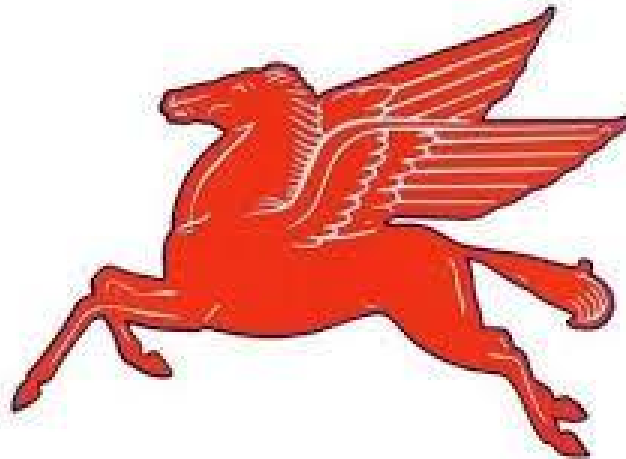


# Curriculum Management System

*PAULSBORO PUBLIC SCHOOLS*



**Science Grade 4**

**UPDATED 2022**

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: 2022**

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# Paulsboro Public Schools

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# Paulsboro Public Schools

## Mission Statement

The mission of the Paulsboro School District is to work with students, parents, educators, and community to develop excellence in education while preparing each student to be viable and productive citizens in society. Our goal is to develop the unique potential of the whole student by creating a challenging and diverse learning climate that prepares students for the 21<sup>st</sup> Century and is rich in tradition and pride.

# PACING CHART

TOPIC	# OF DAYS	DATES	COMMENTS
Module Opener	1		<i>Focus on what energy is</i>
Forces and Motion	7		Focus on how forces affect motion
Speed and Energy	7		Focus on how speed and energy are related
Energy and Transfer in Collisions	7		Focus on how energy transfers when objects collide
STEM Module Project	2		Focus on developing a design that demonstrates the relationship between energy and motion
Module Wrap-Up	1		Day to explain how a roller coaster uses energy
Module Opener	1		Focus on how energy is used
Types of Energy	7		Focus on the types of energy
Sound and Light	7		Focus on how sound and light energy are transferred
Electricity	7		Focus on how electrical energy is transferred
Heat	7		Focus in what heat is
Module Opener	1		Focus on how energy use impacts the environment
Energy from Nonrenewable Resources	7		Focus on how we get energy from nonrenewable resources
Energy from Renewable Resources	7		Focus on how we get energy from renewable resources
Impact of Energy Use	7		Focus on how our use of energy resources affect the environment
Design Energy Solutions	7		Focus on how we can design a device to convert energy

STEM Module Project	1		Focus on designing a device
Module Wrap Up	1		Day to explain how energy is used
Module Opener	1		Focus on how Earth's features change
Map Earth's Features	7		Focus on maps describing patterns in landforms
Evidence from Rocks and Fossils	7		Focus on rocks and fossils
Changes in Landscapes Over Time	7		Focus on how landscapes change
STEM Module Project	1		Focus on demonstrating soil erosion
Module Wrap Up	1		Day to explain how Earth's features change
Module Opener	1		Focus on cause and effects of earthquakes
Map Earthquakes	7		Focus on patterns of earthquakes
Model Earthquake Movement	7		Focus on modeling earthquakes movement
Reduce Earthquake Damage	7		Focus on solutions for earthquake damage
STEM Module Project	1		Focus on a design to reduce forces of earthquakes
Module Wrap-Up	1		Focus on explaining the cause to localized damage
Module Opener	1		Focus on structures of plants and animals helping them survive
Structures and Functions of a Plant	7		Focus on plant structures helping them survive, grow, and reproduce
Structures and Functions of Animals	7		Focus on animal structures helping them survive, grow, and reproduce
STEM Module Project	1		Focus on preparing a presentation
Module Wrap-Up	1		Day to explain how structures help a monarch butterfly survive
Module Opener	1		Focus on how to transmit and interpret information

Information Processing in Animals	7		Focus on how animals sense and interpret their environment
Role of Animals' Eyes	7		Focus on the role of animals eyes
Information Transfer	7		Focus on patterns transmitting information
STEM Module Project	1		Focus on designing a device that uses light, sound, or both to send messages
Module Wrap-Up	1		Day to explain how a lighthouse can use light to transmit a message across distance

# Unit 1

## Forces and Energy

### Big Idea: Energy and Motion

#### NJSLS - Science:

(4-PS3-3)-Ask questions that can be investigated and predict reasonable outcomes based on patterns such as cause and effect relationships.

(4-PS3-1)- Use evidence (e.g., measurements, observations, patterns) to construct an explanation.

#### Related Interdisciplinary Standards:

RI.4.1, RI.4.3, RI.4.9, W.4.2, W.4.7, W.4.8, W.4.9, 4.MD.2

#### MODIFICATIONS:

##### Advanced Learner:

Students will design an inquiry activity using rubber bands and toy cars to investigate the relationship between potential energy, speed, and kinetic energy.

##### Students with Disabilities:

Students will work alone or with a partner to choose a sport and think about what happens when two moving objects

##### English Language Learners:

#### Critical Knowledge and Skills

**Concept(s):** In this module, students will design and build a roller coaster track for a steel ball.

#### Students are able to:

- Students will use what they have learned to develop a design that demonstrates the relationship between energy and motion.
- Students will use what they learn throughout the module to explain how a roller coaster uses energy from start to finish.

#### Learning Goal(s):

- Students will be able to construct an explanation to describe the cause and effect relationship between forces and motion.
- Students will construct an explanation about the relationship between speed and energy.
- Students will ask questions and construct an explanation to describe the transfer of energy when objects collide.

#### Formative/Summative Assessments

##### FORMATIVE:

*Includes Claim-Evidence-Reasoning, Three-Dimensional Thinking questions, Talk About It, Inquiry Activities, Quick Check, and Page Keeley Science Probes*

##### SUMMATIVE:

*Includes Lesson Reviews, McGraw-Hill Lesson Checks and Module Test, Vocabulary Check, and STEM Module Project.*

#### Primary & Supplementary Resources

- Text books
- Student Workbooks
- Leveled Readers
- McGrawHill online component
- Experiment materials



Pantomime- demonstrate concepts such as gravity, collision, and friction.

Vocabulary Logs- create a vocabulary log with the word, a short definition, and an example from their experience.

## Unit 2 Using Energy Big Idea: Energy Transfer

### **NJSLS - Science:**

(4-PS3-2)- Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents.

(4-ESS3-1)- Obtain and combine information to describe that energy and fuels are derived from natural resources and their uses affect the environment.

(4-PS3-4)- Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.

### **Related Interdisciplinary Standards:**

W.4.7, W.4.8

### **MODIFICATIONS:**

#### **Advanced Learner:**

Students will research Earth's increased thermal energy due to climate change and the impact it has had on the severity of storms.

#### **Students with Disabilities:**

### **Critical Knowledge and Skills**

**Concept(s):** In this module, students will investigate different types of energy and how energy is transferred.

### **Students are able to:**

- Students will be able to develop, test, and improve a model to demonstrate light and sound energy transfers.
- Students will use what they learned throughout the module to explain how energy is transferred and used throughout a city.

### **Learning Goal(s):**

- Students will make observations to explain how different types of energy can be transferred in various ways.
- Students will plan and carry out investigations to describe and model how energy transfers with sound and light.
- Students will use their observations to describe how energy is transferred by electric currents.
- Students will plan and carry out investigations to explain

Use chart paper to create a large concept web. Students will share what they know or think they know about energy transfer. Students will add to the web throughout the module.

**English Language Learners:**

Web Diagram- web diagram poster with Energy written in the middle that students can add pictures or words to  
 Word Wall- as new words are introduced add them to a word wall.  
 Concept Webs

how energy can be transferred by heat.

**Formative/Summative Assessments**

*FORMATIVE:*  
*Includes Claim-Evidence-Reasoning, Three-Dimensional Thinking questions, Talk About It, Inquiry Activities, Quick Check, and Page Keeley Science Probes*

*SUMMATIVE:*  
*Includes Lesson Reviews, McGraw-Hill Lesson Checks and Module Test, Vocabulary Check, and STEM Module Project.*

**Primary & Supplementary Resources**

- Text books
- Student Workbooks
- Leveled Readers
- McGrawHill online component
- Experiment materials

**UNIT 2**  
**Using Energy**  
**Big Idea: Natural Resources in the Environment**

**NJSLS – Science:**

(4-PS3-2)- Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents.  
 (4-ESS3-1)- Obtain and combine information to describe that energy and fuels are derived from natural resources and their uses affect the environment.  
 (4-PS3-4)- Apply scientific ideas to design, test, and refine a device that

**Critical Knowledge and Skills**

**Concept(s):** In this module, students will use information they have obtained about natural resources to design a solar oven.

**Students are able to:**

- Students will be able to design a device that converts solar energy into heat.

**Learning Goal(s):**

- Students will obtain and combine information about the source of nonrenewable resources, and how their uses affect humans.







converts energy from one form to another.

**Related Interdisciplinary Standards:**  
W.4.7, W.4.8

**MODIFICATIONS:**

**Advanced Learner:**

Students will research recent advances in energy storage solutions and their predicted application as a source of energy in homes.

**Students with Disabilities:**

Display an idea web with Energy written in center. Students will share their ideas about energy and will add to it throughout the module.

**English Language Learners:**

Word Wall- as new words are introduced add them to a word wall.  
Vocabulary Logs- create a vocabulary log with the word, a short definition, and an example from their experience.  
Scanning for Cognates- explain a cognate and point them out throughout the module.

- Students will use what they learned throughout the module to explain how the energy used by a solar-powered car affects the environment.

- Students will obtain and combine information about the source of renewable resources and how their uses affect humans.
- Students will obtain and combine information about the effects of nonrenewable resources on the environment.
- Students will obtain and combine information about the effects of renewable resources on the environment.

**Formative/Summative Assessments**

*FORMATIVE:*

*Includes Claim-Evidence-Reasoning, Three-Dimensional Thinking questions, Talk About It, Inquiry Activities, Quick Check, and Page Keeley Science Probes*

*SUMMATIVE:*

*Includes Lesson Reviews, McGraw-Hill Lesson Checks and Module Test, Vocabulary Check, and STEM Module Projects*

**Primary & Supplementary Resources**

- Text books
- Student Workbooks
- Leveled Readers
- McGrawHill online component
- Experiment materials

**UNIT 3**

**Our Dynamic Earth**

**Big Idea: Earth and it's Changing Features**

NJSLS - Science:

Critical Knowledge and Skills

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

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

(4-ESS2-1)- Make observations and/or measurements to provide evidence of the effects of weathering or the rate of erosion by water, ice, or vegetation.

**Related Interdisciplinary Standards:**  
RI.4.7, W.4.7, 4.MD.A.2

**MODIFICATIONS:**

**Advanced Learner:**

Students will research geological and paleontological evidence that Earth was once a single continent and create a model to share what they find.

**Students with Disabilities:**

Display a map of the local area and discuss its features, including key. Help students locate their school, as well as familiar landmarks. Then students will create their own map of their choice.

**English Language Learners:**

Picture Scavenger Hunt- picture walk through the pages covering.  
Lesson Scavenger Hunt- a lesson walk, discussing unfamiliar terms

**Concept(s):** In this module students will investigate the changing of Earth's features and design and test a model of erosion.

**Students are able to:**

- Students will use what they learned about Earth's features to design and test two models that demonstrate a solution for soil erosion.
- Students will use what they learned throughout the module to explain how features on Earth's surface can change.

**Learning Goal(s):**

- Students will use maps to interpret and analyze data and describe patterns in landforms.
- Students will construct an explanation about how rock and fossil formations change a landscape over time.
- Students will plan and carry out investigations to observe the effects to Earth's surface by living and nonliving things.

**Formative/Summative Assessments**

*FORMATIVE:*

*Includes Claim-Evidence-Reasoning, Three-Dimensional Thinking questions, Talk About It, Inquiry Activities, Quick Check, and Page Keeley Science Probes*

*SUMMATIVE:*

*Includes Lesson Reviews, McGraw-Hill Lesson Checks and Module Test, Vocabulary Check, and STEM Module Projects*

**Primary & Supplementary Resources**

- Text books
- Student Workbooks
- Leveled Readers
- McGrawHill online component
- Experiment materials

Module Scavenger Hunt- module walk, summarizing and describing information in the module

## UNIT 3

### Our Dynamic Earth

#### Big Idea: Earthquakes

**NJSLS - Science:**

(4-ESS2-2)- Analyze and interpret data from maps to describe patterns of Earth’s features.

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

(4-ESS2-1)- Make observations and/or measurements to provide evidence of the effects of weathering or the rate of erosion by water, ice, or vegetation.

**Related Interdisciplinary Standards:**

RI.4.7, W.4.7, 4.MD.A.2

**MODIFICATIONS:**

**Advanced Learner:**

Students will prepare a report the recommends of which building materials are best used for building an earthquake-safe structure.

**Students with Disabilities:**

Students will pantomime important Earth processes as they come across them, move arms up and down to demonstrate amplitude, move quickly

**Critical Knowledge and Skills**

**Concept(s):** In this module students will consider why one building might have collapsed during an earthquake, while others did not.

**Students are able to:**

- Students will use what they learned throughout the module to develop a design that will resist the forces of an earthquake.
- Students will use what they learned throughout the module to explain why earthquakes cause localized damage.

**Learning Goal(s):**

- Students will analyze and interpret data from maps to observe patterns of earthquake occurrences.
- Students will develop and use models to describe the patterns in waves and how waves causes objects to move.
- Students will construct explanations about the effects of earthquakes on structures and design solutions to reduce earthquake damage.

**Formative/Summative Assessments**

**Primary & Supplementary Resources**

- Text books