For Students:** Science Learning Log (student created) Word Wall Streaming videos Home/School Connection Letters Teacher created PowerPoint presentations and Smart Notebook presentations
Accommodations ations	**Modifications for Special Education/504/At-Risk students:** Provide scientific method planning sheet to use during experiments Provide graphic organizer for invention research Teacher made Science notebook Word Wall Extended time Use think-aloud statements to familiarize students with science terms. Use labels on items as required. Provide visuals and pictures for science terms. Use gestures for simple word problems **Modifications for ELL students:** Provide visual/translated cards with science introductory terms (observation, hypothesis, conclusion, scientific me Provide video in native language about the scientific method and inventions Teacher made Science notebook Word Wall Provide visuals and pictures for science terms. Provide students with picture to help visualize concepts. Use gestures for simple word problems Modeling activities in a small group FOSS ELA connections **Modifications for Gifted students:** Apply knowledge of inventions to real-world examples Online activities

Subject Area: Science

l: Fourth Grade	**Brief Summary of Unit:** Students investigate electricity and magnetism as related effects and engage in eng
ical Science- Energy	design while learning useful applications of electromagnetism in everyday life. They explore energy transfe
	waves, repeating patterns of motion, that result in sound and motion. (*Core Ideas - PS3: Energy and PS4: W*
	Their Applications in Technologies for Information Transfer)

bjective	**Standards**	**Skills – SWBAT**	**Suggested Activities**	**Suggested Assessments**	**F**
vestigate ent and rough ricity ll create arallel e of the s in each vestigate ies of d their with nd each ll n to f like or	4-PS3-1 4-PS3-2 4-PS3-3 4-PS3-4 4-PS4-1 4-PS4-2 4-PS4-3 4-ESS3-1	● The students will be able to use evidence to construct an explanation relating the speed of an object to the energy of that object.4-PS3-1 ● The students will be able to make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents.4-PS3-2 ● The students will be able to ask questions and predict outcomes about the changes in energy that occur when objects collide.4-PS3-3 ● The students will be able to apply scientific ideas to design, test, and refine a device that converts energy from one form to another.4-PS3-4	1. Challenge of lighting a bulb using a simple circuit **(Critical Thinking and Problem Solving)**. 2. Light two bulbs using one D-cell. 3. Create a series circuit and a parallel circuit. (*Crosscutting Concepts – Energy and Matter*) 4. Sort items that stick to a magnet and those which do not stick to a magnet. 5. Use magnets to show attract and repel. 6. Create a temporary magnet and a permanent magnet. (*Crosscutting Concepts – Cause and Effect*) 7. Create an electromagnet. (*Crosscutting Concepts – Systems and Models*) 8. Build and experiment with a ramp for a toy car **(Creativity and Innovation)(Critical Thinking and Problem**	● Investigations 1-4 I-Checks ● Response sheet ● Summative performance assessment ● Science notebook entry (formative) ● Open response problems **(Critical Thinking and Problem Solving)** (formative) ● Performance Assessments ● Teacher-created assessments ● Exit tickets (formative) ● Teacher observations ● Benchmarks: Electrical safety public service announcement	Mi thr De (ap 9-1

les of a act. ill simple d use it agnetic ll the the action o ta to terns of		• The students will be able to develop a model of waves to describe patterns in terms of amplitude and wavelength and that waves can cause objects to move. 4-PS4-1 • The students will be able to develop a model to describe that light reflecting from objects and entering the eye allows objects to be seen. 4-PS4-2 • The students will be able to generate and compare multiple solutions that use patterns to transfer information.4-PS4-3 • The students will be able to obtain and combine information to describe that energy and fuels are derived from natural resources and their uses affect the environment. 4-ESS3-1	**Solving)**. (*Science and Engineering Practices*) 9. Science Court "Electric Current" **(Life and Career Skills)**. 10. Research different types of energy (wind, solar, hydro), identify, and list advantages and disadvantages. (**Global Awareness**) 11. Explore STEM careers related to alternative energy. (**Financial, Economic, Business, and Entrepreneurial Literacy**) 12. Completed circuit lab reports using the scientific method		

Components

Themes	__X___ Global Awareness ___X__Financial, Economic, Business, and Entrepreneurial Literacy _____ Civic Lite _____ Health literacy
Skills	___X____ Creativity and Innovation __X___ Critical Thinking and Problem Solving _____ Communication and Co _____ Information Literacy _____ Media Literacy __X___Life and Career Skills

nary Connections	**Literature connections** - 4.1 Refer to details and examples in a text when explaining what the text says explicitly ar drawing inferences from the text. (4-PS4-3) RI.4.9 Integrate information from two texts on the same topic in order speak about the subject knowledgeably. (4-PS4-3) SL.4.5 Add audio recordings and visual displays to presentations appropriate to enhance the development of main ideas or themes. (4-PS4-1),(4-PS4-2) **Mathematics** – MP.4 Model with mathematics. (4-PS4-1),(4-PS4-2) 4.G.A.1 Draw points, lines, line segments, rays, (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures. (4-PS4-1),(4-P
of Technology	Videos Science Court "Electric Current" Online activities Student research Student-created multimedia presentations *NJSLS 8.1 Educational Technology*
	For Teachers: Science Court "Electric Current" FOSS- Energy Kit (Next Generation) Science Learning Log (teacher created) Speedometry curriculum by Hot Wheels **For Students:** Science Learning Log (student created) FOSS Kit materials (Next Generation) Science Court "Electric Current" handouts Word Wall FOSSweb Streaming videos FOSS Science Stories eGuide eBook Home/School Connection Letters
Accommodations ations	**Modifications for Special Education/504/At-Risk students:** Provide visual models of electrical circuits and hands-on experiments Provide public service announcement planning organizers Extended time Use think-aloud statements to familiarize students with science terms. Use labels on items as required. Provide visuals and pictures for science terms. Use gestures for simple word problems

	Modifications for EL students: Provide videos in native language focused on electrical circuits and electromagnetism Provide visual/cards with translated terms related to energy (electromagnets, alternative energy sources, circuits, Teacher made Science Learning Log Word Wall Provide visuals and pictures for science terms. Provide students with picture to help visualize concepts. Use gestures for simple word problems Modeling activities in a small group FOSS ELA connections Anchor charts **Modifications for Gifted students:** Complete a project to show how alternative energy sources can create a cleaner environment Online activities

Subject Area: Science

: Grade 4	Brief Summary of Unit: Through the study of different ecosystems, students build an understanding of the
Science- Environments	between organisms and their environments. The Environments Module focuses on the concepts that orga energy and matter to live and grow, and that living organisms depend on one another and on their enviro their survival and the survival of populations. (*Core Ideas – Life Science*)

bjective	**Standards**	**Skills – SWBAT**	**Suggested Activities**	**Suggested Assessments**	**R**
ll… d e living ng s in a nts.	4-LS1-1 4-LS1-2	● Students will be able to construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction. 4-LS1-1 ● Students will be able to 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 4-LS1-2	1. Set up a mealworm environment at two temperatures and observe the life cycle over time. 2. Investigate how isopods respond to environmental factors. 3. Investigate small animals that live in leaflitter and study their structures. 4. Set up a freshwater aquarium with different kinds of fish, plants, and other organisms. 5. Conduct a controlled experiment to determine which of four salt concentrations allow brine shrimp eggs to hatch. (*Science and Engineering Practices*) 6. Setup and monitor experiments to determine the range of tolerance of water for germination of four kinds	● I-Checks ● Response sheet ● Summative performance assessment ● Science notebook entry ● Open response problems **(Critical Thinking and Problem Solving)** (formative) ● Performance Assessments ● Teacher-created assessments ● Exit tickets (formative) ● Teacher observations ● Science Court "Living Things"**(Life and Career Skills)** ● Benchmark: Create a project showing the cause/effect relationships between species and organisms in an environment	Jar Ma (ap 8 t

			of seeds. (*Crosscutting Concepts – Cause and Effect*) 7. Study local plants by mapping schoolyard plants and relate plant distribution to environmental factors. 8. Look at plant adaptations. 9. Science Court "Living Things"**(Life and Career Skills)(Communication and Collaboration)** 10. Dissect owl pellets. 11. Create a simple dropping cup model to show the nervous system at work. 12. Students participate in the "Trout in the Classroom" program. (*Crosscutting Concepts – Stability and Change*) (*Global Awareness*)	(alternative assessment)	

Components

Themes	___X__ Global Awareness _____Financial, Economic, Business, and Entrepreneurial Literacy _____ Civic Litera _____ Health literacy
Skills	_____ Creativity and Innovation __x__Critical Thinking and Problem Solving __x__Communication and Collabor _____ Information Literacy _____ Media Literacy __x__Life and Career Skills
nary Connections	**ELA/Literacy –** W.4.1 Write opinion pieces on topics or texts, supporting a point of view with reasons and informat 1) SL.4.5 Add audio recordings and visual displays to presentations when appropriate to enhance the development ideas or themes. (4-LS1-2) **Mathematics –** 4.G.A.3 Recognize a line of symmetry for a two-dimensional figure as a line across the figure such t figure can be folded across the line into matching parts. Identify line symmetric figures and draw lines of symmetry
of Technology	Science Court "Living Things"

	Online Activities “Virtual Aquarium” “Virtual Terrarium” “Food Webs” “Trout Range of Tolerance” FOSSweb Student research Student-created multimedia presentations *NJSLS 8.1 Educational Technology*
	For Teachers: Science Court “Living Things” FOSS- Environment Kit (Next Generation) Science Learning Log (teacher created) **For Students:** Science Learning Log (student created) FOSS Kit materials (Next Generation) Science Court “Living Things” hand-outs Word Wall FOSSweb Streaming videos FOSS Science Stories eGuide eBook Home/School Connection Letters
Accommodations ations	**Modifications for Special Education/504/At-Risk students:** Use environmental factors graphic organizer Providing habitat models for students to visualize environmental concepts Extended time Use think-aloud statements to familiarize students with science terms. Use labels on items as required. Provide visuals and pictures for science terms. Use gestures for simple word problems **Modifications for EL students:** Use videos in native language related to biomes and food webs Provide visuals/cards with translated terms such as decomposers, consumers, living, non-living, etc. Provide visuals and pictures for science terms. Provide students with picture to help visualize concepts. Use gestures for simple word problems Modeling activities in a small group FOSS ELA connections

	Modifications for Gifted students: Create a project with connections on how changes in one biome affects other biomes Online activities

Mine Hill Township School District

(5th Grade/Science)

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Mr. Lee S. Nittel
Superintendent

Approval date:
October 26, 2020

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Subject Area: Science

: 5	Brief Summary of Unit: Students work together to create and test designs for devices and experiments to s
Design	problems and answer questions about the world.

Objective	Standards	Skills – SWBAT	Suggested Activities	Suggested Assessments	Pa
onal force ng on an Earth's that d the er. (5-PS2- tions to a limited by terials and onstraints). of a ution is by he desired solution ferent r solutions ared on how well ets the eria for ow well he nto TS1-1) prove nologies or ones to	5-PS2-1 5-ETS1-1 5-ETS1-2 5-ETS1-3	Support an argument that the gravitational force exerted by Earth on objects is directed down, and that "down" is a local description of the direction that points toward the center of the spherical Earth. (5-PS2-1) Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost. (5-ETS1-1) (Science and Engineering Practices) 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. (5-ETS1-2) **(Life and Career Skills)** Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved. (5-ETS1-3)	- Work with a partner or group to design a parachute (or similar design-dependent device e.g. boat, car). Create multiple test models using different shapes, configurations, and materials, and document group effort to optimize performance (e.g. drop more slowly when carrying 5 gram weight). **(Creativity and Innovation) (Science and Engineering Practices)** - Work independently to design and carry out an experiment that tests a hypothesis to answer a chosen question. Document the process using the steps in the Scientific Method and present the results as a poster and/or demonstration (at the Science Fair, if applicable). **(Crosscutting Concepts)**	**FORMATIVE** Teacher observations Diagnostic/Constructive quizzes and tests: taken online for instant score feedback. NJSLS Resources: Classroom Application Assessments. Learning/Response Logs: Daily Do-Now Assignments Anecdotal Records Completed Labs and Projects Student Responses	6-8 spl tw for de inc exp de de tim Sci (Su Se [pa act gra Ma [fr exp en

r benefits, own risks, cietal -ETS1-2) a problem rried out ning to tion. ution estigating erforms e of likely 5-ETS1-2) stage, ing with proposed n rt of the ss, and can lead designs. en dentify s or which elements that need ed. (5- utions ested in ermine m best oblem, teria and				Science Portfolios (when relevant) Science Binder/Journal **SUMMATIVE** End of Unit tests Benchmarks: Science Portfolios (when relevant) Performance Assessments on the activities described (alternative assessment)	

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Components

Themes	_____ Global Awareness _____Financial, Economic, Business, and Entrepreneurial Literacy _____ Civic Literac _____ Health literacy
Skills	__x___ Creativity and Innovation _____ Critical Thinking and Problem Solving _____ Communication and Collab _____ Information Literacy _____ Media Literacy ___x__Life and Career Skills
nary Connections	• Reading Informational Text: RI.5.1-9 • Writing Standards: W.5.1-10 • Speaking and Listening: SL.5.1-6 • Measurement & Data: 5.MD.1-5
of Technology	Computers, online resources for researching and preparing informational presentations, SmartBoard, multimedia p *NJSLS 8.1 Educational Technology*
	For Teachers: Supplies for activities/labs, FOSS manuals, BrainPop materials, PowerPoint presentations, For Students: FOSS kits, laptops, models/templates, BrainPop materials (print and online), Google Classroom assign
Accommodations ations	Modifications for Special Education/504/At-Risk students: Additional walk-through materials for a basic engineerin level appropriate materials and media (e.g. shorter articles or different article on same topic), additional explanato handouts for modelling and new vocabulary reference sheets, partnering with student helpers, Comply with all IEP modifications and 504 plans. Modifications for ELL students: Use of electronic translation (laptops), partnering with native speakers, providing e help/materials for new vocabulary, translated/visual cards with engineering terms, providing opportunities to rese engineering concepts in native language. Modifications for Gifted students: Additional articles/material on each topic, handout including links for additional and online programs, assignment to be student helpers, engineering project extensions.

Subject Area: Science

: 5 **ystem & The Earth's**	Brief Summary of Unit: Students will use models to show how the Earth fits into the solar system and how the effects of its orbit, to explain the interactions between the four major earth systems, and develop ways scientific ideas to protect the environment.

Objective	Standards	Skills – SWBAT	Suggested Activities	Suggested Assessments	Pa
star that er and n other e it is range eir distance 5-ESS1-1) **Earth un and of ound er with of Earth s between South observable ese include t; daily he length n of d different the sun, tars at es of the and year.** **r systems phere olten rock,**	**5-ESS1-1** **5-ESS1-2** **5-ESS2-1** **5-ESS2-2** **5-ESS3-1**	**Support an argument that differences in the apparent brightness of the sun compared to other stars is due to their relative distances from the Earth. (5-ESS1-1)** **Represent data in graphical displays to reveal patterns of daily changes in length and direction of shadows, day and night, and the seasonal appearance of some stars in the night sky. Examples of patterns could include the position and motion of Earth with respect to the sun and selected stars that are visible only in particular months. (5-ESS1-2) (Crosscutting Concept)** **Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact. Examples could include the influence of the ocean on ecosystems, landform shape, and climate; the influence of the atmosphere on landforms and ecosystems through weather and climate; and the influence of mountain ranges on winds and clouds in the atmosphere. The geosphere,**	- Draw models of the sun's pathway in New Jersey for all seasons. - Use online resources to record daily sunrise and sunset times for an extended period of time (1 or more months) and create a graph showing the changes shown in the length of day and night. (Measurement & Data) - Track the length and direction of shadows cast at a specific time each day for an extended period of time (1 or more months) to create a data table showing how the relative position of the sun changes over time. (Measurement & Data) - Use lamps and spheres to create explanatory models for the variation of shadows during the course of a year for various locations in the Northern and Southern Hemispheres. - Using images of landforms and examples of the destructive forces of earthquakes, volcanoes, and landslides, classify the image of landforms into sporadic and gradual	**FORMATIVE** Teacher observations Diagnostic/Constructive quizzes and tests: taken online for instant score feedback. NJSLS Resources: Classroom Application Assessments. Learning/Response Logs: Daily Do-Now Assignments Anecdotal Records Completed Labs and Projects Student Responses	10 (su Se No

iments), here (water (air), and e (living ding ese ract in s to affect ce d he ocean ariety of and hapes nd mate. ouds in ere the atterns of ESS2-1) Earth's ter is in Most fresh aciers or ; only a is in es, d the (5-ESS2-2) ities in ndustry, y life have ffects on getation, an, air, ter space.		**hydrosphere, atmosphere, and biosphere are each a system. (5-ESS2-1) (Science and Engineering Practices)** **Describe and graph the amounts and percentages of water and fresh water in various reservoirs to provide evidence about the distribution of water on Earth. (5-ESS2-2)** **Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment. (5-ESS3-1)**	events. In the case of the landforms, infer which Earth processes created those landforms. - Construct a model of the role of running water in moving Earth materials using a stream table with sand or other similar materials. Repeat this modeling process to demonstrate how glaciers can change the landscape, and how wave action can move sand on beaches. (Science and Engineering Practices) - Investigate the local area for examples of how moving water, wind, and ice have changed the area using research from the NJ Geological Survey or NJ Department of Environmental Protection. Write a summary of findings. (Reading Informational; Writing Standards). - Dig a soil profile at least through the top 2 or 3 soil horizons and observe the characteristics of the layers as a way to identify how soil forms. - Design, construct, and test a model of a method to reduce soil erosion on a small slope. Cite the strengths and limitations in applying this model to a large scale farm. (Creativity & Innovation; Critical Thinking & Problem Solving) - With a group, develop a program to help protect or improve a part of the local environment. The project should focus on protecting one of	Science Portfolios (when relevant) Science Binder/Journal **SUMMATIVE** End of Unit tests Benchmarks: Science Portfolios (when relevant) Performance Assessments on the activities described (alternative assessment)	

ls and s are doing p protect rces and s. (5-ESS3-			the Earth's four primary systems and result in a poster, a class presentation, and an activity that will involve the whole class. (Critical Thinking & Problem Solving; Speaking & Listening; Communication & Collaboration; Civic Literacy)		

Components

Themes	_____ Global Awareness _____Financial, Economic, Business, and Entrepreneurial Literacy __x___ Civic Litera _____ Health literacy
Skills	___x__ Creativity and Innovation ___x__ Critical Thinking and Problem Solving ___x__ Communication and Colla _____ Information Literacy _____ Media Literacy _____Life and Career Skills
nary Connections	• Reading Informational Text: RI.5.1-9 • Writing Standards: W.5.1-10 • Speaking and Listening: SL.5.1-6 • Measurement & Data: 5.MD.1-5
of Technology	Computers, online resources for researching and preparing informational presentations, SmartBoard, multimedia p *NJSLS 8.1 Educational Technology*
	For Teachers: Supplies for activities/labs, FOSS manuals, BrainPop materials, PowerPoint presentations, Astronomy at the University of Nebraska-Lincoln "Basic Coordinates and Seasons" lab For Students: FOSS kits, laptops, models/templates, BrainPop materials (print and online), Google Classroom assign Geological Survey & NJ Department of Environmental Protection websites.
Accommodations ations	Modifications for Special Education/504/At-Risk students: Providing pre-made graphic organizer as model of the sc providing multimedia materials and animations that explain the Sun's position and shadow length, level appropriat and media (e.g. shorter articles or different article on same topic), additional explanatory handouts for modelling a vocabulary reference sheets, partnering with student helpers, Comply with all IEP modifications and 504 plans, tem based research projects. Modifications for ELL students: Use of electronic translation (laptops), partnering with native speakers, providing visual/translated cards with solar system terms, providing opportunities to research Solar System in native languag multimedia sources in different languages.

	Modifications for Gifted students: Additional articles/material on each topic, handout including links for additional and online programs, assignment to be student helpers, additional assignment components that include observatio variation in star position and visibility with presentation of results.

Subject Area: Science

: 5 **nd Properties of Matter**	Brief Summary of Unit: Students will conduct a variety of experiments and explorations that show the basi composition of matter and the changes it can go through, changes which may also affect its basic propertie

Objective	Standards	Skills – SWBAT	Suggested Activities	Suggested Assessments	Pa
y type can d into t are too but even ter still n be other del gases are natter t are too and are y around explain ations, inflation a balloon cts of air ticles or S1-1) **cts exist y small to ely large.** **(weight) of served ges form, itions in**	**5-PS1-1** **5-PS1-2** **5-PS1-3** **5-PS1-4**	**Develop a model to describe that matter is made of particles too small to be seen, e.g. adding air to expand a basketball, compressing air in a syringe, dissolving sugar in water, and evaporating salt water. (5-PS1-1) (Science and Engineering Practices)** **Measure and graph quantities to provide evidence that regardless of the type of change that occurs when heating, cooling, or mixing substances, the total weight of matter is conserved, e.g. phase changes, dissolving, and mixing that form new substances. (5-PS1-2) (Crosscutting Concepts)** **Make observations and measurements to identify materials based on their properties, e.g. baking soda and other powders, metals, minerals, and liquids. Examples of properties include color, hardness, reflectivity, electrical conductivity, thermal conductivity, response to magnetic forces, and solubility. (5-PS1-3)** **Conduct an investigation to determine whether the mixing of two or more**	- Create Silly Putty and Slime to demonstrate the difference between physical and chemical changes. - Perform a lab that involves electrolysis to observe molecules breaking down to atoms, and those atoms bonding to form new substances with different properties. (Critical Thinking). - Dissolve salt, ice, Alka-Seltzer in water to demonstrate conservation of mass and endothermic and exothermic reactions. - Create a station for "mystery substance" lab. Groups select several substances which must be identified and write their properties on an index card. Cards are distributed randomly among students who must find the substance that matches their card. - Dissolve salt in water and then evaporate water to show that the salt is still there. Weigh and record data to verify the amount of each substance. (Critical Thinking;	**FORMATIVE** Teacher observations Diagnostic/Constructive quizzes and tests: taken online for instant score feedback. NJSLS Resources: Classroom Application Assessments. Learning/Response Logs: Daily Do-Now Assignments Anecdotal Records Completed Labs and Projects Student Responses	4-6 (su Jar Fe

ns to 1-2) ts of a operties o identify -PS1-3) ts are used nd sical ch as , , and S1-2) r more stances new ith perties ed. (5-PS1- hat hange in ccurs, the of the oes not S1-2)		**substances results in new substances. (5-PS1-4)**	Measurement & Data) (Crosscutting Concepts) - Use online resources to create an atomic model of an element of their choice; final product should show: the atomic number, the element's symbol, the element's name, and properties of the element in its most common phase. (Creativity, Reading Informational).	Science Portfolios (when relevant) Science Binder/Journal **SUMMATIVE** End of Unit tests Benchmarks: Science Portfolios (when relevant) Performance Assessments on the activities described (alternative assessment)	

Components

Themes	_____ Global Awareness _____Financial, Economic, Business, and Entrepreneurial Literacy _____ Civic Literac _____ Health literacy
Skills	___x__ Creativity and Innovation __x___ Critical Thinking and Problem Solving _____ Communication and Collab _____ Information Literacy _____ Media Literacy _____Life and Career Skills
nary Connections	• Reading Informational Text: RI.5.1-9

	● Measurement & Data: 5.MD.1-5
of Technology	Computers, online resources for researching and preparing informational presentations, SmartBoard, multimedia p *NJSLS 8.1 Educational Technology*
	For Teachers: Supplies for activities/labs, FOSS manuals, BrainPop materials, PowerPoint presentations, batteries fo electrolysis lab. For Students: FOSS kits, laptops, models/templates, BrainPop materials (print and online), Google Classroom assign online element resources, substance ID lab materials.
Accommodations ations	Modifications for Special Education/504/At-Risk students: Provide models for electrolysis, break down electrolysis directions, level appropriate materials and media (e.g. shorter articles or different article on same topic), additiona explanatory handouts for modelling and new vocabulary reference sheets, partnering with student helpers, Compl IEP modifications and 504 plans, partially pre-filled templates for lab reports, assigned element project based on sk Modifications for ELL students: Provide additional resources for atomic models, use of electronic translation (lapto partnering with native speakers, providing translated/visual cards for matter concepts, provide opportunities for re matter in native language. Modifications for Gifted students: Additional articles/material on each topic, handout including links for additional and online programs, assignment to be student helpers, extension of element project to include protons, neutrons electrons/configuration, option to bring in/research their own substances for substance ID lab.

Subject Area: Science

: 5 **re of Organisms and**	Brief Summary of Unit: Students will model the ways energy is converted into food and is passed through a ecosystem. Students will diagram the parts of a healthy ecosystem and measure the impact on the environ the parts of the system are disrupted.

Objective	Standards	Skills – SWBAT	Suggested Activities	Suggested Assessments	Pa
nsported and within S1-1) **e their growth air and -1)** **be terms of nts and tions. (5-** **lmost any al can be o plants. re related in which s eat od and s eat the eat plants. sms, such bacteria, dead oth plants ts and therefore**	**5-LS1-1** **5-LS1-2** **5-PS3-1**	**Support an argument that plants get the materials they need for growth chiefly from air and water, and not from soil. (5-LS1-1) (Science and Engineering Practices)** **Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment. Emphasis is on the idea that matter that is not food (air, water, decomposed materials in soil) is changed by plants into matter that is food. Examples of systems could include organisms, ecosystems, and the Earth. (Science and Engineering Practices)** **Use models, including diagrams and/or flowcharts, to describe that energy in animals' food (used for body repair, growth, motion, and to maintain body warmth) was once energy from the sun. (5-PS3-1) (Crosscutting Concepts)**	- Plan a group experiment to grow pea plants. Each group should test different variables (amount of soil, amount of watering, etc.) to determine which plants need most. Observe that the amount of soil does not decrease as the plant grows and explain where it is getting new "parts" from. Write a lab report to present findings. (Critical thinking, Writing interdisciplinary connection standards). - Create schematic drawings or digital simulations that explain how plants are able to take solar energy and convert it to sugar. (Reading interdisciplinary connection) - Observe the differences between plant and animal body systems by comparing samples and examining cells under the microscope. - Create a model food web that traces energy from light through an ecosystem. Highlight each transfer of energy between organisms, and discuss how the pathway may vary	**FORMATIVE** Teacher observations Diagnostic/Constructive quizzes and tests: taken online for instant score feedback. NJSLS Resources: Classroom Application Assessments. Learning/Response Logs: Daily Do-Now Assignments Anecdotal Records Completed Labs and Projects Student Responses	8-1 (su Ap

rs." on estores me ck to the ms can in s in which lar needs ealthy one in le species ypes are meet their latively f life. uced lamage the n 5-LS2-1) s between oil and s, animals, s as these ve and die. btain ater, from nent, and e matter or solid) e . (5-LS2-1) e n various tween S3-1)			within one ecosystem and between ecosystems. - Play variations on the "invasive species game" and explain why moving organisms from their native ecosystem to a new ecosystem may upset the balance of the new ecosystem. (Writing standards) - Create a digital interactive food web that traces energy from light through an ecosystem. Highlight each transfer of energy between organisms, and discuss how the pathway may vary within one ecosystem and between ecosystems. (Critical Thinking) - Research a real-life food web and present a Pocket-mod book or poster about the food web. (Reading Informational; Speaking & Listening). - Coordinating with ELA class, pretend to be a member of the previously-researched food web that is threatened with extinction by human activity. Write a persuasive letter to the governor of the state in which it lives arguing why that organism needs protection, what consequences would occur if it became extinct, and suggestions for conservation actions. (Writing standards; Reading informational; Critical thinking; Civic Literacy) - Pretend to be an entomologist studying the relationship between	Science Portfolios (when relevant) Science Binder/Journal **SUMMATIVE** End of Unit tests Benchmarks: Science Portfolios (when relevant) Performance Assessments on the activities described (alternative assessment)	

eleased as once the sun tured by chemical forms (from air 5-PS3-1) **es animals erials they y repair and the need to dy warmth on. (5-PS3-**			nutritional needs and life cycle stages in insects. -Use the theme "A World Without Light" to depict the consequences of a world without solar energy. (Life and Career Skills) - Create an "energy pyramid" to model how energy flows through levels of an ecosystem, and use population data to calculate how many primary consumers are needed to sustain a given number of predators. Predict what will happen to the ecosystem if these variables change too much. (Measurement & Data; Critical Thinking).		

Components

Themes	_____ Global Awareness _____Financial, Economic, Business, and Entrepreneurial Literacy ___x__ Civic Litera _____ Health literacy
Skills	_____ Creativity and Innovation ___x__ Critical Thinking and Problem Solving _____ Communication and Collab _____ Information Literacy _____ Media Literacy __x__ Life and Career Skills
nary Connections	• Reading Informational Text: RI.5.1-9 • Writing Standards: W.5.1-10 • Speaking and Listening: SL.5.1-6 • Measurement & Data: 5.MD.1-5
of Technology	Computers, online resources for researching and preparing informational presentations, SmartBoard, multimedia p *NJSLS 8.1 Educational Technology*
	For Teachers: Supplies for activities/labs, FOSS manuals, BrainPop materials, PowerPoint presentations, Invasive Sp materials For Students: FOSS kits, laptops, models/templates, BrainPop materials (print and online), Google Classroom assign Pocket-mod, poster supplies, plant growing supplies.
Accommodations ations	Modifications for Special Education/504/At-Risk students: Provide students with a model energy pyramid, addition reinforce the food web, level appropriate materials and media (e.g. shorter articles or different article on same top

	additional explanatory handouts for modelling and new vocabulary reference sheets, partnering with student helpe with all IEP modifications and 504 plans, assigned plant growth variable with template, assigned food web project w template and starter/examples, list of argument ideas and extra resources for letter-writing project. Modifications for ELL students: Use of electronic translation (laptops), partnering with native speakers, providing translated/visual cards with organism and ecosystem terms, providing opportunities to research organism/ecosyste concepts in native language. Modifications for Gifted students: Additional articles/material on each topic, handout including links for additional and online programs, assignment to be student helpers, create a food web animation using Adobe Flash, produce a song, video, or skit. Research real local threatened area or species for letter writing project and write real letter to officials.

Mine Hill Township School District

(6th Grade/Science)

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Subject Area: Science

: 6 **amic Systems**	Brief Summary of Unit: Students will explore the **roles of water in Earth's surface processes**, explain the di between and how to record data for **weather and climate patterns**, and explain the causes and impacts of **climate change**.

Objective	Standards	Skills – SWBAT	Suggested Activities	Suggested Assessments	Pa
patterns es and the f water in ere, by winds, nd ocean s and major s of local cerns. (MS- **e patterns ex, only be** **ally. (MS-** **density ions in and a global** **ed ocean S-ESS2-6)** **l climate ed by involving ocean, the**	**MS-ESS2-5** **MS-ESS2-6** **MS-ESS3-5**	**Develop a conceptual model to explain the mechanisms for the Sun's energy to drive wind and the hydrologic cycle. (MS-ESS2-5,6)** **Collect data to provide evidence for how the motions and complex interactions of air masses results in changes in weather conditions. (MS-ESS2-5) (Crosscutting Concepts)** **Explain how variations in density result from variations in temperature and salinity drive a global pattern of interconnected ocean currents. (MS-ESS2-5,6)** **Use a model to explain the mechanisms that cause varying daily temperature ranges in a coastal community and in a community located in the interior of the country (MS-ESS2-5,6, ESS3-5) (Science and Engineering Practices)** **Develop and use a model to describe how unequal heating and rotation of the Earth cause patterns of atmospheric and oceanic circulation that determine regional climates (MS-**	- Create small scale models of circulation of liquids and gasses resulting from heating and cooling. Use the models to create causal explanations for the circulation of the atmosphere and oceans. - Draw arrows demonstrating the circulation of ocean currents in the ocean basins using a Mercator projection map. Use the color red for warm water arrows, and the color blue for cold water arrows. Generate statements about the circulation patterns in each ocean basin. (Global Awareness). - Create their own weather news program; they will research, gather props, work on scenery, and write scripts to prepare for their news production where they will report local, national, and international weather forecasts and weather-related news. (Media Literacy; Speaking & Listening). - Use thermometers, psychrometers, and other weather instruments, collect data and observations of daily weather. Identify relationships	**FORMATIVE** Teacher observations Diagnostic/Constructive quizzes and tests: taken online for instant score feedback NJSLS Resources: Classroom Application Assessments Learning/Response Logs: Daily Do-Now Assignments Anecdotal Records Completed Labs and Projects Student Responses	6 v (su Fe Ap

ice, nd living e vary with tude, and ional ll of which eanic and flow S-ESS2-6) xerts a nce on climate by nergy from asing it nd globally g it an S-ESS2-6) ities, such e of gases from l fuels, are s in the n Earth's e (global educing limate educing erability to mate ccur ne ng of nce, and other wledge,		**ESS2-6) (Science and Engineering Practices)** **Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century (MS-ESS3-5) (Crosscutting Concepts)**	among variables and identify any changes that may be related to the passing of air masses. Use digital technology to record the data then compare their observations with students in other schools. (Measurement & Data). - Compare the above weather data to real-time data found on a website, such as NOAA Weather. List the possible reasons why there may be differences in the data collected locally and that found on the website. (Information Literacy; Writing Standards) (Life and Career Skills) - Create and analyze climatographs (graph of the average monthly temperature and rainfall quantities for a location) for coastal and inland locations to identify and generalize patterns. Average monthly data for this activity may be acquired from the Office of the New Jersey State Climatologist's homepage. (Information Literacy). - Construct and/or use simple weather instruments (barometer, wind vane, sling psychrometer, thermometer, rain gauge, anemometer) - Use the data collected above and a real-time satellite image of either New Jersey or the Northeast region, forecast when the weather might be expected to change. Support the forecast with data and observations.	Science Portfolios (when relevant) Science Binder/Journal **SUMMATIVE** End of Unit test (benchmark) Science Portfolios (when relevant) Performance Assessments on the activities described (alternative assessments)	

rstanding havior and hat visely in d activities.			- Apply yearly data to plot the changes in precipitation and temperature over the past 30 years, and identify any changes during that time period. Create a statement about the climate of New Jersey, and explain why this statement is only a generalization for the state based on the variations in the climate across the state. (Measurement & Data). - Confirm the results of the above activity with satellite images of sea surface temperature and wind vectors. - Identify the current found in the Atlantic Ocean off the coast of New Jersey, and identify where it came from and where it is going. - Using printed materials, and other sources, review how gyres play an important role influencing air temperature, weather, climate, world exploration, and commerce. (Reading Informational).		

Components

Themes	__**x**__ Global Awareness _____Financial, Economic, Business, and Entrepreneurial Literacy _____ Civic Litera _____ Health literacy
Skills	_____ Creativity and Innovation _____ Critical Thinking and Problem Solving _____ Communication and Collabo __x___ Information Literacy ___x___ Media Literacy ___x___Life and Career Skills
nary Connections	• Reading Informational Text: RST.6-8.1-10 • Writing Standards: WHST.6-8.1-10

	● Speaking and Listening: SL.6.1-6 ● Measurement & Data: 6.NS.3, 6.EE.9, 6.SP.1-3, 6.SP.4-5
of Technology	Computers, Use of online resources linked to school weather station to gather and interpret weather data. Interpr use of climate data sourced from online resources to use Excel/spreadsheet programs in creation of climate graphs Multimedia projects. *NJSLS 8.1 – Educational Technology.*
	For Teachers: Supplies for activities/labs, FOSS manuals, BrainPop materials, PowerPoint presentations, NOAA teac materials, **http://www.state.nj.us/education/cccs/21cu/5/** For Students: FOSS kits, laptops, models/templates, BrainPop materials (print and online), Google Classroom assign Climate Data website.
Accommodations ations	Modifications for Special Education/504/At-Risk students: Provide extra web resources for weather concepts, simp research tools for weather systems, level appropriate materials and media (e.g. shorter articles or different article topic), additional explanatory handouts for modelling and new vocabulary reference sheets, partnering with stude Comply with all IEP modifications and 504 plans, Climate graph components shared between members of a group. Modifications for EL students: Provide additional models for climate graphs, use of electronic translation (laptops) with native speakers, providing visual/translated cards with weather and climate terms. Modifications for Gifted students: Additional articles/material on each topic, handout including links for additiona and online programs, assignment to be student helpers, video demonstrations of current and climate pattern caus influenced by landforms like mountains, islands. Optional additional climate graph charting differences between ch and nearby city influenced by different landforms, e.g. across a mountain range or body of water.

Subject Area: Science

: 6	Brief Summary of Unit: Students will develop an understanding of the relative motions of the earth, moon,
e and Its Stars; Earth and stem	using and creating dynamic models and analyzing data. Students will be able to explain the role of gravity i determining these motions.

Objective	Standards	Skills – SWBAT	Suggested Activities	Suggested Assessments	Pa
he tion of the n, and ky can be scribed, d th models. solar art of the alaxy, of many e S-ESS1-2) tem ave a disk of , drawn gravity. tem e sun and f objects, nets, their asteroids in orbit un by its	MS-ESS1-1 MS-ESS1-2 MS-ESS1-3	Generate and analyze evidence (through simulations or long term investigations) to explain why the Sun's apparent motion across the sky changes over the course of a year. (MS-ESS1-2) Develop and use a model of the Earth-sun-moon system to describe the cyclic patterns of lunar phases, eclipses of the sun and moon, and seasons. (MS-ESS1-1) (Science and Engineering Practices) Develop and use a model that shows how gravity causes smaller objects to orbit around larger objects at increasing scales, including the gravitational force of the sun causes the planets and other bodies to orbit around it holding together the solar system. (MS-ESS1-1) (Science and Engineering Practices) Analyze and interpret data to determine scale properties of objects in the solar system. (MS-ESS1-3) (Crosscutting Concepts)	- Draw models of the sun's pathway in New Jersey for all seasons. (Measurement & Data). - Use classroom materials, such as lamps and spheres, to create explanatory models for the variation of shadows during the course of a year for various locations in the Northern and Southern Hemispheres. - Use basic physical science materials, such as washers and string, to model centripetal motion, and collect data to assist in predicting what would happen if gravity increased, decreased, or was taken away. - Create two scale models of the solar system- one for size of objects, and one for distance to the sun. Discuss the complications in making one model for both size and distance. (Measurement & Data). - Use online resources, such as those from NASA, to develop a table of comparing characteristics of the planets. Use the details of this table	**FORMATIVE** Teacher observations Diagnostic/Constructive quizzes and tests: taken online for instant score feedback NJSLS Resources: Classroom Application Assessments Learning/Response Logs: Daily Do-Now Assignments Anecdotal Records Completed Labs and Projects Student Responses	5 v (su Se Oc MS sh co th lea De all ob da co

pull on SS1-2), **f the solar xplain e sun and rth's spin n direction rt term but e to its the sun. are a t tilt and y the ntensity of ifferent h across S-ESS1-1)**		**Develop and use a model to describe the role of gravity in the motions within galaxies and the solar system. (MS-ESS1-2)**	to define the patterns in the characteristics of objects in the solar system. (Reading Informational; Measurement & Data). - Analyze data on sunrise and sunset times (in terms of length of daylight) and describe patterns. Explain the reason for the patterns by using models or computer simulations of the Earth and Sun. (Information Literacy; Reading Informational; Measurement & Data). - Make a model of how the Earth rotates on its tilted axis as it revolves around the Sun. - Create a poster that explains how the concept of time is derived from Earth's rotation and revolution. (Reading Informational, Communication & Collaboration) - Model the relationships (basic Newtonian mechanics) between the orbiting motions of the planets around the Sun, and moons around the planets. - Using a variety of resources (e.g., NASA photographs, computer simulations), create tables and charts that allow for easy comparison of the physical properties of planets (e.g., distance from the Sun, size, temperature, composition, surface features). (Measurement & Data).	Science Portfolios (when relevant) Science Binder/Journal **SUMMATIVE** End of Unit test (benchmark) Science Portfolios (when relevant) Performance Assessments on the activities described (alternative assessments)	

Components

Themes	_____ Global Awareness _____Financial, Economic, Business, and Entrepreneurial Literacy _____ Civic Literac _____ Health literacy
Skills	_____ Creativity and Innovation _____ Critical Thinking and Problem Solving ___x__ Communication and Collabo ___x__ Information Literacy _____ Media Literacy _____Life and Career Skills
nary Connections	● Reading Informational Text: RST.6-8.1-10 ● Measurement & Data: 6.NS.3, 6.EE.9, 6.SP.1-3, 6.SP.4-5
of Technology	Computers, Use of online resource articles to find information about assigned body system and senses. Interpretat of solar system data sourced from online resources to use Excel/spreadsheet programs and online interactive mod space.com. Multimedia projects. *NJSLS 8.1 – Educational Technology.*
	For Teachers: Supplies for activities/labs, FOSS manuals, BrainPop materials, PowerPoint presentations, Astronom at the University of Nebraska-Lincoln Basic Coordinates and Seasons Lab. For Students: FOSS kits, laptops, models/templates, BrainPop materials (print and online), Google Classroom assig human body websites.
Accommodations ations	Modifications for Special Education/504/At-Risk students: Provide opportunities for partner-work with the scale m online calculators for the asteroid project, level appropriate materials and media (e.g. shorter articles or different a same topic), additional explanatory handouts for modelling and new vocabulary reference sheets, partnering with helpers, Comply with all IEP modifications and 504 plans, assigned to a group on otherwise individual projects. Divi model components among members of group (i.e. one student models sun motion, one moon, one earth). Modifications for EL students: Use of electronic translation (laptops), partnering with native speakers, providing visual/translated cards with solar system and gravity terms, provide opportunities for research of the solar system language. Modifications for Gifted students: Additional articles/material on each topic, handout including links for additional and online programs, assignment to be student helpers, video demonstrations of current and climate pattern caus influenced by landforms like mountains, islands. Optional additional celestial motion model component: addition o Mercury to model relative motion using data from the same student resources.

Subject Area: Science

: 6 **: Solar-Powered Car**	Brief Summary of Unit: Students will complete an engineering project in which they will build, test, and rac powered car. (*Science and Engineering Practices*)

Objective	Standards	Skills – SWBAT	Suggested Activities	Suggested Assessments	Pa
ecisely a criteria nts can be more t the ution will . of ncludes n of nciples and nt nat are possible IS-ETS1-1) stematic olutions to how et the onstraints . (MS- -ETS1-3) arts of utions can to create at is better ts	MS-ETS1-1 MS-ETS1-2 MS-ETS1-3	**Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions. (MS-ETS1-1) (Disciplinary Core Idea)** **Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem. (MS-ETS1-2)** **Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success. (MS-ETS1-3)**	- With a group, design and build a solar-powered / battery powered car that can successfully complete a 20 meter track, using both provided kit parts and modifying using custom parts. (Critical Thinking). (Science and Engineering Practices) (Crosscutting Concepts) - Track data, record results of tests and possible designs by maintaining a portfolio. (Writing standards, Measurement & Data). - Perform trials and tests for the car and use data from those tests to make improvements. (Critical Thinking, Creativity & Innovation; Communication & Collaboration; Life and Career Skills). - Apply knowledge about gear ratios to select an ideal gear size relative to the weight of the car and size of the wheels. (Critical Thinking, Creativity & Innovation).	**FORMATIVE** Teacher observations NJSLS Resources: Classroom Application Assessments Learning/Response Logs: Daily Do-Now Assignments Anecdotal Records Completed Labs and Projects Science Portfolios Science Binder/Journal **SUMMATIVE**	15 (su Jar 2-3 ses we co wi un

s. (MS- **e design form the ll tests, he cs of the erformed ach test useful for the cess—that hose cs may be into the (MS-ETS1-**				Portfolios Performance Assessments on the activities described (alternative assessments)	

Components

Themes	_____ Global Awareness _____Financial, Economic, Business, and Entrepreneurial Literacy _____ Civic Literac _____ Health literacy
Skills	___x__ Creativity and Innovation ___x__ Critical Thinking and Problem Solving ___x__ Communication and Colla _____ Information Literacy _____ Media Literacy __x__Life and Career Skills
nary Connections	Measurement & Data: 6.NS.3, 6.EE.9, 6.SP.1-3, 6.SP.4-5 ● Writing Standards: WHST.6-8.1-10
of Technology	Computers, Use of online resources to gather and interpret data, use of online simulations. Multimedia projects. *M* *Educational Technology.*
	For Teachers: Supplies for activities/labs, FOSS manuals, PowerPoint presentations, photo and video examples. For Students: FOSS kits, laptops, models/templates, solar panels, car kits, tools
Accommodations ations	Modifications for Special Education/504/At-Risk students: Providing models and templates of solar powered cars, p pre-built parts i.e. axle assembly, pre-selected gear ratios, provide students with opportunities to view examples of cars that worked, partnering with student helpers, Comply with all IEP modifications and 504 plans. Modifications for EL students: Use of electronic translation (laptops), partnering with native speakers, providing visual/translated cards with engineering terms.

	Modifications for Gifted students: Assignment as student helper and assistant lab safety wardens, handouts on ad ratio strategies and links for research/simulations.

Subject Area: Science

: 6	Brief Summary of Unit: Students will model the structure and function of cells and body systems, and explo brain collects and interprets different kinds of information about the world through its senses.
unction and Information	

Objective	Standards	Skills – SWBAT	Suggested Activities	Suggested Assessments	Pa
gs are ells, which st unit that o be alive. may e single lar) or nt l types of llular). **special e or nctions, membrane undary what aves the -2)** **ar he body is multiple ubsystems. stems are ls that er to form rgans that**	**MS-LS1-1** **MS-LS1-2** **MS-LS1-3** **MS-LS1-8** **SLO-4**	**Conduct an investigation to provide evidence that living things are made of cells; either one cell or many different numbers and types of cells. (MS-LS1-1) (Crosscutting Concepts)** **Develop and use a model to describe the function of a cell as a whole and ways parts of cells contribute to the function (MS-LS1-2) (Science and Engineering Practices)** **Use argument supported by evidence for how the body is a system of interacting subsystems composed of groups of cells (MS-LS1-3)** **Develop a model to explain how senses change energy coming from the environment (light, sound waves, chemicals in gases or food, heat or touch/pressure) into electrical signals in the nerves that go into the brain and spinal cord. (MS-LS1-8) (Crosscutting Concepts)** **Gather and synthesize information that sensory receptors respond to stimuli by sending messages to the brain for immediate behavior or**	- Construct conceptual models to clarify the levels of organization for structure and function in living things (cells, tissues, organs, organ systems). - Collaborate between Science and ELA to write a persuasive letter to a "Boss" about why they, as an assigned body system, are essential for operation of a healthy body and should not be "fired". (Writing standards, Reading Informational; Health Literacy). - Observe and identify organelles of plant and animal cells, using a microscope. - Create a cell theme park project (choose a theme and assign each cell part within the theme). - Create a miniature human body system using recycled materials. (Global Awareness). - Students imagine themselves as their favorite food, a red blood cell, a virus, air, etc. and write a short	**FORMATIVE** Teacher observations Diagnostic/Constructive quizzes and tests: taken online for instant score feedback NJSLS Resources: Classroom Application Assessments Learning/Response Logs: Daily Do-Now Assignments Anecdotal Records Completed Labs and Projects Student Responses	4 v (su Ap

ed for dy MS-LS1-3) **eceptor different ro- echanical, ansmitting als that nerve cells The hen the brain, mmediate memories. SLO 4)**		**storage as memories. (MS-LS1-8) (Crosscutting Concepts)**	story about what happens when the food, etc. enters the human body. They trace the object throughout the human body, explaining where the object stops and for what purpose and present their short story at a reading in front of an audience. (Speaking & Listening). -Create a working lung and diaphragm model using balloons. - Produce a pocket-mod book about the human body systems. - Create a 30-day diet and exercise program. Include three meals per day, snacks, drinks, and a weekly exercise routine. (Health Literacy; Reading Informational; Writing standards; Life and Career Skills). - Work as construction teams to build a 3-D model of a cell. They are required to label the organelles with names and functions (Communication & Collaboration). - Create a pocket-mod book: Adventures of a Cell (Writing standards)	Science Portfolios (when relevant) Science Binder/Journal **SUMMATIVE** End of Unit test (benchmark) Science Portfolios (when relevant) Performance Assessments on the activities described (alternative assessments)	

Components

Themes	___**x**__ Global Awareness _____Financial, Economic, Business, and Entrepreneurial Literacy _____ Civic Litera ___x__ Health literacy
Skills	_____ Creativity and Innovation _____ Critical Thinking and Problem Solving ___x__ Communication and Collabo _____ Information Literacy _____ Media Literacy ___x__Life and Career Skills
nary Connections	● Reading Informational Text: RST.6-8.1-10 ● Writing Standards: WHST.6-8.1-10 ● Speaking and Listening: SL.6.1-6
of Technology	Computers, Use of online resources to gather and interpret data. Interpretation and use of solar system data sourc online resources to use Excel/spreadsheet programs and online interactive models from space.com. Multimedia pr *NJSLS 8.1 – Educational Technology.*
	For Teachers: Supplies for activities/labs, FOSS manuals, BrainPop materials, PowerPoint presentations For Students: FOSS kits, laptops, models/templates, BrainPop materials (print and online), Google Classroom assign online simulations.
Accommodations ations	Modifications for Special Education/504/At-Risk students: Providing diagrams of the cell structures to use through projects, provide additional resources on body systems to use throughout the project, level appropriate materials (e.g. shorter articles or different article on same topic), additional explanatory handouts for modelling and new voc reference sheets, partnering with student helpers, Comply with all IEP modifications and 504 plans, assigned to a g otherwise individual projects. Division of model components among members of group (i.e. one student models su one moon, one earth). Modifications for EL students: Multimedia resources on structure and function of the cell, use of electronic transla (laptops), partnering with native speakers, providing visual/translated cards with cell and body systems terms, prov opportunities for researching body systems in student's native language. Modifications for Gifted students: Additional articles/material on each topic, handout including links for additional and online programs, assignment to be student helpers, video demonstrations of current and climate pattern caus influenced by landforms like mountains, islands. Optional additional celestial motion model component: addition o Mercury to model relative motion using data from the same student resources.

Subject Area: Science

: 6 **velopment, and on of Organisms**	Brief Summary of Unit: Students will explore and identify the various ways adaptations give living things an when facing pressure in their environment. Students will demonstrate an understanding of basic genetic fa underlie adaptations and use their knowledge to model natural and artificial genetic variation.

tent/Objective	Standards	Skills – SWBAT	Suggested Activities	Suggested Assessments	Pa
eproduce, either sexually and transfer their mation to their S-LS3-2) age in characteristic at increase the odds of . (MS-LS1-4) duce in a variety of imes depending on vior and specialized reproduction. (MS-LS1- ors as well as local ffect the growth of the (MS-LS1-5) cated in the s of cells, with each pair containing two ach of many distinct distinct gene chiefly production of specific ich in turn affects the ndividual. Changes o genes can result in roteins, which can affect s and functions of the	MS-LS1-4 MS-LS1-5 MS-LS3-1 MS-LS3-2 MS-LS4-5	Use argument based on empirical evidence and scientific reasoning to support an explanation for how characteristic animal behaviors and specialized plant structures affect the probability of successful reproduction of animals and plants respectively. (MS-LS1-4) (Crosscutting Concepts) Construct a scientific explanation based on evidence for how environmental and genetic factors influence the growth of organisms. (MS-LS1-5) (Science and Engineering Practices) Develop and use a model to describe why structural changes to genes (mutations) located on chromosomes may affect proteins and may result in harmful, beneficial, or	- Research populations of animals that have been hunted or exploited over time. (Reading Informational). - Use authentic data to determine the trends in population numbers, and consider the specific reasons for the decline in these populations. Present their finding in a multimedia presentation. (Measurement & Data). - As a class, determine which threats have the most dramatic impact on endangered species in certain regions of the world using the data provided. (Reading Informational). - Take an inventory of their own genetic traits (attached earlobe, tongue roll, widows peak,etc.) and compare those inventories with other students in groups and make a data table. - Make a comparison chart to show how various animals adapt to different environments. - In a PowerPoint presentation, inform how given traits can be achieved (and can occur in higher frequencies) by selective breeding	**FORMATIVE** Teacher observations Diagnostic/Constructive quizzes and tests: taken online for instant score feedback NJSLS Resources: Classroom Application Assessments Learning/Response Logs: Daily Do-Now Assignments Anecdotal Records Completed Labs and Projects	6-8 (su De Fe

d thereby change traits. **inherited traits ent and offspring arise differences that result set of chromosomes re genes) inherited.** **eproducing organisms, contributes half of the ed (at random) by the dividuals have two of some and hence two h gene, one acquired rent. These versions tical or may differ from (MS-LS3-2)** **o variations that arise reproduction, genetic can be altered because . Though rare, ay result in changes to and function of me changes are thers harmful, and some e organism. (MS-LS3-1)** **election, humans have to influence certain cs of organisms by eding. One can choose ntal traits determined hich are then passed on (MS-LS4-5)**		**neutral effects to the structure and function of the organism. (MS-LS3-1) (Science and Engineering Practices)** **Develop and use a model to describe why asexual reproduction results in offspring with identical genetic information and sexual reproduction results in offspring with genetic variation. (MS-LS3-2)** **Gather and synthesize information about the technologies that have changed the way humans influence the inheritance of desired traits in organisms. (MS-LS4-5)**	- Create a two minute commercial that explains the process of selective breeding with respect to your product; show the process of how you can select certain traits to breed and how generations can change over time. (Media Literacy, Speaking & Listening; Communication & Collaboration; Reading Informational). - Breed virtual or live organisms in the classroom (plants, fruit flies, mealworms, etc.) and document the entire process. Suggested: Monster Maker project. (Communication & Collaboration; Critical Thinking & Problem Solving; Creativity & Innovation). - Monitor the different variations found among organisms of the same kind (color, size, etc.). (Critical Thinking & Problem Solving). - Observe their bred organisms of the same kind and describe how their physical appearances differ in a journal or a student-created nature documentary. (Writing Standards). - Record the class traits on tree leaf cut-outs and place their leaves on a large tree whose branches each represent a different trait. (Communication & Collaboration). - Describe how a species has changed, over time, in response to an environmental change (ex. how are 2 mammals - a grizzly and polar bear - different? how do these changes help them survive in their environment? did	Student Responses Science Portfolios (when relevant) Science Binder/Journal **SUMMATIVE** End of Unit test (benchmark) Science Portfolios (when relevant) Performance Assessments on the activities described (alternative assessments)	

			the change happen before or after they were born? etc.). (Reading Informational; Writing standards).		

Components

Themes	_____ Global Awareness _____Financial, Economic, Business, and Entrepreneurial Literacy _____ Civic Literac _____ Health literacy
Skills	___x__ Creativity and Innovation ___x__ Critical Thinking and Problem Solving ___x__ Communication and Colla _____ Information Literacy ____x__ Media Literacy _____Life and Career Skills
nary Connections	● Reading Informational Text: RST.6-8.1-10 ● Writing Standards: WHST.6-8.1-10 ● Speaking and Listening: SL.6.1-6 ● Measurement & Data: 6.NS.3, 6.EE.9, 6.SP.1-3, 6.SP.4-5
of Technology	Computers, Use of online resources for finding informational texts and data on endangered species. Use of video e software for commercial project. Multimedia projects. *NJSLS 8.1 – Educational Technology.*
	For Teachers: Supplies for activities/labs, FOSS manuals, BrainPop materials, PowerPoint presentations For Students: FOSS kits, laptops, models/templates, BrainPop materials (print and online), Google Classroom assign "Who Wants to Live A Million Years" adaptation/survival game.
Accommodations ations	Modifications for Special Education/504/At-Risk students: Provide opportunities to play the bunny rabbit genetics game, providing additional videos on genetics and adaptation concepts, level appropriate materials and media (e.g articles or different article on same topic), additional explanatory handouts for modelling and new vocabulary refe sheets, partnering with student helpers, Comply with all IEP modifications and 504 plans. Modifications for EL students: Use of electronic translation (laptops), partnering with native speakers, providing visual/translated cards with terms related to genetics, provide opportunities for research of genetics concepts in n language. Modifications for Gifted students: Additional articles/material on each topic, handout including links for additional and online programs, assignment to be student helpers, additional generations or partners for cross-breeding proj

Subject Area: Science

: 6 **Electromagnetic Radiation**	Brief Summary of Unit: Students will experiment with the behavior of waves including light rays and explai their properties create the phenomena of color, refraction, reflection, and changes in sound.

Objective	Standards	Skills – SWBAT	Suggested Activities	Suggested Assessments	Pa
ve has a ttern with velength, nd MS-PS4-1) **e needs a ough which ted. (MS-** **hines on is sorbed, or through epending t's the olor) of the 4-2)** **t light e traced as , except at ween nsparent g., air and d glass) ght path PS4-2)**	**MS-PS4-1** **MS-PS4-2** **MS-PS4-3**	**Use mathematical representations to describe a simple model for waves that includes how the amplitude of a wave is related to the energy in a wave. (MS-PS4-1) (Science and Engineering Practices)** **Develop and use a model to describe that waves are reflected, absorbed, or transmitted through various materials. (MS-PS4-2) (Crosscutting Concepts)** **Explain why we can see the color of an object in space but cannot hear sound. (MS-PS4-2)** **Use ray diagrams to explain how refracted light and reflected light bring images of distant objects closer and enlarge things that are too small to be observed with an unaided eye. (MS-PS4-2)** **Integrate qualitative scientific and technical information to support the claim that digitized signals are a more reliable way to encode and transmit information than analog signals. (MS-PS4-3) (Crosscutting Concepts) (Science and Engineering Practices)**	- Predict the path of reflected or refracted light using reflecting and refracting telescopes as examples. (Critical Thinking). - Investigate many properties of light through learning centers: Diffraction Action, Did You See the Light?, CD Rainbows, Spinning Colors, Bending Light, and Between Light and Heat. - Apply knowledge about thermodynamics to design a structure that prevents heat movement and protects a spacecraft. (Critical Thinking, Creativity & Innovation). - Interact with online simulations such as "Gizmo's Heat Transfer" and Conduction. Examine the transfer of heat energy through a material and explore how the temperature difference affects the rate of heat transfer. - Collect real-time observations and data to relate conduction,	**FORMATIVE** Teacher observations Diagnostic/Constructive quizzes and tests: taken online for instant score feedback NJSLS Resources: Classroom Application Assessments Learning/Response Logs: Daily Do-Now Assignments Anecdotal Records Completed Labs and Projects Student Responses	3-4 (su Se De

el of light explaining olor, and y- ending of face dia. (MS- **cause light rough not be a , like er waves.** **nals (sent es) are a e way to transmit (MS-PS4-**		**Create a simple model that explains the mechanism for how wave pulses are used to save, transmit, and receive information. (MS-PS4-3)**	convection and radiation phenomena to the evolution of a hurricane. Share and discuss with the rest of class. (Measurement & Data) - Create a multimedia presentation (Life and Career Skills), based on the model and the principles of conduction, convection and radiation.	Science Portfolios (when relevant) Science Binder/Journal **SUMMATIVE** End of Unit test (benchmark) Science Portfolios (when relevant) Performance Assessments on the activities described (alternative assessments)	

Components

Themes	_____ Global Awareness _____Financial, Economic, Business, and Entrepreneurial Literacy _____ Civic Literac _____ Health literacy
Skills	___x__ Creativity and Innovation ___x__ Critical Thinking and Problem Solving _____ Communication and Collab _____ Information Literacy _____ Media Literacy ___x___Life and Career Skills
nary Connections	Measurement & Data: 6.NS.3, 6.EE.9, 6.SP.1-3, 6.SP.4-5
of Technology	Computers, Use of online resources to gather and interpret data, use of online simulations. Multimedia projects. *M* *Educational Technology.*
	For Teachers: Supplies for activities/labs, FOSS manuals, BrainPop materials, PowerPoint presentations For Students: FOSS kits, laptops, models/templates, BrainPop materials (print and online), Google Classroom assign online simulations.

Accommodations ations	Modifications for Special Education/504/At-Risk students: Provide additional multimedia resources for reflection a refraction concepts, provide opportunities for simpler version of Energy Basics simulation, level appropriate mater media (e.g. shorter articles or different article on same topic), additional explanatory handouts for modelling and r vocabulary reference sheets, partnering with student helpers, Comply with all IEP modifications and 504 plans, modified/simplified lab report templates and assistance extra assistance with lab stations. Modifications for EL students: Use of electronic translation (laptops), partnering with native speakers, providing visual/translated cards with waves and electromagnetic terms. Modifications for Gifted students: Additional articles/material on each topic, handout including links for additional and online programs, assignment to be student helpers, project comparing digital and analogue signals for music p and/or video.