

**Science
Grade 3**

**CURRICULUM GUIDE
Approved
August 22, 2017**

**Mr. David C. Mango, Superintendent
Mrs. Debra Grigoletti, Director of Curriculum & Instruction**

**Developed by:
Veronica Jost
Brynne O'Neill**

**This curriculum may be modified through varying techniques,
strategies and materials, as per an individual student's
Individualized Education Plan (IEP).**

**Approved by the Insert district Board of Education
At the regular meeting held on August 22, 2017
And
Aligned with the New Jersey Student Learning Standards**

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Philosophy and Rationale

Science, engineering, and technology influence and permeate every aspect of modern life. Some knowledge of science and engineering is required to engage with the major public policy issues of today as well as to make informed everyday decisions, such as selecting among alternative medical treatments or determining how to invest public funds for water supply options. In addition, understanding science and the extraordinary insights it has produced can be meaningful and relevant on a personal level, opening new worlds to explore and offering lifelong opportunities for enriching people's lives. In these contexts, learning science is important for everyone, even those who eventually choose careers in fields other than science or engineering.

Scope and Sequence

		Timeline (Suggested Time)
Engineering and Design	<u>Unit 1</u> Engineering	September - October 22 Days
Physical Science	<u>Unit 2</u> Forces <u>Unit 3</u> Motion	October - December 39 Days
Life Science	<u>Unit 4</u> Life Cycles and Inherited Traits <u>Unit 5</u> Organisms and Their Environment <u>Unit 6</u> Fossils	December - March 66 Days
Earth and Space Sciences	<u>Unit 7</u> Weather and Patterns	March - April 27 Days

Unit 1 Lessons

1. How Do We Define a Problem?
2. How Do We Design a Solution?
3. How Do we Test and Improve a Solution?

Unit 1 Vocabulary

- Constraint
- Criteria
- Engineer
- technology

Unit 2 Lessons

1. What Are Forces?
2. What Are Some Types of Forces?
3. What Forces Act from a Distance?

Unit 2 Vocabulary

- balanced forces
- electricity
- force
- gravity
- magnet
- net force
- static electricity
- unbalanced forces

Unit 3 Lessons

1. What Is Motion?
2. What Are Some Patterns in Motion?

Unit 3 Vocabulary

- frame of reference
- motion
- position
- speed

Unit 4 Lessons

1. What Are Some Plant Life Cycles?
2. What Are Some Animal Life Cycles?
3. What Are Inherited Plant and Animal Traits?

Unit 4 Vocabulary

- life cycle
- metamorphosis
- organism
- pupa

- trait

Unit 5 Lessons

1. How Does the Environment Affect Traits?
2. What Are Adaptations?
3. How Can Organisms Succeed in Their Environments?
4. What Happens When Environments Change?

Unit 5 Vocabulary

- adaptation
- camouflage
- environment
- habitat
- mimicry
- population

Unit 6 Lessons

1. What Is a Fossil?
2. What Do Fossils Tell Us About the Past?

Unit 6 Vocabulary

- aquatic
- extinct
- fossil
- terrestrial

Unit 7 Lessons

1. How is Weather Measured?
2. How Can We Predict Weather?
3. What Are Some Severe Weather Impacts?
4. What Are Some Types of Climates?

Unit 7 Vocabulary

- atmosphere
- climate
- hazard
- precipitation
- rain gauge
- thermometer
- weather
- wind vane

Mission Statement

The Great Meadows Regional School District will provide quality educational opportunities that ensure the individual success of all students within a safe and supportive environment and to build lifelong learners who will meet society's challenges into and beyond the 21st century. To that end, it is anticipated that all students will achieve the New Jersey Student Learning Standards at all grade levels.

Stage 1: Desired Results

Unit: 1

Topic: Engineering Processes

Content Standards

Engineering Design

- **3-5-ETS1-2** Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.
- **3-5-ETS1-3** 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.
- **3-5-ETS1-1** Define a simple design problem reflecting a need or want that includes specified criteria for success and constraints on materials, time, or cost.

Essential Questions

- Why is it important to define problem and design a solution?
- How do we test and improve a solution?

Enduring Understandings

- Students are exposed to a problem scenario. They integrate prior problem-solving experience with the engineering concepts of criteria and constraints.

After exploring real-world examples and the needs they fulfill, students write a detailed description of a problem that they wish to solve.

- Students research and develop possible solutions to a problem, then communicate and compare those solutions with others, and develop testing criteria based on how the solution will be used. Students will also examine the ways engineering can be used to solve practical problems.
- Students continue their exploration of the design process by investigating options and refinements of a solution to increase benefits, decrease known risks, or meet societal demands. Students utilize the prototype irrigation system that was developed over the previous two lessons. Here, students refine their solution by brainstorming and testing possible improvements.

Knowledge and Skills

Students will be able to:

- Define a simple design problem reflecting a need or a want.
- Ask questions and integrate prior problem-solving experience with the engineering concepts of criteria and constraints.
- Explore real-world examples and the needs they fulfill.
- Research and design possible solutions to a problem.
- Communicate and compare solutions with others.
- Develop criteria based on likely conditions in which the solution will be used.
- Plan and conduct investigations that test solutions and identify problems.
- Increase benefits or decrease risks associated with a device or solution.

Stage 2: Evidence of Understanding, Learning Objectives and Expectations

Assessment Methods (formative, summative, other evidence and/or student self- assessment)

- Preassessment
 - Assessment Guide, Unit Pretest
 - The Unit Pretest focuses on prerequisite knowledge and is composed of items that evaluate students' preparedness for the content covered within this unit.
- Formative Assessment

- Student Edition, Apply What You Know, Lesson Check, and Self Check
- Summative Assessment
 - Assessment Guide, Lesson Quiz
 - The Lesson Quiz provides a quick assessment of each lesson objective and of the portion of the Performance Expectation aligned to the lesson.
- Student Edition, Performance Task pp. 60-61
 - The Performance Task presents the opportunity for students to collaborate with classmates in order to complete the steps of each Performance Task. Each Performance Task provides a formal Scoring Rubric for evaluating students' work.
- Student Edition, Unit 1 Review pp. 62-64
 - Assessment Guide, Unit Test
 - The Unit Test provides an in-depth assessment of the Performance Expectations aligned to the unit. This test evaluates students' ability to apply knowledge in order to explain phenomena and to solve problems.
- Independent Practice pages
- Performance Tasks
- Teacher observation
- Class Participation
- Teacher created lesson checks/worksheets
- Homework and practice pages
- "Making Connections" pages
- Unit Project: Building A Better Backpack

Stage 3: Learning Plan

Student Engagement:

- Virtual Lab: Egg Drop Challenge
- Leveled Readers:
 - On Level • How Does the Design Process Help Us?
 - Extra Support • How Does the Design Process Help Us?
 - Enrichment • Designing Amusement Park Rides
- Small/whole group discussion
- Making content connections
- Hands-on Activity

- Critical Thinking and Problem Solving
- Utilizing Interactive Student Edition
- Vocabulary Game
- Written, visual, auditory, and hands-on activities
- Class Participation
- Supplemental worksheets
- Interactive website games
- Project-based learning activities

Differentiation

- One-on-one/whole group/small group instruction
- Science centers
- Leveled Readers
- In-Class Support
- ELL teacher strategies in this unit:
 - Lesson 2: pp. 24, 27
 - Lesson 3: pp. 53, 56
- RTI/Extra Support Strategies for students needing extra support in this unit:
 - Lesson 1: pp. 8, 11, 12, 14
 - Lesson 2: pp. 30, 36
 - Lesson 3: p. 52
- Extension Strategies for students who have mastered core content in this unit:
 - Lesson 1: p. 15, 16
 - Lesson 3: p. 45, 49
- Vocabulary Differentiation Strategies
 - pp. 3
- Unit Project Differentiation
 - Pp. 31

Learning Experiences

- Unit Project: Building a Better Backpack
- Leveled Readers
- Hands on activities after each lesson
- Math and Language Arts Connections
- Virtual Worlds using Google Expeditions
- Virtual Lab: Egg Drop Challenge
- Open Ended Simulations
- Take It Further (student choice)
- Performance assessments

- Vocabulary Game: Guess the Word

21st Century Skills and Technology

Lessons will include:

- Critical Thinking
- Evidence Notebooks
- Hands-on investigations
- Real World Connections
- Problem Solving Activities
- Creativity and Imagination
- Communication and Collaboration with peers
- Media and Technology integrated lessons
- Cross curricular references
- Science and Engineering Practices Online Handbook
- Performance Tasks
- Engineering Design Process
- Immersive Digital Curriculum
- “Take It Further” (student choice)
- Student centered learning model
- Open ended simulations
- 3-D Virtual Field Trip
- Self reflections

Time Allotment

22 school days

Resources

HMH Science Dimensions series for Third Grade

Supplementary Resources:

- HMH Science Dimensions Curriculum Materials
 - Student Edition write-in book
 - Smartboard Interactive Lessons
- Teacher Websites
- Chapter Resources
- Leveled Readers
- Kahoot! Activities

- Supplemental Authentic Literature:
 - What Do You Do With an Idea? by Kobi Yamada
 - What Do You Do With a Problem? by Kobi Yamada
 - Rosie Revere, Engineer by Andrea Beaty
 - The Most Magnificent Thing by Ashley Spires
 - Ada Twist, Scientist by Andrea Beaty
 - Swimming With Sharks: The Daring Discoveries of Eugenie Clark by Heather Lang

Stage 1: Desired Results

Unit 2

Topic Forces

Content Standards

Motion and Stability: Forces and Interactions

- 3-PS2-1 Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object.
- 3-PS2-3 Ask questions to determine cause-and-effect relationships of electric or magnetic interactions between two objects not in contact with each other.
- 3-PS2-4 Define a simple design problem that can be solved by applying scientific ideas about magnets.

Essential Questions

- What are forces?
- How does distance affect forces?

Enduring Understandings

- Students will evaluate cause-and-effect relationships between forces and objects . They will ask questions and define problems related to real-world applications of force and make observations and collect evidence to determine how a dogsled team makes its way across a snowy landscape.
- Students will explore net force as well as balanced and unbalanced forces by planning and conducting an investigation to observe and measure contact forces using a variety of methods and tools. By exploring balanced and unbalanced forces, students will recognize the cause-and-effect relationships between forces and motion.

- Students will gather and analyze evidence that forces such as magnetism and electricity can act on objects without touching them. Students use what they learn to build an electromagnet in which electricity is used to cause magnetic attraction . As a result, students learn about attractive forces and observe how they work.

Knowledge and Skills

Students Will Be Able To

- Recognize force as a push or a pull. Demonstrate how its strength and direction can be changed. Identify the cause-and-effect relationship between the speed and direction of an object and the strength and direction of the force applied to it.
- Understand how contact forces, including friction, and non-contact forces, such as gravity, act on objects, and that objects often have multiple forces acting on them. Plan and carry out an investigation of forces to determine that balanced forces result in zero net force and no motion change. Recognize causes and effects between forces and changes in motion.
- Identify magnetism and static electricity as forces that can act on objects without touching them.

Stage 2: Evidence of Understanding, Learning Objectives and Expectations

Benchmarks (embedded student proficiencies)

Assessment Methods

- Preassessment
 - Assessment Guide, Unit Pretest
 - The Unit Pretest focuses on prerequisite knowledge and is composed of items that evaluate students' preparedness for the content covered within this unit.
- Formative Assessment
 - Student Edition, Apply What You Know, Lesson Check, and Self Check
- Summative Assessment
 - Assessment Guide, Lesson Quiz
 - The Lesson Quiz provides a quick assessment of each lesson objective and of the portion of the Performance Expectation aligned to the lesson.
- Student Edition, Performance Task pp. 130–131
 - The Performance Task presents the opportunity for students to collaborate with classmates in order to complete the steps of each

Performance Task. Each Performance Task provides a formal Scoring Rubric for evaluating students' work.

- Student Edition, Unit 2 Review pp. 132–134
 - Assessment Guide, Unit Test
 - The Unit Test provides an in-depth assessment of the Performance Expectations aligned to the unit. This test evaluates students' ability to apply knowledge in order to explain phenomena and to solve
- Independent Practice pages
- Performance Tasks
- Teacher observation
- Class Participation
- Teacher created lesson checks/worksheets
- Homework and practice pages
- “Making Connections” pages
- Unit Project: Balanced Forces

Stage 3: Learning Plan

Engage Students

- Virtual Lab: Launch a Roller Coaster
- Making Connections
 - At Home
 - In the Community
- Send home Family letters
- Leveled Readers
 - On-Level Reader • How Do We Use Machines?
 - Extra Support • How Do We Use Machines?
 - Enrichment • Building With Machines
- Small/whole group discussion
- Making content connections
- Hands-on Activity
- Critical Thinking and Problem Solving
- Utilizing Interactive Student Edition
- Vocabulary Game
- Written, visual, auditory, and hands-on activities
- Class Participation
- Supplemental worksheets
- Interactive website games
- Project-based learning activities

Differentiation

- ELL teacher strategies in this unit:
 - Lesson 1: pp. 74, 86
 - Lesson 2: p. 91
 - Lesson 3: p. 113
- RTI/Extra Support Strategies for students needing extra support in this unit:
 - Lesson 1: p. 80
 - Lesson 2: pp. 95, 98
 - Lesson 3: pp. 111, 112, 117, 120, 126
- Extension Strategies for students who have mastered core content in this unit:
 - Lesson 1: pp. 70, 78, 83
 - Lesson 2: pp. 92, 97, 103
 - Lesson 3: pp. 112, 117
- Vocabulary Differentiation Strategies
 - pp. 67
- Unit Project Differentiation
 - Pp. 672

Learning Experiences:

- Unit Project: Balanced Forces
- Leveled Readers
- Hands on activities after each lesson
- Math and Language Arts Connections
- Virtual Worlds using Google Expeditions
- Virtual Labs
- Open Ended Simulations
- Take it Further (student choice)
- Performance Assessments
- Vocabulary Game : Guess the Word

21st Century Skills & Technology:

Lessons will include:

- Critical Thinking
- Evidence Notebooks
- Hands-on investigations
- Real World Connections
- Problem Solving Activities
- Creativity and Imagination

- Communication and Collaboration with peers
- Media and Technology integrated lessons
- Cross curricular references
- Science and Engineering Practices Online Handbook
- Performance Tasks
- Engineering Design Process
- Immersive Digital Curriculum
- “Take It Further” (student choice)
- Student centered learning model
- Open ended simulations
- 3-D Virtual Field Trip
- Self reflections

Time Allotment

22 Days

Resources

HMH Science Dimensions for third grade

Supplemental Resources:

- HMH Science Dimensions Curriculum Materials
 - Student Edition write-in book
 - Smartboard Interactive Lessons
- Teacher Websites
- Chapter Resources
- Leveled Readers
- Supplemental Authentic Literature:
 - Many Ways to Move: A Look At Motion by Jennifer Boothroy
 - Riding On Roller Coasters by Rigby Staff
 - Pushing and Pulling by Natalie Hyde
 - Forces Make Things Move. Kimberly Brubaker Bradley.
 - Waking Upside Down. Philip Heckman. Atheneum

Stage 1: Desired Results

Unit: 3

Topic: Motion

Content Standards

Motion and Stability: Forces and Interactions

- **3-PS2-1** Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object.
- **3-PS2-2** Make observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predict future motion.

Essential Questions

- What is motion?
- What are some patterns in motion?

Enduring Understandings

- Students will examine how balanced and unbalanced forces affect the motion of an object. Students will begin by asking questions and defining problems related to forces and motion. They will then investigate forces and the effects they have on motion. Students will identify specific reasons (causes) why motion changes (effect) as a result of the forces acting on them.
- Students will observe types of motions (up and down, back and forth, around and around, and zigzag) and measure objects' motions in various situations. Students will investigate different variables that affect the speed and direction of a pendulum to find patterns and use those patterns to make predictions about future movements.

Knowledge and Skills

Students will be able to:

- Examine how balanced and unbalanced forces affect the motion of an object.
- Ask questions and define problems related to forces and motion.
- Investigate forces and the effects they have on motion.
- Identify specific reasons (causes) why motion changes (effect) as a result of the forces acting on them.
- Observe types of motions (up and down, back and forth, around and around, and zigzag) and measure objects' motions in various situations.
- Investigate different variables that affect the speed and direction of a pendulum to find patterns.
- Use patterns to make predictions about future movements.

Stage 2: Evidence of Understanding, Learning Objectives and Expectations
Assessment Methods (formative, summative, other evidence and/or student self- assessment)

- Preassessment
 - Assessment Guide, Unit Pretest
 - The Unit Pretest focuses on prerequisite knowledge and is composed of items that evaluate students' preparedness for the content covered within this unit.
- Formative Assessment
 - Student Edition, Apply What You Know, Lesson Check, and Self Check
- Summative Assessment
 - Assessment Guide, Lesson Quiz
 - The Lesson Quiz provides a quick assessment of each lesson objective and of the portion of the Performance Expectation aligned to the lesson.
- Student Edition, Performance Task pp. 176-177
 - The Performance Task presents the opportunity for students to collaborate with classmates in order to complete the steps of each Performance Task. Each Performance Task provides a formal Scoring Rubric for evaluating students' work.
- Student Edition, Unit 3 Review pp. 178-180
 - Assessment Guide, Unit Test
 - The Unit Test provides an in-depth assessment of the Performance Expectations aligned to the unit. This test evaluates students' ability to apply knowledge in order to explain phenomena and to solve problems.
- Independent Practice pages
- Performance Task
- Teacher observation
- Class Participation
- Teacher created lesson checks/worksheets
- Homework and practice pages
- "Making Connections" pages
- Unit Project: Motion Detectives

Stage 3: Learning Plan

Student Engagement:

- Project-based learning activities
- Virtual Lab: Patterns of Motion
- Leveled Readers:
 - On Level • How Do We Use Machines?
 - Extra Support • How Do We Use Machines?
 - Enrichment • Building With Machines
- Small/whole group discussion
- Making content connections
- Hands-on Activity
- Critical Thinking and Problem Solving
- Utilizing Interactive Student Edition
- Vocabulary Game
- Written, visual, auditory, and hands-on activities
- Class Participation
- Supplemental worksheets
- Interactive website games

Differentiation

- ELL teacher strategies in this unit:
 - Lesson 1: pp. 140, 141, 144, 147
 - Lesson 2: p. 160
- RTI/Extra Support Strategies for students needing extra support in this unit:
 - Lesson 1: pp. 140, 148, 151
 - Lesson 2: pp. 162, 164
- Extension Strategies for students who have mastered core content in this unit:
 - Lesson 2: p. 162
- Vocabulary Differentiation Strategies
 - p. 137
- Unit Project Differentiation
 - p. T1371
- One-on-one/whole group/small group instruction
- Science centers
- Leveled Readers
- In-Class Support

Learning Experiences

- Unit Project: Motion Detectives
- Leveled Readers
- Hands on activities after each lesson
- Math and Language Arts Connections
- Virtual Worlds using Google Expeditions
- Virtual Lab: Patterns of Motion
- Open Ended Simulations
- Take It Further (student choice)
- Performance assessments
- Vocabulary Game: Bingo

21st Century Skills and Technology

- Lessons will include:
 - Critical Thinking
 - Evidence Notebooks
 - Hands-on investigations
 - Real World Connections
 - Problem Solving Activities
 - Creativity and Imagination
 - Communication and Collaboration with peers
 - Media and Technology integrated lessons
 - Cross curricular references
 - Science and Engineering Practices Online Handbook
 - Performance Tasks
 - Engineering Design Process
 - Immersive Digital Curriculum
 - “Take It Further” (student choice)
 - Student centered learning model
 - Open ended simulations
 - 3-D Virtual Field Trip
 - Self reflections

Time Allotment

17 school days

Resources

HMH Science Dimensions series for Third Grade

Supplemental Resources

- HMH Science Dimensions Curriculum Materials
 - Student Edition write-in book
 - Smartboard Interactive Lessons
- Teacher Websites
- Chapter Resources
- Leveled Readers
- Supplemental Authentic Literature:
 - Forces Make Things Move by Kimberly Brubaker Bradley
 - Gravity is a Mystery by Franklyn M. Branley
 - Roller Coaster by Marla Frazee
 - Waking Upside Down by Philip Heckman

Stage 1: Desired Results

Unit 4

Topic Life Cycles and Inherited Traits

Content Standards

From Molecules to Organisms: Structures and Processes

- **3-LS1-1** Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death.

Heredity: Inheritance and Variation of Traits

- **3-LS3-1** Analyze and interpret data to provide evidence that plants and animals have traits inherited from parents and that variation of these traits exists in a group of similar organisms.

Essential Questions

- What are some plant and animal life cycles?
- What are inherited plant and animal traits?

Enduring Understandings

- Students will explore plant life cycles and how a plant depends on its environment to live and reproduce. They will use data and information they gather as evidence to support explanations. By exploring the effect of the

environment on plant life cycles, they will learn what plants need to reproduce.

- Students will explore patterns of change in animal life cycles, and use those patterns to make predictions. Students will investigate technology used to track patterns of animal movement in order to understand reproductive behavior. Students will compare and contrast the life cycles of several different animals. Students will use models to describe phenomena and develop models by designing a nest and a zoo.
- Students learn about offspring and parents of plants and animals. They study images to interpret data about inherited traits. They note similarities and differences in organisms that can be understood in terms of inheritance. They find patterns in inherited traits, and simulate inheritance in a hands-on project.

Knowledge and Skills

Students Will Be Able To

- Identify and recognize the common patterns in various life cycles of plants; build models of a plant life cycle; and understand that a given plant's life cycle always happens in the same order.
- Identify and recognize patterns in the various stages of the life cycles of different animals. Develop and use models to describe the unique and diverse life cycles of different animals. Learn about technology that enables scientists to find patterns in data to show how reproduction is essential to the continued existence of every organism.
- Study images of organisms to collect and interpret data and find patterns in inherited traits. Note similarities and differences in the organisms.

Stage 2: Evidence of Understanding, Learning Objectives and Expectations

Benchmarks (embedded student proficiencies)

Assessment Methods

- Preassessment
 - Assessment Guide, Unit Pretest
 - The Unit Pretest focuses on prerequisite knowledge and is composed of items that evaluate students' preparedness for the content covered within this unit.
- Formative Assessment
 - Student Edition, Apply What You Know, Lesson Check, and Self Check
- Summative Assessment
 - Assessment Guide, Lesson Quiz

- The Lesson Quiz provides a quick assessment of each lesson objective and of the portion of the Performance Expectation aligned to the lesson.
- Student Edition, Performance Task pp. 254-255
 - The Performance Task presents the opportunity for students to collaborate with classmates in order to complete the steps of each Performance Task. Each Performance Task provides a formal Scoring Rubric for evaluating students' work.
- Student Edition, Unit 4 Review pp. 256- 258
 - Assessment Guide, Unit Test
 - The Unit Test provides an in-depth assessment of the Performance Expectations aligned to the unit. This test evaluates students' ability to apply knowledge in order to explain phenomena and to solve
- Independent Practice pages
- Performance Task
- Teacher observation
- Class Participation
- Teacher created lesson checks/worksheets
- Homework and practice pages
- "Making Connections" pages
- Unit Project Life Cycle Models

Stage 3: Learning Plan

Engage Students

- Virtual Lab: Insect Life Cycles
- Making Connections
 - At Home
 - In the Community
- Send home Family letters
- Leveled Readers
 - On-Level Reader •How Do Living Things Change and Grow?
 - Extra Support • How Do Living Things Change and Grow?
 - Enrichment • Surprising Adaptations.
- Small/whole group discussion
- Making content connections
- Hands-on Activity
- Critical Thinking and Problem Solving
- Utilizing Interactive Student Edition

- Vocabulary Game
- Written, visual, auditory, and hands-on activities
- Class Participation
- Supplemental worksheets
- Interactive website games
- Project-based learning activities

Differentiation

- ELL teacher strategies in this unit:
 - Lesson 1: p. 201
 - Lesson 2: pp. 211, 215, 219
 - Lesson 3: pp. 241, 247
- RTI/Extra Support Strategies for students needing extra support in this unit:
 - Lesson 1: pp. 186, 195
 - Lesson 2: pp. 210, 226
 - Lesson 3: pp. 237, 244, 250
- Extension Strategies for students who have mastered core content in this unit:
 - Lesson 1: pp. 188, 199, 200
 - Lesson 2: pp. 211, 212, 219, 226
 - Lesson 3: pp. 240, 243
- Vocabulary Differentiation Strategies
 - p. 183
- Unit Project Differentiation
 - p. T1831

Learning Experiences:

- Unit Project: Life Cycle Model
- Leveled Readers
- Hands on activities after each lesson
- Math and Language Arts Connections
- Virtual Worlds using Google Expeditions
- Virtual Labs
- Open Ended Simulations
- Take it Further (student choice)
- Performance Assessments
- Vocabulary Game : Guess the Word

21st Century Skills & Technology:

Lessons will include:

- Critical Thinking

- Evidence Notebooks
- Hands-on investigations
- Real World Connections
- Problem Solving Activities
- Creativity and Imagination
- Communication and Collaboration with peers
- Media and Technology integrated lessons
- Cross curricular references
- Science and Engineering Practices Online Handbook
- Performance Tasks
- Engineering Design Process
- Immersive Digital Curriculum
- “Take It Further” (student choice)
- Student centered learning model
- Open ended simulations
- 3-D Virtual Field Trip
- Self reflections

Time Allotment

22 Days

Resources

HMH Science Dimensions for third grade

Supplemental Resources:

- HMH Science Dimensions Curriculum Materials
 - Student Edition write-in book
 - Smartboard Interactive Lessons
- Teacher Websites
- Chapter Resources
- Leveled Readers
- Supplemental Authentic Literature:
 - Handle with Care: An Unusual Butterfly Journey by Loree Griffin Burns
 - Frogs by Gail Gibbons
 - Seed, Sprout, Fruit: An Apple Tree Life Cycle by Shannon Knudson
 - The Tiny Seed by Eric Carle
 - A Butterfly is Patient by Dianna Hutts Aston.
 - Brilliant Bees by Linda Glaser

Stage 1: Desired Results

Unit: 5

Topic: Organisms and Their Environments

Content Standards

Ecosystems: Interactions, Energy, and Dynamics

- **3-LS2-1** Construct an argument that some animals form groups that help members survive.

Heredity: Inheritance and Variation of Traits

- **3-LS3-2** Use evidence to support the explanation that traits can be influenced by the environment.

Biological Evolution: Unity and Diversity

- **3-LS4-2** Use evidence to construct an explanation for how the variations in characteristics among individuals of the same species may provide advantages in surviving, finding mates, and reproducing.
- **3-LS4-3** Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all.
- **3-LS4-4** Make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change.

Essential Questions

- How does the environment affect traits and adaptations?
- How can organisms succeed in their environments and what happens when environments change?

Enduring Understandings

- Students will explore cause-and-effect relationships between the environment and the traits of living things. They will use data and information they gather as evidence to support explanations.
- Students will recognize and explain that some organisms survive well in environments and others do not. They will analyze and interpret evidence to support the claim that any environment meets the needs of organisms to different degrees.

- Students will investigate cause-and-effect relationships about individual traits and the benefits of being a member of a group. Students will gather data to support a claim about the relationship between body color and survival.
- Student will recognize that changes to habitats affect populations. They will examine changes that happen on different scales of time and construct explanations about how environmental changes affect organisms in an ecosystem.

Knowledge and Skills

Students will be able to:

- Explore cause-and-effect relationships between the environment and the traits of living things.
- Use data and information they gather as evidence to support explanations.
- Recognize and explain that some organisms survive well in environments and others do not.
- Analyze and interpret evidence to support the claim that any environment meets the needs of organisms to different degrees.
- Investigate cause-and-effect relationships about individual traits and the benefits of being a member of a group.
- Gather data to support a claim about the relationship between body color and survival.
- Recognize that changes to habitats affect populations.
- Will examine changes that happen on different scales of time and construct explanations about how environmental changes affect organisms in an ecosystem.

Stage 2: Evidence of Understanding, Learning Objectives and Expectations

Assessment Methods

- Preassessment
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- Summative Assessment
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 - The Lesson Quiz provides a quick assessment of each lesson objective and of the portion of the Performance Expectation aligned to the lesson.
- Student Edition, Performance Task pp. 340–341
 - The Performance Task presents the opportunity for students to collaborate with classmates in order to complete the steps of each Performance Task. Each Performance Task provides a formal Scoring Rubric for evaluating students' work.
- Student Edition, Unit 5 Review pp. 342–344
 - Assessment Guide, Unit Test
 - The Unit Test provides an in-depth assessment of the Performance Expectations aligned to the unit. This test evaluates students' ability to apply knowledge in order to explain phenomena and to solve problems.
- Independent Practice pages
- Performance Task
- Teacher observation
- Class Participation
- Teacher created lesson checks/worksheets
- Homework and practice pages
- “Making Connections” pages
- Unit Project: Lucky Layers

Stage 3: Learning Plan

Student Engagement:

- Virtual Lab: Survival!
- Leveled Readers:
 - On Level • How Are Living Things Connected to Their Ecosystem?
 - Extra Support • How Are Living Things Connected to Their Ecosystem?
 - Enrichment • Rainforest Adventure
- Small/whole group discussion
- Making content connections
- Hands-on Activity
- Critical Thinking and Problem Solving
- Utilizing Interactive Student Edition
- Vocabulary Game

- Written, visual, auditory, and hands-on activities
- Class Participation
- Supplemental worksheets
- Interactive website games
- Project-based learning activities

Differentiation

- ELL teacher strategies in this unit:
 - Lesson 1: pp. 264, 277
 - Lesson 2: p. 287
 - Lesson 3: pp. 304, 306, 312
 - Lesson 4: pp. 326, 335
- RTI/Extra Support Strategies for students needing extra support in this unit:
 - Lesson 1: p. 273
 - Lesson 2: pp. 284, 292
 - Lesson 3: pp. 303, 309, 316
 - Lesson 4: p. 329
- Extension Strategies for students who have mastered core content in this unit:
 - Lesson 1: pp. 267, 274
 - Lesson 2: pp. 289, 298
 - Lesson 3: pp. 305, 313, 314
 - Lesson 4: pp. 323, 325
- Vocabulary Differentiation Strategies
 - P. 261
- Unit Project Differentiation
 - p. T261K
- One-on-one/whole group/small group instruction
- Science centers
- Leveled Readers
- In-Class Support

Learning Experiences

- Unit Project: Lucky Layers
- Leveled Readers
- Hands on activities after each lesson
- Math and Language Arts Connections
- Virtual Worlds using Google Expeditions
- Virtual Lab: Survival!

- Open Ended Simulations
- Take It Further (student choice)
- Performance assessments
- Vocabulary Game: Picture It

21st Century Skills and Technology

Lessons will include:

- Critical Thinking
- Evidence Notebooks
- Hands-on investigations
- Real World Connections
- Problem Solving Activities
- Creativity and Imagination
- Communication and Collaboration with peers
- Media and Technology integrated lessons
- Cross curricular references
- Science and Engineering Practices Online Handbook
- Performance Tasks
- Engineering Design Process
- Immersive Digital Curriculum
- “Take It Further” (student choice)
- Student centered learning model
- Open ended simulations
- 3-D Virtual Field Trip
- Self reflections

Time Allotment

27 school days

Resources

HMH Science Dimensions series for Third Grade

Supplementary Resources:

- HMH Science Dimensions Curriculum Materials
 - Student Edition write-in book
 - Smartboard Interactive Lessons
- Teacher Websites
- Chapter Resources

- Leveled Readers
- Kahoot! Activities
- Supplemental Authentic Literature:
 - Sea Habitats by Rigby Staff
 - Horses Up Close by Christopher Blazeman
 - What's On The Food Chain Menu? by Julie Lundgren
 - Food Chains by Rigby Staff
 - Jane Goodall: Living With The Chimpanzees by Rigby Staff
 - Living in Groups by Rigby Staff
 - Wetlands by Yvonne Franklin
 - How Ecosystems Work by Julie Lundgren

Stage 1: Desired Results

Unit 6

Topic Fossils

Content Standards

Biological Evolution: Unity and Diversity

- **3-LS4-1** Analyze and interpret data from fossils to provide evidence of the organisms and the environments in which they lived long ago.

Essential Questions

- What is a Fossil?
- What do Fossils Tell Us About the Past?

Enduring Understandings

- Students will analyze and interpret data to make sense of phenomena and identify some types of fossils. By observing phenomena and consistent patterns in nature, they will explain that fossils represent plants and animals from the past. Students use evidence provided by fossils to determine what types of organisms and habitats existed long ago.
- Students are expected to analyze fossils to discover patterns among different organisms, such as organisms that live in water and those that live on land. Students will also be required to identify fossils from organisms that no longer exist on Earth to modern-day animals.

Knowledge and Skills

Students Will Be Able To

- Analyze and interpret data from fossils to provide evidence of the organisms and the environments in which they lived long ago. Identify some types of fossils, and explain that fossils represent plants and animals from the past.
- Analyze fossils to determine the types of organisms represented by those fossils. Use the analysis to determine the environment in which the organisms lived.

Stage 2: Evidence of Understanding, Learning Objectives and Expectations

Assessment Methods

- Preassessment
 - Assessment Guide, Unit Pretest
 - The Unit Pretest focuses on prerequisite knowledge and is composed of items that evaluate students' preparedness for the content covered within this unit.
- Formative Assessment
 - Student Edition, Apply What You Know, Lesson Check, and Self Check
- Summative Assessment
 - Assessment Guide, Lesson Quiz
 - The Lesson Quiz provides a quick assessment of each lesson objective and of the portion of the Performance Expectation aligned to the lesson.
- Student Edition, Performance Task pp. 394 - 395
 - The Performance Task presents the opportunity for students to collaborate with classmates in order to complete the steps of each Performance Task. Each Performance Task provides a formal Scoring Rubric for evaluating students' work.
- Student Edition, Unit 6 Review pp. 396 - 398
 - Assessment Guide, Unit Test
 - The Unit Test provides an in-depth assessment of the Performance Expectations aligned to the unit. This test evaluates students' ability to apply knowledge in order to explain phenomena and to solve
- Independent Practice pages
- Performance Task
- Teacher observation
- Class Participation
- Teacher created lesson checks/worksheets
- Homework and practice pages

- “Making Connections” pages
- Unit Project: A Window to the Past

Stage 3: Learning Plan

Engage Students

- Virtual Lab: Fossil Hunt
- Making Connections
 - At Home
 - In the Community
- Send home Family letters
- Leveled Readers
 - On-Level Reader • How Are Living Things Connected to Their Ecosystem?
 - Extra Support • How Are Living Things Connected to Their Ecosystem?
 - Enrichment • Rain Forest Adventure
- Small/whole group discussion
- Making content connections
- Hands-on Activity
- Critical Thinking and Problem Solving
- Utilizing Interactive Student Edition
- Vocabulary Game
- Written, visual, auditory, and hands-on activities
- Class Participation
- Supplemental worksheets
- Interactive website games
- Project-based learning activities

Differentiation

- ELL teacher strategies in this unit:
 - Lesson 2: pp. 372, 383, 386, 389, 392
- RTI/Extra Support Strategies for students needing extra support in this unit:
 - Lesson 1: pp. 353, 360, 361, 362, 363, 366
 - Lesson 2: pp. 377, 381, 383, 384
- Extension Strategies for students who have mastered core content in this unit:
 - Lesson 2: p. 384
- Vocabulary Differentiation Strategies
 - P. 347

- Unit Project Differentiation
 - p. T3471

Learning Experiences:

- Unit Project: A Window to the Past
- Leveled Readers
- Hands on activities after each lesson
- Math and Language Arts Connections
- Virtual Worlds using Google Expeditions
- Virtual Labs
- Open Ended Simulations
- Take it Further (student choice)
- Performance Assessments
- Vocabulary Game : Guess the Word

21st Century Skills & Technology:

Lessons will include:

- Evidence Notebooks
- Hands on investigations
- Communication and Collaboration with peers
- Science and Engineering Practices Online Handbook
- Performance Tasks
- Engineering Design Process
- Immersive digital curriculum
- Open ended simulations
- 3d virtual field trip
- Self reflections
- Take it Further (student choice)
- Student centered learning model
- Media and Technology integrated lessons
- Cross curricular references

Time Allotment

17 Days

Resources

HMH Science Dimensions for third grade

Supplemental Resources:

- HMH Science Dimensions Curriculum Materials

- Student Edition write-in book
- Smartboard Interactive Lessons
- Teacher Websites
- Chapter Resources
- Leveled Readers
- Supplemental Authentic Literature:
 - An Encyclopedia Of Fossils by Rigby Staff
 - Fossil by Bill Thompson
 - Ivy & Bean: Break the Fossil Record by Annie Barrows
 - The Fossil Girl by Catherine Brighton
 - Monster Bones: The Story of a Dinosaur Fossil by Jacqui Bailey
 - Digging Up Dinosaurs by Alik
 - Fantastic Fossils by Christine Petersen

Stage 1: Desired Results

Unit 7

Topic Weather and Patterns

Content Standards

Earth's Systems

- **3-ESS2-1** Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season.
- **3-ESS2-2** Obtain and combine information to describe climates in different regions of the world.
- **3-ESS3-1** Make a claim about the merit of a design solution that reduces the impacts of a weather-related hazard.

Essential Questions

- How is weather measured?
- How can we predict weather?
- How does weather impact Earth?

Enduring Understandings

- Students will learn how scientists measure and record data about weather. They will learn to interpret weather maps and graphs of weather data and examine patterns of weather.

- Students will analyze and interpret data by recording patterns of the weather to make weather predictions. They will represent weather data in tables and bar graphs to reveal patterns that indicate relationships.
- Students will see cause-and-effect patterns of weather and learn how humans can use that data and technology to lessen the impacts of weather-related hazards. Students will analyze and interpret data to make a claim about a solution against criteria and constraints . They use this to learn the importance of improving existing technologies to lessen the impacts of severe weather.
- Students will obtain and analyze information about weather patterns in several climate zones and investigate how patterns help scientists understand Earth's climate and make predictions.

Knowledge and Skills

Students Will Be Able To

- To observe visuals to obtain information about expected weather patterns. Students think about how to analyze the weather data in order to plan for a camping trip.
- To analyze and interpret data about patterns of weather conditions across different times and locations in order to observe patterns of change that can be used to make weather predictions.
- To identify hazardous weather types and recognize characteristics of specific hazardous weather types; explain the cause-and effect relationship between hazardous weather and the damage it causes, and how scientists use data to predict where severe weather will occur. Also to learn about engineered features used to help reduce weather damage.
- To identify and evaluate characteristics of climate and weather patterns and how animals survive in them.

Stage 2: Evidence of Understanding, Learning Objectives and Expectations

Benchmarks (embedded student proficiencies)

Assessment Methods

- Preassessment
 - Assessment Guide, Unit Pretest
 - The Unit Pretest focuses on prerequisite knowledge and is composed of items that evaluate students' preparedness for the content covered within this unit.
- Formative Assessment
 - Student Edition, Apply What You Know, Lesson Check, and Self Check

- Summative Assessment
 - Assessment Guide, Lesson Quiz
 - The Lesson Quiz provides a quick assessment of each lesson objective and of the portion of the Performance Expectation aligned to the lesson.
- Student Edition, Performance Task pp. 488- 489
 - The Performance Task presents the opportunity for students to collaborate with classmates in order to complete the steps of each Performance Task. Each Performance Task provides a formal Scoring Rubric for evaluating students' work.
- Student Edition, Unit 4 Review pp. 490- 492
 - Assessment Guide, Unit Test
 - The Unit Test provides an in-depth assessment of the Performance Expectations aligned to the unit. This test evaluates students' ability to apply knowledge in order to explain phenomena and to solve
- Independent Practice pages
- Performance Tasks
- Teacher observation
- Class Participation
- Teacher created lesson checks/worksheets
- Homework and practice pages
- "Making Connections" pages
- Unit Project: Safety Plan

Stage 3: Learning Plan

Engage Students

- Virtual Lab: Run a Weather Station
- Making Connections
 - At Home
 - In the Community
- Send home Family letters
- Leveled Readers
 - On-Level Reader • How Can We Describe Weather?
 - Extra Support • How Can We Describe Weather?
 - Enrichment • Double Danger: Thunderstorms and Tornadoes
- Small/whole group discussion
- Making content connections
- Hands-on Activity

- Critical Thinking and Problem Solving
- Utilizing Interactive Student Edition
- Vocabulary Game
- Written, visual, auditory, and hands-on activities
- Class Participation
- Supplemental worksheets
- Interactive website games
- Project-based learning activities

Differentiation

- ELL teacher strategies in this unit:
 - Lesson 1: p. 417
 - Lesson 2: pp. 431, 433
 - Lesson 3: p. 448
 - Lesson 4: pp. 467, 470, 480
- RTI/Extra Support Strategies for students needing extra support in this unit:
 - Lesson 1: pp. 406, 408, 411, 413
 - Lesson 2: pp. 424, 426, 429, 430, 433, 436, 438, 440
 - Lesson 3: p. 451
 - Lesson 4: pp. 471, 473, 479, 484
- Extension Strategies for students who have mastered core content in this unit:
 - Lesson 4: pp. 467, 469, 470, 471, 482
- Vocabulary Differentiation Strategies
 - p. 401
- Unit Project Differentiation
 - p. T401K

Learning Experiences:

- Unit Project: Safety Plan
- Leveled Readers
- Hands on activities after each lesson
- Math and Language Arts Connections
- Virtual Worlds using Google Expeditions
- Virtual Labs
- Open Ended Simulations
- Take it Further (student choice)
- Performance Assessments
- Vocabulary Game : Concentration

21st Century Skills & Technology:

Lessons will include:

- Critical Thinking
- Evidence Notebooks
- Hands-on investigations
- Real World Connections
- Problem Solving Activities
- Creativity and Imagination
- Communication and Collaboration with peers
- Media and Technology integrated lessons
- Cross curricular references
- Science and Engineering Practices Online Handbook
- Performance Tasks
- Engineering Design Process
- Immersive Digital Curriculum
- “Take It Further” (student choice)
- Student centered learning model
- Open ended simulations
- 3-D Virtual Field Trip
- Self reflections

Time Allotment

27 Days

Resources

- HMH Science Dimensions Curriculum Materials
 - Student Edition write-in book
 - Smartboard Interactive Lessons
 - Teacher Websites
 - Chapter Resources (Reteach and Enrich)
 - Leveled Readers
- Supplemental Authentic Literature:
 - Seasons and Weather by Rigby Staff
 - What are Weather Instruments? By Joseph Kampff
 - Weather Watching by Rigby Staff
 - Floods and Blizzards by William Rice
 - Come on Rain by Karen Hesse
 - On the Same Day in March by Marilyn Singer
 - The Kids Book of Weather Forecasting by Mark Breen

New Jersey Student Learning Standards

<http://www.state.nj.us/education/cccs/>

Integration of 21st Century Theme(s)

The following websites are sources for the following 21st Century Themes and Skills:

<http://www.nj.gov/education/code/current/title6a/chap8.pdf>

<http://www.p21.org/about-us/p21-framework> .

<http://www.state.nj.us/education/cccs/standards/9/index.html>

21st Century Interdisciplinary Themes (into core subjects)

- Global Awareness
- Financial, Economic, Business and Entrepreneurial Literacy
- Civic Literacy
- Health Literacy
- Environmental Literacy

Learning and Innovation Skills

- Creativity and Innovation
- Critical Thinking and Problem Solving
- Communication and Collaboration

Information, Media and Technology Skills

- Information Literacy
- Media Literacy
- ICT (Information, Communications and Technology) Literacy

Life and Career Skills

- Flexibility and Adaptability
- Initiative and Self-Direction
- Social and Cross-Cultural Skills
- Productivity and Accountability
- Leadership and Responsibility

Integration of Digital Tools

- Classroom computers/laptops
- Technology Lab
- FM system

- Other software programs