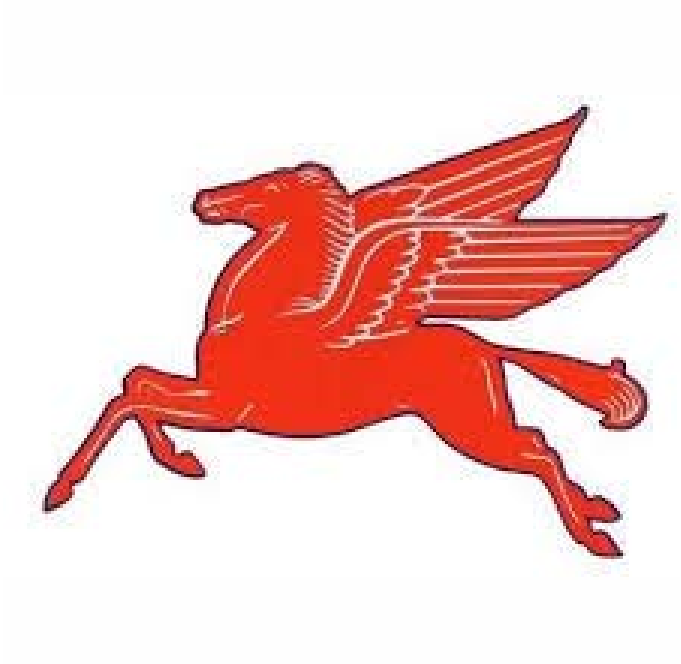
Curriculum Management System

PAULSBORO PUBLIC SCHOOLS



Science Curriculum- Sixth Grade

UPDATED JUNE 2016

For adoption by all regular education programs as specified and
for adoption or adaptation by all Special Education Programs in
accordance with Board of Education Policy.

Board Approved: September 2016

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Paulsboro Public Schools

Mission Statement

The mission of the Paulsboro School District is to provide each student the educational opportunities to assist in attaining their full potential in a democratic society. Our instructional programs will take place in a responsive, community based school system that fosters respect among all people. Our expectation is that all students will achieve the New Jersey Core Curriculum Content Standards (NJCCCS) at every grade level.

New Jersey State Department of Education
21st Century College and Career Readiness Standards

The 12 Career Ready Practices

These practices outline the skills that all individuals need to have to truly be adaptable, reflective, and proactive in life and careers. These are researched practices that are essential to career readiness.

CRP1. Act as a responsible and contributing citizen and employee. **CRP2.** Apply appropriate academic and technical skills. **CRP3.** Attend to personal health and financial well-being. **CRP4.** Communicate clearly and effectively and with reason. **CRP5.** Consider the environmental, social and economic impacts of decisions. **CRP6.** Demonstrate creativity and innovation. **CRP7.** Employ valid and reliable research strategies. **CRP8.** Utilize critical thinking to make sense of problems and persevere in solving them. **CRP9.** Model integrity, ethical leadership and effective management. **CRP10.** Plan education and career paths aligned to personal goals.
CRP11. Use technology to enhance productivity. **CRP12.** Work productively in teams while using cultural global competence.

9.1 Personal Financial Literacy
This standard outlines the important fiscal knowledge, habits, and skills that must be mastered in order for students to make informed decisions about personal finance. Financial literacy is an integral component of a student's college and career readiness, enabling students to achieve fulfilling, financially-secure, and successful careers.

9.2 Career Awareness, Exploration, and Preparation
This standard outlines the importance of being knowledgeable about one's interests and talents, and being well informed about postsecondary and career options, career planning, and career requirements.
http://www.state.nj.us/education/cccs/2014/career/

MODIFICATIONS

Special Education:
Students Hands on activity, cooperative learning, peer tutoring, extended time, reteach in utilizing various methods. Utilize remediation resources which include assessment and intervention, in planning and instruction.

English Language Learners:
Provide hands-on activities and explanations. Use reduced text, so that print is not so dense. Assess comprehension through demonstration or other alternative means (gestures, drawings). Give instructions/directions in writing and orally. Use of translation dictionaries to locate words in the native language.
Use English Learners resources such as study guides, assessments and a visual glossary.

At-Risk Students:
Hands on activities cooperative learning, reteach using various methods. Make use of remediation lessons and quizzes when appropriate.

Gifted and Talented Students:
Utilize Pre-AP Resources such as the pacing, assignment and best practices guide.

Reading Unit	Reading Standards	Writing Unit	Writing Standards	Speaking & Listening Standards	Language Standards	Foundational Skills Standards
Launching Reading with Experienced Readers	RL.6.1, RL.6.2, RL.6.5	Launching Writing Workshop	W.6.3, W.6.4	SL.6.1	L.6.2, L.6.4	RF.6.3, RF.6.4
Following Characters into Meaning	RL.6.1, RL.6.2, RL.6.5, RL.6.6	Narrative Craft Writing	W.6.3, W.6.4, W.6.5	SL.6.1, SL.6.3	L.6.1, L.6.3, L.6.4	RF.6.3, RF.6.4
Nonfiction Reading	RI.6.4, RI.6.8, RI.6.9	Informational Writing	W.6.2, W.6.5, W.6.8	SL.6.1, SL.6.2	L.6.1, L.6.4, L.6.5, L.6.6	RF.6.3, RF.6.4
Nonfiction Research Projects	RI.6.1, RI.6.4, RI.6.5, RI.6.6, RL.6.4	Research Reports	W.6.2, W.6.5, W.6.6, W.6.7, W.6.9	SL.6.1, SL.6.4	L.6.3, L.6.4, L.6.5, L.6.6	RF.6.3, RF.6.4
Historical Fiction Book Clubs	RL.6.2, RL.6.3, RL.6.4, RI.6.3	Research Reports	W.6.1, W.6.4, W.6.5, W.6.6, W.6.7, W.6.10	SL.6.1, SL.6.2	L.6.4, L.6.5, L.6.6	RF.6.3, RF.6.4
Interpretation Text Sets	RI.6.1, RI.6.3, RI.6.4, RI.6.5, RI.6.8, RL.6.3	Research Based Argument Writing	W.6.1, W.6.4, W.6.5, W.6.10	SL.6.1, SL.6.4	L.6.4, L.6.5, L.6.6	RF.6.3, RF.6.4
Informational Reading	RI.6.4, RI.6.6, RI.6.7, RL.6.7, RL.6.4	Research Based Argument Writing	W.6.1,W.6.4, W.6.5, W.6.10	SL.6.1, SL.6.3, SL.6.5	L.6.4, L.6.5, L.6.6	RF.6.3, RF.6.4
Test Preparation	RI.6.2, RI.6.4, RI.6.10, RL.6.3	Test Preparation	W.6.5, W.6.9, W.6.10	SL.6.1	L.6.1, L.6.4, L.6.5, L.6.6	RF.6.3, RF.6.4
Fantasy Fiction or Author Study	Rl.6.9, RL.6.10	Shaping Texts: Memoir	W.6.5, W.6.10	SL.6.1, SL.6.6	L.6.4, L.6.5, L.6.6	RF.6.3, RF.6.4

Scope and Sequence

Quarter 1 – Grade _6_

Big Idea: From Molecules to Organisms: Structures and Processes

Disciplinary Core Ideas

Structure and Function

- All living things are made up of cells, which is the smallest unit that can be said to be alive. An organism may consist of one single cell (unicellular) or many different numbers and types of cells (multicellular). (MS-LS1-1)

-Within cells, special structures are responsible for particular functions, and the cell membrane forms the boundary that controls what enters and leaves the cell. (MS-LS1-2)

-In multicellular organisms, the body is a system of multiple interacting subsystems. These subsystems are groups of cells that work together to form tissues and organs that are specialized for particular body functions. (MS-LS1-3)

LS1.B: Growth and Development of Organisms

-Animals engage in characteristic behaviors that increase the odds of reproduction. (MS-LS1-4)

-Plants reproduce in a variety of ways, sometimes depending on animal behavior and specialized features for reproduction. (MS-LS1-4)

-Genetic factors as well as local conditions affect the growth of the adult plant. (MS-LS1-5)

LS1.C: Organization for Matter and Energy Flow in Organisms

-Plants, algae (including phytoplankton), and many microorganisms use the energy from light to make sugars (food) from carbon dioxide from the atmosphere and water through the process of photosynthesis, which also releases oxygen. These sugars can be used immediately or stored for growth or later use. (MS-LS1-6)

Scope and Sequence

Quarter 2 – Grade _6_

Big Idea: Biological Evolution: Unity and Diversity

Disciplinary Core Ideas

LS4.A: Evidence of Common Ancestry and Diversity

-The collection of fossils and their placement in chronological order (e.g., through the location of the sedimentary layers in which they are found or through radioactive dating) is known as the fossil record. It documents the existence, diversity, extinction, and change of many life forms throughout the history of life on Earth. (MS-LS4-1)

-Anatomical similarities and differences between various organisms living today and between them and organisms in the fossil record, enable the reconstruction of evolutionary history and the inference of lines of
evolutionary descent. (MS-LS4-2)

-Comparison of the embryological development of different species also reveals similarities that show relationships not evident in the fully-formed anatomy. (MS-LS4-3)

LS4.B: Natural Selection

-Natural selection leads to the predominance of certain traits in a population, and the suppression of others. (MS-LS4-4)

-In artificial selection, humans have the capacity to influence certain characteristics of organisms by selective breeding. One can choose desired parental traits determined by genes, which are then passed on to offspring. (MS-LS4-5)

LS4.C: Adaptation

Big Idea: Ecosystems: Interactions, Energy, and Dynamics

Disciplinary Core Ideas

LS2.A: Interdependent Relationships in Ecosystems

-Organisms, and populations of organisms, are dependent on their environmental interactions both with other living things and with nonliving factors. (MS-LS2-1)

-In any ecosystem, organisms and populations with similar requirements for food, water, oxygen, or other resources may compete with each other for limited resources, access to which consequently constrains their growth and reproduction. (MS-LS2-1)

-Growth of organisms and population increases are limited by access to resources. (MS-LS2-1)

-Similarly, predatory interactions may reduce the number of organisms or eliminate whole populations of organisms. Mutually beneficial interactions, in contrast, may become so interdependent that each organism requires the other for survival. Although the species involved in these competitive, predatory, and mutually beneficial interactions vary across ecosystems, the patterns of interactions of organisms with their environments, both living and nonliving, are shared. (MS-LS2-2)

LS2.B: Cycle of Matter and Energy Transfer in Ecosystems

-Food webs are models that demonstrate how matter and energy is transferred between producers, consumers, and decomposers as the three groups interact within an ecosystem. Transfers of matter into and out of the physical environment occur at every level. Decomposers recycle nutrients from dead plant or animal

-Adaptation by natural selection acting over generations is one important process by which species change over time in response to changes in environmental conditions. Traits that support successful survival and reproduction in the new environment become more common; those that do not become less common. Thus, the distribution of traits in a population changes. (MS-LS4-6)	matter back to the soil in terrestrial environments or to the water in aquatic environments. The atoms that make up the organisms in an ecosystem are cycled repeatedly between the living and nonliving parts of the ecosystem. (MS-LS2-3) **LS2.C: Ecosystem Dynamics, Functioning, and Resilience** -Ecosystems are dynamic in nature; their characteristics can vary over time. Disruptions to any physical or biological component of an ecosystem can lead to shifts in all its populations. (MS-LS2-4) -Biodiversity describes the variety of species found in Earth's terrestrial and oceanic ecosystems. The completeness or integrity of an ecosystem's biodiversity is often used as a measure of its health. (MS-LS2-5) **LS4.D: Biodiversity and Humans** - Changes in biodiversity can influence humans' resources, such as food, energy, and medicines, as well as ecosystem services that humans rely on—for example, water purification and recycling. (secondary to MS-LS2-5) **ETS1.B: Developing Possible Solutions** -There are systematic processes for evaluating solutions with respect to how well they meet the criteria and constraints of a problem. (secondary to MS-LS2-5)

Scope and Sequence

Quarter 3 – Grade _6_

Big Idea: Motion and Stability: Forces and Interactions

Disciplinary Core Ideas

PS2.B: Types of Interactions

-The gravitational force of Earth acting on an object near Earth's surface pulls that object toward the planet's center. (5-PS2-1)

Big Idea: Matters and Its Interactions

Disciplinary Core Ideas

PS1.A: Structure and Properties of Matter

-Matter of any type can be subdivided into particles that are too small to see, but even then the matter still exists and can be detected by other means. A model showing that gases are made from matter particles that are too small to see and are moving freely around in space can explain many observations, including the inflation and shape of a balloon and the effects of air on larger particles or objects. (5-PS1-1)

-The amount (weight) of matter is conserved when it changes form, even in transitions in which it seems to vanish. (5-PS1-2)

-Measurements of a variety of properties can be used to identify materials. (Boundary: At this grade level, mass and weight are not distinguished, and no attempt is made to define the unseen particles or explain the atomic-scale mechanism of evaporation and condensation.) (5-PS1-3)

PS1.B: Chemical Reactions

-When two or more different substances are mixed, a new substance with different properties may be formed. (5-PS1-4)

-No matter what reaction or change in properties occurs, the total weight of the substances does not change. (Boundary: Mass and weight are not distinguished at this grade level.) (5-PS1-2)

Scope and Sequence

Quarter 4 – Grade _6_

Big Idea: Earth's Place in the Universe

Disciplinary Core Ideas

ESS1.A: The Universe and its Stars

-The sun is a star that appears larger and brighter than other stars because it is closer. Stars range greatly in their distance from Earth. (5-ESS1-1)

ESS1.B: Earth and the Solar System

-The orbits of Earth around the sun and of the moon around Earth, together with the rotation of Earth about an axis between its North and South poles, cause observable patterns. These include day and night; daily changes in the length and direction of shadows; and different positions of the sun, moon, and stars at different times of the day, month, and year. (5-ESS1-2)

Big Idea: Earth's Systems

Disciplinary Core Ideas

ESS2.A: Earth Materials and Systems

-Earth's major systems are the geosphere (solid and molten rock, soil, and sediments), the hydrosphere (water and ice), the atmosphere (air), and the biosphere (living things, including humans). These systems interact in multiple ways to affect Earth's surface materials and processes. The ocean supports a variety of ecosystems and organisms, shapes landforms, and influences climate. Winds and clouds in the atmosphere interact with the landforms to determine patterns of weather. (5-ESS2-1)

ESS2.C: The Roles of Water in Earth's Surface Processes

-Nearly all of Earth's available water is in the ocean. Most fresh water is in glaciers or underground; only a tiny fraction is in streams, lakes, wetlands, and the atmosphere. (5-ESS2-2)

QUARTER 1 – 15 days
Big Idea: From Molecules to Organisms
Topic: Structures and Processes

Standards: **NGSS- Life Science**

MS-LS1-1. 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-LS1-2. 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-LS1-3. Use argument supported by evidence for how the body is a system of interacting subsystems composed of groups of cells

MS-LS1-4. 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-LS1-5. Construct a scientific explanation based on evidence for how environmental and genetic factors influence the growth of organisms.

GOAL

Students will use data and conceptual models to understand how the environment and genetic factors determine the growth of an individual organism. They connect this idea to the role of animal behaviors in animal reproduction and to the dependence of some plants on animal behaviors for their reproduction.

Essential Questions	**Assessments**
1. What evidence is available to prove that living things are made of cells? 2. Evaluate the functions of a cell. 3. Argue how the body is a system of interacting subsystems composed of groups of cells. 4. How are environmental and genetic factors influenced by the growth of organisms?	**Formative:** participation in team activities, research, verbal communication, observations, experiments **Summative/Topic:** Interactive Science assessments, formal lab sheets**,** experiments
Enduring Understanding	**Resources**
Students will demonstrate grade appropriate proficiency in analyzing and interpreting data, using models, conducting investigations, and communicating information.	- Interactive Science Series - Trade Books/ Classroom Library - Manipulatives - NJ DOE Model Curriculum - NGSS www.nextgenscience.org/ - NSTA www.nsta.org/

MS-LS1-6. Construct a scientific explanation based on evidence for the role of photosynthesis in the cycling of matter and flow of energy into and out of organisms. MS-LS1-7. Develop a model to describe how food is rearranged through chemical reactions forming new molecules that support growth and/or release energy as this matter moves through an organism MS-LS1-8. Gather and synthesize information that sensory receptors respond to stimuli by sending messages to the brain for immediate behavior or storage as memories. **Career Ready Practices** CRP5. Consider the environmental, social and economic impacts of decisions. CRP6. Demonstrate creativity and innovation. CRP7. Employ valid and reliable research strategies. CRP11. Use technology to enhance productivity. CRP12. Work productively in teams while using cultural global competence.		

QUARTER 2 – 15 days
Big Idea: Biological Evolution
Topic: Unity and Diversity

Standards: NGSS Life Science

MS-LS4-1. Analyze and interpret data for patterns in the fossil record that document the existence, diversity, extinction,
and change of life forms throughout the history of life on Earth under the assumption that natural laws operate
today as in the past

MS-LS4-2. Apply scientific ideas to construct an explanation for the anatomical similarities and differences among modern
organisms and between modern and fossil organisms to infer evolutionary relationships.

MS-LS4-3. Analyze displays of pictorial data to compare patterns of similarities in the embryological development across
multiple species to identify relationships not evident in the fully formed anatomy.

MS-LS4-4. Construct an explanation based on evidence that describes how genetic variations of traits in a population
increase some individuals' probability of surviving and reproducing in a specific environment.

MS-LS4-5. Gather and synthesize information about the technologies that have changed the way humans influence the

GOAL

Students will analyze and interpret data, develop models, construct arguments, and demonstrate a deeper understanding of the cycling of matter, the flow of energy, and resources in ecosystems.

Essential Questions

1. Develop patterns in the fossil record that document the existence, diversity, extinction, and change of life forms throughout history of life on Earth.
2. Determine the anatomical similarities and differences among modern organisms and between modern and fossil organisms to infer evolutionary relationships.
3. Determine how genetic variations of traits in a population increase some individuals' probability of surviving and reproducing in a specific environment.
4. Justify how natural selection may lead to increases and decreases of specific traits in populations over time.

Assessments

Formative: participation in team activities, research, verbal communication, observations, experiments

Summative/Topic: Interactive Science assessments, formal lab sheets**,** experiments

Enduring Understanding

Students will demonstrate grade appropriate proficiency in analyzing and interpreting

Resources

- Interactive Science Series
- Trade Books/ Classroom Library
- Manipulatives
- NJ DOE Model Curriculum

inheritance of desired traits in organisms. MS-LS4-6. Use mathematical representations to support explanations of how natural selection may lead to increases and decreases of specific traits in populations over time. **Career Ready Practices** CRP5. Consider the environmental, social and economic impacts of decisions. CRP6. Demonstrate creativity and innovation. CRP7. Employ valid and reliable research strategies. CRP11. Use technology to enhance productivity. CRP12. Work productively in teams while using cultural global competence.	data, developing models, and constructing arguments.	- NGSS www.nextgenscience.org/ - NSTA www.nsta.org/

QUARTER 2 – 15 days
Big Idea: Ecosystems
Topic: Interactions, Energy, and Dynamics

Standards: NGSS Life Science

MS-LS2-1. Analyze and interpret data to provide evidence for the effects of resource availability on organisms and
populations of organisms in an ecosystem.

MS-LS2-2. Construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems.

MS-LS2-3. Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem

MS-LS2-4. Construct an argument supported by empirical evidence that changes to physical or biological components of an
ecosystem affect populations

MS-LS2-5. Evaluate competing design solutions for maintaining biodiversity and ecosystem services.

NGSS Engineering Design

MS-ETS1-1. 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.

GOAL

Students will build on their understanding of matter and energy as they study patterns of interactions among organisms within an ecosystem.

Essential Questions

1. Develop evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem.
2. Predict patterns of interactions among organisms across multiple ecosystems.
3. Compose an argument to support that populations are affects by changes to physical or biological components.

Assessments

Formative: participation in team activities, research, verbal communication, observations, experiments

Summative/Topic: Interactive Science assessments, formal lab sheets**,** experiments

Enduring Understanding

Students will demonstrate grade appropriate proficiency in asking questions, designing solutions, engaging in argument from evidence, developing and using models, and designing solutions.

Resources

- Interactive Science Series
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MS-ETS1-2. Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem. MS-ETS1-3. 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-ETS1-4. Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.		

QUARTER 3 – 15 days
Big Idea: Motion and Stability
Topic: Forces and Interactions

Standards: NGSS Physical Science

MS-PS2-1. Apply Newton's Third Law to design a solution to a problem involving the motion of two colliding objects

MS-PS2-2. Plan an investigation to provide evidence that the change in an object's motion depends on the sum of the forces on the object and the mass of the object.

MS-PS2-3. Ask questions about data to determine the factors that affect the strength of electric and magnetic forces.

MS-PS2-4. Construct and present arguments using evidence to support the claim that gravitational interactions are attractive and depend on the masses of interacting objects

MS-PS2-5. Conduct an investigation and evaluate the experimental design to provide evidence that fields exist between objects exerting forces on each other even though the objects are not in contact.

GOAL

Students will use system and system models plus stability change to understand ideas related to why some objects will keep moving and why objects fall to the ground.

Essential Questions

1. Devise a solution to a problem involving the motion of two colliding objects.
2. Show evidence that the change in an object's motion depends on the sum of the forces on the object and the mass of the object.
3. What are the factors that affect the strength of electric and magnetic forces.
4. Argue the claim that gravitational interactions are attractive and depend on the masses of interacting objects.

Assessments

Formative: participation in team activities, research, verbal communication, observations, experiments

Summative/Topic: Interactive Science assessments, formal lab sheets**,** experiments

Enduring Understanding

Students will demonstrate proficiency in asking questions, planning and carrying out investigations, designing solutions, engaging in argument from evidence, developing and using models, and constructing explanations and designing solutions.

Resources

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QUARTER 3 – 15 days
Big Idea: Matter and Its Interactions

Standards: NGSS Physical Science

MS-PS1-1. Develop models to describe the atomic composition of simple molecules and extended structures

MS-PS1-2. Analyze and interpret data on the properties of substances before and after the substances interact to determine if a chemical reaction has occurred

MS-PS1-3. Gather and make sense of information to describe that synthetic materials come from natural resources and impact society

MS-PS1-4. Develop a model that predicts and describes changes in particle motion, temperature, and state of a pure substance when thermal energy is added or removed

MS-PS1-5. Develop and use a model to describe how the total number of atoms does not change in a chemical reaction and thus mass is conserved

MS-PS1-6. Undertake a design project to construct, test, and modify a device that either releases or absorbs thermal energy

GOAL

Students will explain why some materials are attracted to each other while others are not.

Essential Questions

1. Describe the atomic composition of simple molecules and extended structures.
2. Determine if a chemical reaction has occurred before and after the substances interact.
3. Tell why synthetic materials come from natural resources.
4. Justify the total number of atoms does not change in a chemical reaction.

Assessments

Formative: participation in team activities, research, verbal communication, observations, experiments

Summative/Topic: Interactive Science assessments, formal lab sheets**,** experiments

Enduring Understanding

Students are expected to demonstrate proficiency in asking questions, planning and carrying out investigations, designing solutions, and engaging in argument.

Resources

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by chemical processes.

QUARTER 4 – 20 days
Big Idea: Earth's Place in the Universe

Standards: NGSS Earth and Space Science

MS-ESS1-1. 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-ESS1-2. Develop and use a model to describe the role of gravity in the motions within galaxies and the solar system.

MS-ESS1-3. Analyze and interpret data to determine scale properties of objects in the solar system.

MS-ESS1-4. Construct a scientific explanation based on evidence from rock strata for how the geologic time scale is used
to organize Earth's 4.6-billion-year-old history.

Career Ready Practices

CRP5. Consider the environmental, social and economic impacts of decisions.
CRP6. Demonstrate creativity and innovation.
CRP7. Employ valid and reliable research strategies.
CRP11. Use technology to enhance productivity.
CRP12. Work productively in teams while using

GOAL

Students examine the Earth's place in relation to the solar system, the Milky Way galaxy, and the universe. There is a strong emphasis on a systems approach and using models of the solar system to explain the cyclical patterns of eclipses, tides, and seasons.

Essential Questions

1. Show the cyclic patterns of lunar phases, eclipses of the sun and moon, and seasons.
2. Support the role of gravity in the motions within galaxies and the solar system.
3. Determine scale properties of objects in the solar system.
4. Show how the geologic time scale is used to organize Earth's 4.6 billion year old history.

Assessments

Formative: participation in team activities, research, verbal communication, observations, experiments

Summative/Topic: Interactive Science assessments, formal lab sheets**,** experiments

Enduring Understanding

Students are expected to demonstrate proficiency in developing and using models and analyzing and interpreting data.

Resources

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- Trade Books/ Classroom Library
- Manipulatives
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- NGSS www.nextgenscience.org/
- NSTA www.nsta.org/

cultural global competence.		

QUARTER 4 – 20 days
Big Idea: Earth's Systems

Standards: NGSS Earth and Space Science

MS-ESS2-1. Develop a model to describe the cycling of Earth's materials and the flow of energy that drives this process.

MS-ESS2-2. Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales.

MS-ESS2-3. Analyze and interpret data on the distribution of fossils and rocks, continental shapes, and seafloor structures to provide evidence of the past plate motions.

MS-ESS2-4. Develop a model to describe the cycling of water through Earth's systems driven by energy from the sun and the force of gravity

MS-ESS2-5. Collect data to provide evidence for how the motions and complex interactions of air masses results in changes in weather conditions

MS-ESS2-6. Develop and use a model to describe how unequal heating and rotation of the Earth cause patterns of

GOAL

Students will make sense of how Earth's geosystems operate by modeling the flow of energy and cycling of matter within and among different systems.

Essential Questions

1. Show and describe the cycling of Earth's materials and the flow of energy that drives this process.
2. How does the geoscience process change Earth's surface at varying time and spatial scales?
3. Provide support for how the motions and complex interactions of air masses results in changes in weather conditions.
4. Describe how unequal heating and rotation of the earth cause patterns of atmospheric and oceanic circulation that determine regional climates.

Assessments

Formative: participation in team activities, research, verbal communication, observations, experiments

Summative/Topic: Interactive Science assessments, formal lab sheets**,** experiments

Enduring Understanding

Students are expected to demonstrate proficiency in developing and using models, and planning and carrying out investigations.

Resources

- Interactive Science Series
- Trade Books/ Classroom Library
- Manipulatives
- NJ DOE Model Curriculum
- NGSS www.nextgenscience.org/
- NSTA www.nsta.org/

atmospheric and oceanic circulation that determine regional climates.		