



Mansfield Township School District

John Hydock Elementary School

Course of Study/Curriculum Guide

(This curriculum is aligned with the New Jersey Next Generation Science Standards)

K-2 Science Curriculum

Board of Education Approval

December 2018

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Mission Statement

The mission of the Mansfield Township School District is to provide programs, materials, experiences, and environment that will ensure all students achieve the expectations of the New Jersey Student Learning Standards (NJSLS). In addition, the District's mission is to produce ethically, morally responsible students who possess the personal, interpersonal, intellectual, and social/emotional skills, concepts and understandings that will allow all students to function in, and live productively in society. In pursuit of our mission, we pledge to:

- Promote a learning environment that stresses not only the academic process but also self-discipline, self-worth, motivation, and respect for self, all others, and property.
- Provide equal access to a quality education where each student can reach his/her unique potential and recognize the efforts of each student.
- Provide equal access to a quality education where each student can reach his/her unique potential and recognize the efforts of each student.
- Promote an appreciation and understanding of diverse cultural backgrounds in our society and ensure a school climate that is accepting and welcomes everyone.
- Provide and maintain open communications between school and home among all sectors of the community.
- Involve community members in the educational process by promoting volunteer
- programs.
- Encourage a spirit of pride, professionalism, and growth among staff members.
- Provide students opportunities to use current technologies to help develop critical thinking and problem solving skills.
- Develop and offer parent training programs that assist parents
- Provide the needed resources for the continual revision and updating of program offerings and facilities.
- To enhance parenting skills.
- Encourage the development of partnerships with business and corporations for the support of our educational offerings.

Next Generation Science Standards

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.

Mission: *Scientifically literate individuals possess the knowledge and understanding of scientific concepts and processes required for personal decision-making, participation in civic and cultural affairs, and economic productivity.*

Vision: The science standards are designed to help realize a vision for education in the sciences and engineering in which students, over multiple years of school, actively engage in scientific and engineering practices and apply crosscutting concepts to deepen their understanding of the core ideas in these fields. The learning experiences provided for students should engage them with fundamental questions about the world and with how scientists have investigated and found answers to those questions. Throughout grades K-12, students should have the opportunity to carry out scientific investigations and engineering design projects related to the disciplinary core ideas (pp. 8-9, NRC, 2012).

Featured Resources

- [Science Model Curriculum Framework](#): provides concrete examples and resources for the development of local science curriculum. The courses and units were developed through the work of consortia of practicing teachers, science supervisors, and higher education faculty.
- [Science Instruction Companion to the Danielson Framework](#): serves two purposes. First, the document provides science specific observable evidence that supervisors of science teachers can reference during and after classroom observations. Second, the document is envisioned to be used as a common reference for professional conversations with and among the science faculty.
- [Science Program Rubric](#): is designed to help teams of educators answer the following questions. *To what extent is the science program consistent with the letter, spirit, and intent of the New Jersey Student Learning Standards for Science?* and *What should our goal(s) be for continued improvement?*

Pacing Guide

	MP1	MP2	MP3
	Science	Science	Science
<u>Kindergarten</u>	<p><u>Unit 1: Engineering and Technology</u></p> <p><u>Unit 2: Forces and Motion</u></p>	<p><u>Unit 3: Plant and Animal Structures</u></p> <p><u>Unit 4: Sun Warms Earth</u></p>	<p><u>Unit 5: Weather</u></p> <p><u>Unit 6: Earth's Resources</u></p>
<u>First Grade</u>	<p><u>Unit 1: Engineering and Design</u></p> <p><u>Units 2 & 3: Sound and Light</u></p>	<p><u>Units 2 & 3: Sound and Light</u></p> <p><u>Unit 6: Objects and Patterns in the Sky</u></p>	<p><u>Units 4 & 5: Life Science</u></p>
<u>Second Grade</u>	<p><u>Unit 1: Engineering Design Process</u></p> <p><u>Unit 2 : Matter</u> ½ of unit 2 (first half)</p>	<p><u>Unit 2 : Matter</u> ½ of Unit 2(second half)</p> <p><u>Unit 4: Earth's Surface</u></p> <p><u>Unit 5 : Changes to Earth's Surface</u> ½ of 5(first half)</p>	<p><u>Unit 5 : Changes to Earth's Surface</u> ½ of Unit 5 (second half)</p> <p><u>Unit 3: Environments for Living Things</u></p>

Kindergarten

Unit 1: Engineering and Technology

Recommended Pacing: Marking Period 1

Unit Summary: In this unit, students will define a simple problem that can be solved by developing a new or improved tool, ask questions, make observations, and gather information helpful in thinking about a problem, create a model based on evidence to represent a tool that solves a problem, compare and test design solutions to a problem, use sketches and models to communicate a solution to a problem.

Next Generation Science Standards: K-2-ETS1-1, K-2-ETS1-2, K-2-ETS1-3

Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts
<p>Asking Questions and Defining Problems</p> <ul style="list-style-type: none"> Asking questions and defining problems in K-2 builds on prior experiences and progresses to simple descriptive questions. Ask questions based on observations to find more information about the natural and/or designed world(s). (K2-ETS1-1) Define a simple problem that can be solved through the development of a new or improved object or tool. (K-2-ETS1-1) 	<p>ETS1.A: Defining and Delimiting Engineering Problems</p> <ul style="list-style-type: none"> A situation that people want to change or create can be approached as a problem to be solved through engineering. (K-2-ETS1-1) Asking questions, making observations, and gathering information are helpful in thinking about problems. (K-2-ETS1-1) Before beginning to design a solution, it is important to clearly understand the problem. (K-2-ETS1-1) 	<p>Structure and Function</p> <ul style="list-style-type: none"> The shape and stability of structures of natural and designed objects are related to their function(s). (K-2-ETS1-2)

Developing and Using Models

- Modeling in K–2 builds on prior experiences and progresses to include using and developing models (i.e., diagram, drawing, physical replica, diorama, dramatization, or storyboard) that represent concrete events or design solutions.
- Develop a simple model based on evidence to represent a proposed object or tool. (K-2-ETS1-2)

Analyzing and Interpreting Data

- Analyzing data in K–2 builds on prior experiences and progresses to collecting, recording, and sharing observations. Analyze data from tests of an object or tool to determine if it works as intended. (K-2-ETS1-3)

Connections to Nature of Science: Scientific Investigations

- Use a Variety of Methods
Scientists use different ways to study the world. (K-PS2-1)

ETS1.B: Developing Possible Solutions

- Designs can be conveyed through sketches, drawings, or physical models. These representations are useful in communicating ideas for a problem’s solutions to other people. (K-2-ETS1-2)

ETS1.C: Optimizing the Design Solution

- Because there is always more than one possible solution to a problem, it is useful to compare and test designs. (K-2-ETS1-3)

***Interdisciplinary Connections
NJSL Standard Connections***

Progress Indicators for Language Arts

RI.K.1 (Lesson 1.2)	With prompting and support, ask and answer questions about key details in a text.
W.K.6 (Lesson 1.1)	With guidance and support from adults, explore a variety of digital tools to produce and publish writing, including a collaboration with peers.
W.K.8 (Lesson 1.1) (Lesson 1.2)	With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question.
SL.K.5 (Lesson 1.2)	Add drawings or other visual displays to descriptions as desired to provide additional detail.

NJSLS Mathematical Standards and Practices:

K.CC.A.3 (Lesson 1.2)	Write numbers from 0 to 20. Represent a number of objects with a written numeral 0-20 (with 0 representing a count of no objects).
K.CC.B.5 (Lesson 1.2)	Count to answer "how many?" questions about as many as 20 things arranged in a line, a rectangular array, or a circle, or as many as 10 things in a scattered configuration; given a number from 1-20, count out that many objects.
K.MD.A.2 (Lesson 1.1)	Directly compare two objects with a measurable attribute in common, to see which object has "more of"/"less of" the attribute, and describe the difference.
K.G.A.2 (Lesson 1.2)	Correctly name shapes regardless of their orientations or overall size.
MP.2 (Lesson 1.2)	Reason abstractly and quantitatively.
MP.4 (Lesson 1.1)	Model with mathematics.

Technology/21st Century:

- 8.2.2.C.1 Brainstorm ideas on how to solve a problem or build a product.
- 8.2.2.C.2 Create a drawing of a product or device that communicates its function to peers and discuss.
- 8.2.2.C.3 Explain why we need to make new products.
- 8.2.2.C.4 Identify designed products and brainstorm how to improve one used in the classroom.
- 8.2.2.C.5 Describe how the parts of a common toy or tool interact and work as part of a system.
- 8.2.2.C.6 Investigate a product that has stopped working and brainstorm ideas to correct the problem.
- 8.2.2.D.1 Collaborate and apply a design process to solve a simple problem from everyday experiences

21st Century:

- 9.1.4.G.1 Describe how valuable items might be damaged or lost and ways to protect them.
- 9.2.4.A.1 Identify reasons why people work, different types of work, and how work can help a person achieve personal and professional goals.
- 9.2.4.A.2 Identify various life roles and civic and work-related activities in the school, home, and community.
- 9.2.4.A.3 Investigate both traditional and nontraditional careers and relate information to personal likes and dislikes.
- 9.2.4.A.4 Explain why knowledge and skills acquired in the elementary grades lay the foundation for future academic and career success.

Essential Questions:

- What Does an Engineer Do?
- How Can We Use a Design Process?

Enduring Understandings:

- Explore the work of an engineer
- Make observations
- Ask questions
- Gather information
- Define a simple problem
- Design a solution to a simple problem
- Investigate how engineers find solutions to everyday problems
- Investigate how technology is involved in solving problems
- Analyze data

Performance Expectation

Resources

<p>ETS1-1 Ask questions, make observations, gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.</p>	<p>HMH Science Dimensions Lesson 1</p>
<p>ETS1-2 Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.</p>	<p>HMH Science Dimensions Lesson 2</p>
<p>ETS1-3 Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.</p>	<p>HMH Science Dimensions Lesson 2</p>

Unit Assessments:

- Unit Project
- Unit Performance Task
- Lesson Quizzes
- Unit Test
- Performance-Based Assessment
- End-of-Year Test
- Teacher Observation

Resources/Websites:

- PBSkids.org
- Nationalgeographic.org
- CrashCourseKids.com
- MysteryScience.com
- BetterLesson.com

Mentor Texts/Leveled Books:

[Leveled Readers](#)

Accommodations & Modifications

Accommodations & Modifications to address special populations such as: Special Education, Students at risk of failure, students with 504's, Gifted and Talented and English Language Learners can be found at the bottom of this document, or by clicking here: [Modifications & Adaptations for Special Populations:](#)

Additional Modifications and Accommodations specific to this lesson are:

- Online HMH Science Dimensions audio and visual support

- Student Edition HMH Science Dimensions Workbook think pages
- Science Notebook - My thinking
- Alternate Engage Strategy Lessons
- Collaborative Work with Partner

Physical Science

Unit 2: Forces and Motion

Recommended Pacing: Marking Period 1

Unit Summary: In this unit, students will plan and conduct an investigation about the speed of objects, gather evidence to support or refute ideas about what caused motion, analyze data from tests to determine if a tool works as intended and explore pushes and pulls of different strengths and their effect on objects.

Next Generation Science Standards: K-PS2-1, K-PS2-2

Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts
<p>Planning and Carrying Out Investigations</p> <ul style="list-style-type: none"> • With guidance, planning and carrying out investigations to answer questions or test solutions to problems in K-2 builds on prior experiences and progresses to simple investigations, based on fair 	<p>PS2.A: Forces and Motion</p> <ul style="list-style-type: none"> • Pushes and pulls can have different strengths and directions. (KPS2-1),(K-PS2-2) • Pushing or pulling on an object can change the speed or direction of its motion and can start or stop it. (K-PS2-1),(K-PS2-2) 	<p>Cause and Effect</p> <ul style="list-style-type: none"> • Simple tests can be designed to gather evidence to support or refute student ideas about causes. (K-PS2- 1),(K-PS2-2)

tests, which provide data to support explanations or design solutions. With guidance, plan and conduct an investigation in collaboration with peers. (K-PS2-1)

Analyzing and Interpreting Data

- Analyzing data in K–2 builds on prior experiences and progresses to collecting, recording, and sharing observations. Analyze data from tests of an object or tool to determine if it works as intended. (K-PS2-2)

PS2.B: Types of Interactions

- When objects touch or collide, they push on one another and can change motion. (K-PS2-1)

PS3.C: Relationship Between Energy and Forces

- A bigger push or pull makes things speed up or slow down more quickly. (secondary to K-PS2-1)

ETS1.A: Defining Engineering Problems

- A situation that people want to change or create can be approached as a problem to be solved through engineering. Such problems may have many acceptable solutions. (secondary to KPS2-2)

**Interdisciplinary Connections
NJSL Standard Connections**

Progress Indicators for Language Arts

RI.K.1
(Lesson 2.2)

With prompting and support, ask and answer questions about key details in a text.

W.K.7
(Lesson 2.1)
(Lesson 2.2)

Participate in shared research and writing projects (e.g., explore a number of books by a favorite author and express opinions about them).

SL.K.3 (Lesson 2.1) (Lesson 2.2)	Ask and answer questions in order to seek help, get information, or clarify something that is not understood.
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NJSLS Mathematical Standards and Practices:

K.MD.A.1 (Lesson 2.1) (Lesson 2.2)	Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object.
K.MD.A.2 (Lesson 2.1) (Lesson 2.2)	Directly compare two objects with a measurable attribute in common, to see which object has “more of”/“less of” the attribute, and describe the difference.
MP.2 (Lesson 2.1) (Lesson 2.2)	Reason abstractly and quantitatively.

Technology:

- 8.1.P.A.4 Use basic technology terms in the proper context in conversation with peers and teachers (e.g., camera, tablet, Internet, mouse, keyboard, and printer).
- 8.1.P.A.5 Demonstrate the ability to access and use resources on a computing device.
- 8.1.2.A.4 Demonstrate developmentally appropriate navigation skills in virtual environments (i.e. games, museums).
- 8.1.2.A.5 Enter information into a spreadsheet and sort the information.
- 8.1.5.A.1 Select and use the appropriate digital tools and resources to accomplish a variety of tasks including solving problems.
- 8.1.P.C.1 Collaborate with peers by participating in interactive digital games or activities.
- 8.1.2.C.1 Engage in a variety of developmentally appropriate learning activities with students in other classes, schools, or countries using various media formats such as online collaborative tools, and social media.
- 8.1.P.E.1 Use the Internet to explore and investigate questions with a teacher’s support.\
- 8.1.2.E.1 Use digital tools and online resources to explore a problem or issue.
- 8.2.2.B.2 Demonstrate how reusing a product affects the local and global environment.

21st Century:

- 9.1.4.G.1 Describe how valuable items might be damaged or lost and ways to protect them.

- 9.2.4.A.1 Identify reasons why people work, different types of work, and how work can help a person achieve personal and professional goals.
- 9.2.4.A.2 Identify various life roles and civic and work-related activities in the school, home, and community.
- 9.2.4.A.3 Investigate both traditional and nontraditional careers and relate information to personal likes and dislikes.
- 9.2.4.A.4 Explain why knowledge and skills acquired in the elementary grades lay the foundation for future academic and career success.

Essential Questions:

- What is Motion?
- How Can We Change the Way Things Move?

Enduring Understandings:

- Plan and carry out investigations
- Make observations
- Gather evidence about direction and speed of motion
- Conduct simple tests about speed or direction of object in motion
- Make observations about strengths of pushes and pulls.
- Collect and analyze data
- Observe effects of exerting larger and smaller forces on object
- Gather evidence to support or refute idea about causation.

Performance Expectation	Resources
<p>K-PS2-1 Plan and conduct an investigation to compare the effects of different strengths or different directions of pushes and pulls on the motion of an object.</p>	<p>HMH Science Dimensions Lesson 1 Lesson 2</p>
<p>K-PS2-2 Analyze data to determine if a design solution works as intended to change the speed or direction of an object with a push or pull.</p>	<p>HMH Science Dimensions Lesson 2</p>

Unit Assessments:

- Unit Project
- Unit Performance Task
- Lesson Quizzes
- Unit Test
- Performance-Based Assessment
- End-of-Year Test
- Teacher Observation

Resources/Websites:

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- Nationalgeographic.org
- CrashCourseKids.com
- MysteryScience.com
- BetterLesson.com

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[Leveled Readers](#)

Accommodations & Modifications

Accommodations & Modifications to address special populations such as: Special Education, Students at risk of failure, students with 504's, Gifted and Talented and English Language Learners can be found at the bottom of this document, or by clicking here : [Modifications & Adaptations for Special Populations:](#)

Additional Modifications and Accommodations specific to this lesson are:

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- Student Edition HMH Science Dimensions Workbook think pages
- Science Notebook - My thinking
- Alternate Engage Strategy Lessons
- Collaborative Work with Partner

Unit 3: Plant and Animal Structures

Recommended Pacing: Marking Period 2

Unit Summary: In this unit, students will use observations to describe patterns of what plants and animals need to survive, analyze data by collecting, recording, and sharing observations, use a model to show the relationship between the needs of different plants or animals and the places they live, use patterns as evidence to support claims and construct an argument supported by evidence for how plants and animals change the environment to survive.

Next Generation Science Standards: K-LS1-1, K-ESS2-2, K-ESS3-1

Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts
<p>Analyzing and Interpreting Data</p> <ul style="list-style-type: none"> Analyzing data in K–2 builds on prior experiences and progresses to collecting, recording, and sharing observations. Use observations (firsthand or from media) to describe patterns in the natural world in order to answer scientific questions. (K-LS1-1) <p>Connections to Nature of Science: Scientific Knowledge is Based on Empirical Evidence</p>	<p>LS1.C: Organization for Matter and Energy Flow in Organisms</p> <ul style="list-style-type: none"> All animals need food in order to live and grow. They obtain their food from plants or from other animals. Plants need water and light to live and grow. (K-LS1-1) 	<p>Patterns</p> <ul style="list-style-type: none"> Patterns in the natural and human designed world can be observed and used as evidence. (K-LS1-1)

- Scientists look for patterns and order when making observations about the world. (K-LS1-1)

***Interdisciplinary Connections
NJSL Standard Connections***

Progress Indicators for Language Arts

RI.K.1 (Lesson 3.4)	With prompting and support, ask and answer questions about key details in a text.
W.K.7 (Lesson 3.1) (Lesson 3.2) (Lesson 3.4)	Participate in shared research and writing projects (e.g., explore a number of books by a favorite author and express opinions about them).
SL.K.5 (Lesson 3.1) (Lesson 3.2) (Lesson 3.3)	Add drawings or other visual displays to descriptions as desired to provide additional detail.

NJSLS Mathematical Standards and Practices:

K.CC.A.1 (Lesson 3.2) (Lesson 3.3)	Count to 100 by ones and by tens.
K.CC.A.3 (Lesson 3.2)	Write numbers from 0 to 20. Represent a number of objects with a written numeral 0-20 (with 0 representing a count of no objects).
K.CC.C.7 (Lesson 3.4)	Compare two numbers between 1 and 10 presented as written numerals.

K.MD.A.2 (Lesson 3.1) (Lesson 3.3)	Directly compare two objects with a measurable attribute in common, to see which object has “more of”/“less of” the attribute, and describe the difference.
MP.2 (Lesson 3.3)	Reason abstractly and quantitatively.
MP.4 (Lesson 3.2) (Lesson 3.4)	Model with mathematics.

Technology:

- 8.1.P.A.4 Use basic technology terms in the proper context in conversation with peers and teachers (e.g., camera, tablet, Internet, mouse, keyboard, and printer).
- 8.1.P.A.5 Demonstrate the ability to access and use resources on a computing device.
- 8.1.2.A.4 Demonstrate developmentally appropriate navigation skills in virtual environments (i.e. games, museums).
- 8.1.2.A.5 Enter information into a spreadsheet and sort the information.
- 8.1.5.A.1 Select and use the appropriate digital tools and resources to accomplish a variety of tasks including solving problems.
- 8.1.P.C.1 Collaborate with peers by participating in interactive digital games or activities.
- 8.1.2.C.1 Engage in a variety of developmentally appropriate learning activities with students in other classes, schools, or countries using various media formats such as online collaborative tools, and social media.
- 8.1.P.E.1 Use the Internet to explore and investigate questions with a teacher’s support.\
- 8.1.2.E.1 Use digital tools and online resources to explore a problem or issue.
- 8.2.2.B.2 Demonstrate how reusing a product affects the local and global environment.

21st Century:

- 9.1.4.G.1 Describe how valuable items might be damaged or lost and ways to protect them.
- 9.2.4.A.1 Identify reasons why people work, different types of work, and how work can help a person achieve personal and professional goals.
- 9.2.4.A.2 Identify various life roles and civic and work-related activities in the school, home, and community.
- 9.2.4.A.3 Investigate both traditional and nontraditional careers and relate information to personal likes and dislikes.
- 9.2.4.A.4 Explain why knowledge and skills acquired in the elementary grades lay the foundation for future academic and career success.

Essential Questions:

- What Do Plants Need?
- What Do Animals Need?
- Where Do Plants and Animals Live?
- How Do Plants and Animals Change Their Environment?

Enduring Understandings:

- Compare living and nonliving things.
- Identify patterns in what plants need to live and grow.
- Use observations as evidence to establish patterns in natural world.
- Identify what animals need to live and grow
- Use observations as basis to answer scientific questions.
- Gather evidence concerning the needs of plants and animals
- Develop understanding that plants and animals live in places that have the things they need and these places have systems.
- Use models to show the relationship between the needs of living things and the places they live.
- Focus on how living things change their environment to meet their needs.
- Build arguments from evidence to support a claim about the way living things change the environment.

Performance Expectation**K-LS1-1**

Use observations to describe patterns of what plants and animals (including humans) need to survive.

K-ESS2-2

Construct an argument supported by evidence for how plants and animals (including humans) can change the environment to meet their needs.

Resources

HMH Science Dimensions
Lesson 1
Lesson 2

HMH Science Dimensions
Lesson 4

K-ESS3-1

Use a model to represent the relationship between the needs of different plants or animals (including humans) and the places they live.

HMH Science Dimensions
Lesson 3

Unit Assessments:

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- Unit Performance Task
- Lesson Quizzes
- Unit Test
- Performance-Based Assessment
- End-of-Year Test
- Teacher Observation

Resources/Websites:

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- Collaborative Work with Partner

Earth and Space Sciences

Unit 4: Sun Warms Earth

Recommended Pacing: Marking Period 2

Unit Summary: In this unit, students will make observations to construct an evidence-based account of the effect of sunlight on Earth’s surface, make observations to collect data that can be used to make comparisons, use tools and materials provided to design and build a device that protects people from the sun and describe the causes that create observable patterns associated with the effect of sunlight on Earth’s surface.

Next Generation Science Standards: K-PS3-1, K-PS3-2

Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts
Planning and Carrying Out Investigations <ul style="list-style-type: none">• Planning and carrying out investigations to answer questions or test solutions to problems in K–2 builds on prior experiences and progresses to simple investigations, based on fair tests, which provide data to	PS3.B: Conservation of Energy and Energy Transfer <ul style="list-style-type: none">• Sunlight warms Earth’s surface. (K-PS3-1),(K-PS3-2)	Cause and Effect <ul style="list-style-type: none">• Events have causes that generate observable patterns. (K-PS3-1),(K-PS3-2)

support explanations or design solutions. Make observations (firsthand or from media) to collect data that can be used to make comparisons. (K-PS3-1)

Constructing Explanations and Designing Solutions

- Constructing explanations and designing solutions in K–2 builds on prior experiences and progresses to the use of evidence and ideas in constructing evidence-based accounts of natural phenomena and designing solutions. Use tools and materials provided to design and build a device that solves a specific problem or a solution to a specific problem. (K-PS3- 2)

Connections to Nature of Science: Scientific Investigations Use a Variety of Methods

- Scientists use different ways to study the world. (K-PS3-1)

***Interdisciplinary Connections
NJSL Standard Connections***

Progress Indicators for Language Arts

W.K.7
(Lesson 4.1)
(Lesson 4.2)

Participate in shared research and writing projects (e.g., explore a number of books by a favorite author and express opinions about them).

NJSLS Mathematical Standards and Practices:

K.MD.A.2
(Lesson 4.1)
(Lesson 4.2)

Directly compare two objects with a measurable attribute in common, to see which object has "more of"/"less of" the attribute, and describe the difference.

Technology:

- 8.1.P.A.4 Use basic technology terms in the proper context in conversation with peers and teachers (e.g., camera, tablet, Internet, mouse, keyboard, and printer).
- 8.1.P.A.5 Demonstrate the ability to access and use resources on a computing device.
- 8.1.2.A.4 Demonstrate developmentally appropriate navigation skills in virtual environments (i.e. games, museums).
- 8.1.2.A.5 Enter information into a spreadsheet and sort the information.
- 8.1.5.A.1 Select and use the appropriate digital tools and resources to accomplish a variety of tasks including solving problems.
- 8.1.P.C.1 Collaborate with peers by participating in interactive digital games or activities.
- 8.1.2.C.1 Engage in a variety of developmentally appropriate learning activities with students in other classes, schools, or countries using various media formats such as online collaborative tools, and social media.
- 8.1.P.E.1 Use the Internet to explore and investigate questions with a teacher's support.
- 8.1.2.E.1 Use digital tools and online resources to explore a problem or issue.
- 8.2.2.B.2 Demonstrate how reusing a product affects the local and global environment.

21st Century:

- 9.1.4.G.1 Describe how valuable items might be damaged or lost and ways to protect them.
- 9.2.4.A.1 Identify reasons why people work, different types of work, and how work can help a person achieve personal and professional goals.
- 9.2.4.A.2 Identify various life roles and civic and work-related activities in the school, home, and community.
- 9.2.4.A.3 Investigate both traditional and nontraditional careers and relate information to personal likes and dislikes.
- 9.2.4.A.4 Explain why knowledge and skills acquired in the elementary grades lay the foundation for future academic and career success.

Essential Questions:

- How does the sun warm Earth?
- How can I protect myself from the sun?

Enduring Understandings:

- Sunlight's effect on Earth's surface
- Observe how water, soil, sand and rocks are affected by sunlight
- Effect of sun's light and heat through data analysis
- Hands-on investigations

Performance Expectation**K-PS3-1**

Make observations to determine the effect of sunlight on Earth's surface.

K-PS3-2

Use tools and materials to design and build a structure that will reduce the warming effect of sunlight on an area.

Resources

HMH Science Dimensions
Lesson 1

HMH Science Dimensions
Lesson 2

Unit Assessments:

- Unit Project
- Unit Performance Task
- Lesson Quizzes
- Unit Test
- Performance-Based Assessment
- End-of-Year Test
- Teacher Observation

Resources/Websites:

- PBSkids.org
- Nationalgeographic.org
- CrashCourseKids.com
- MysteryScience.com
- BetterLesson.com

Mentor Texts/Leveled Books:

[Leveled Readers](#)

Accommodations & Modifications

Accommodations & Modifications to address special populations such as: Special Education, Students at risk of failure, students with 504's, Gifted and Talented and English Language Learners can be found at the bottom of this document, or by clicking here: [Modifications & Adaptations for Special Populations:](#)

Additional Modifications and Accommodations specific to this lesson are:

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- Student Edition HMH Science Dimensions Workbook think pages
- Science Notebook - My thinking
- Alternate Engage Strategy Lessons
- Collaborative Work with Partner

Unit 5: Weather

Recommended Pacing: Marking Period 3

Unit Summary: In this unit, students will use observations to describe different kinds of weather, explore observable weather patterns, use patterns as evidence to describe weather conditions, ask questions to find out about different kinds of weather, explore technologies meteorologists use to predict weather and severe weather conditions.

Next Generation Science Standards: K-ESS2-1, K-ESS3-2

Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts
<p>Analyzing and Interpreting Data</p> <ul style="list-style-type: none"> Analyzing data in K–2 builds on prior experiences and progresses to collecting, recording, and sharing observations. Use observations (firsthand or from media) to describe patterns in the natural world in order to answer scientific questions. (K-ESS2-1) <p>Engaging in Argument from Evidence</p>	<p>ESS2.D: Weather and Climate</p> <ul style="list-style-type: none"> Weather is the combination of sunlight, wind, snow or rain, and temperature in a particular region at a particular time. People measure these conditions to describe and record the weather and to notice patterns over time. (K-ESS2-1) <p>ESS2.E: Biogeology</p>	<p>Patterns</p> <ul style="list-style-type: none"> Patterns in the natural world can be observed, used to describe phenomena, and used as evidence. (K-ESS2-1) <p>Systems and System Models</p> <ul style="list-style-type: none"> Systems in the natural and designed world have parts that work together. (K-ESS2-2)

- Engaging in argument from evidence in K–2 builds on prior experiences and progresses to comparing ideas and representations about the natural and designed world(s). Construct an argument with evidence to support a claim. (K-ESS2-2)

Connections to Nature of Science: Science Knowledge is Based on Empirical Evidence

- Scientists look for patterns and order when making observations about the world. (K-ESS2-1)

- Plants and animals can change their environment.

ESS3.C: Human Impacts on Earth Systems

- Things that people do to live comfortably can affect the world around them. But they can make choices that reduce their impacts on the land, water, air, and other living things. (secondary to (K-ESS2-2)

**Interdisciplinary Connections
NJSL Standard Connections**

Progress Indicators for Language Arts

RI.K.1
(Lesson 5.3)
(Lesson 5.4)

With prompting and support, ask and answer questions about key details in a text.

W.K.2
(Lesson 5.1)
(Lesson 5.2)
(Lesson 5.3)

Use a combination of drawing, dictating, and writing to compose informative/explanatory texts in which they name what they are writing about and supply some information about the topic.

W.K.7
(Lesson 5.1)
(Lesson 5.2)

Participate in shared research and writing projects (e.g., explore a number of books by a favorite author and express opinions about them).

SL.K.3 (Lesson 5.3) (Lesson 5.4)	Ask and answer questions in order to seek help, get information, or clarify something that is not understood.
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NJSLS Mathematical Standards and Practices:

K.CC.A.1 (Lesson 5.3)	Count to 100 by ones and by tens.
K.CC.A.2 (Lesson 5.1) (Lesson 5.2)	Count forward beginning from a given number within the known sequence (instead of having to begin at 1).
K.CC.B.5 (Lesson 5.4)	Count to answer "how many?" questions about as many as 20 things arranged in a line, a rectangular array, or a circle, or as many as 10 things in a scattered configuration; given a number from 1-20, count out that many objects.
K.CC.C.7 (Lesson 5.1) (Lesson 5.2)	Compare two numbers between 1 and 10 presented as written numerals.
K.MD.A.2 (Lesson 5.2)	Directly compare two objects with a measurable attribute in common, to see which object has "more of"/"less of" the attribute, and describe the difference.
K.MD.B.3 (Lesson 5.1)	Classify objects into given categories; count the numbers of objects in each category and sort the categories by count.
MP.2 (Lesson 1) (Lesson 2)	Reason abstractly and quantitatively.
MP.4 (Lesson 1) (Lesson 2) (Lesson 3) (Lesson 4)	Model with mathematics.

Technology:

- 8.1.P.A.4 Use basic technology terms in the proper context in conversation with peers and teachers (e.g., camera, tablet, Internet, mouse, keyboard, and printer).
- 8.1.P.A.5 Demonstrate the ability to access and use resources on a computing device.
- 8.1.2.A.4 Demonstrate developmentally appropriate navigation skills in virtual environments (i.e. games, museums).
- 8.1.2.A.5 Enter information into a spreadsheet and sort the information.
- 8.1.5.A.1 Select and use the appropriate digital tools and resources to accomplish a variety of tasks including solving problems.
- 8.1.P.C.1 Collaborate with peers by participating in interactive digital games or activities.
- 8.1.2.C.1 Engage in a variety of developmentally appropriate learning activities with students in other classes, schools, or countries using various media formats such as online collaborative tools, and social media.
- 8.1.P.E.1 Use the Internet to explore and investigate questions with a teacher's support.
- 8.1.2.E.1 Use digital tools and online resources to explore a problem or issue.
- 8.2.2.B.2 Demonstrate how reusing a product affects the local and global environment.

21st Century:

- 9.1.4.G.1 Describe how valuable items might be damaged or lost and ways to protect them.
- 9.2.4.A.1 Identify reasons why people work, different types of work, and how work can help a person achieve personal and professional goals.
- 9.2.4.A.2 Identify various life roles and civic and work-related activities in the school, home, and community.
- 9.2.4.A.3 Investigate both traditional and nontraditional careers and relate information to personal likes and dislikes.
- 9.2.4.A.4 Explain why knowledge and skills acquired in the elementary grades lay the foundation for future academic and career success.

Essential Questions:

- How can we observe weather patterns?
- How can we measure weather?
- What are kinds of severe weather?
- How can forecasts help us?

Enduring Understandings:

- Observe and describe different types of weather, weather patterns and four seasons
- Collect, record and share observations of weather
- Identify weather patterns
- Explain how weather tools are used to collect data
- Use pictures and text to describe and identify severe weather
- Observe, ask question and gather information
- Identify causes of severe weather
- Describe how scientists make predictions, ask questions and make observations.
- Make weather forecast.
- Response to different types of severe weather.

Performance Expectation**ESS2-1**

Use and share observations of local weather conditions to describe patterns over time.

Resources

HMH Science Dimensions
Lesson 1
Lesson 2

ESS3-2

HMH Science Dimensions

Ask questions to obtain information about the purpose of weather forecasting to preparing for, and respond to, severe weather.

Lesson 3
Lesson 4

Unit Assessments:

- Unit Project
- Unit Performance Task
- Lesson Quizzes
- Unit Test
- Performance-Based Assessment
- End-of-Year Test
- Teacher Observation

Resources/Websites:

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- Nationalgeographic.org
- CrashCourseKids.com
- MysteryScience.com
- BetterLesson.com

Mentor Texts/Leveled Books:

[Leveled Readers](#)

Accommodations & Modifications

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- Alternate Engage Strategy Lessons
- Collaborative Work with Partner

Unit 6: Earth's Resources

Recommended Pacing: Marking Period 3

Unit Summary: In this unit, students will identify air, water, rocks, and soil as natural resources, use evidence to explain that living things need water, air, and resources from the land, describe how natural resources work as part of a system in the natural world, explain ways people use natural resources and the impact they have on the environment and design and communicate solutions to overcome negative impacts on the environment.

Next Generation Science Standards: K-ESS3-3, K-ESS3-1

Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts
<p>Obtaining, Evaluating, and Communicating Information</p> <ul style="list-style-type: none"> Obtaining, evaluating, and communicating information in K–2 builds on prior experiences and uses observations and texts to communicate new information. Read grade-appropriate texts and/or use media to obtain scientific information to describe patterns in the natural world. 	<p>ESS3.A: Natural Resources</p> <ul style="list-style-type: none"> Living things need water, air, and resources from the land, and they live in places that have the things they need. Humans use natural resources for everything they do. (K-ESS3-1) 	<p>Cause and Effect</p> <ul style="list-style-type: none"> Events have causes that generate observable patterns. (K-ESS3-2),(K-ESS3-3) <p>Systems and System Models</p> <ul style="list-style-type: none"> Systems in the natural and designed world have parts that work together. (K-ESS3-1)

(K-ESS3-2)

- Communicate solutions with others in oral and/or written forms using models and/or drawings that provide detail about scientific ideas. (K-ESS3-3)

Developing and Using Models

- Modeling in K–2 builds on prior experiences and progresses to include using and developing models (i.e., diagram, drawing, physical replica, diorama, dramatization, storyboard) that represent concrete events or design solutions. Use a model to represent relationships in the natural world. (K-ESS3-1)

ESS3.C: Human Impacts on Earth Systems

- Things that people do to live comfortably can affect the world around them. But they can make choices that reduce their impacts on the land, water, air, and other living things. (K-ESS3- 3)

ETS1.B: Developing Possible Solutions

- Designs can be conveyed through sketches, drawings, or physical models. These representations are useful in communicating ideas for a problem’s solutions to other people. (secondary to K-ESS3-3)

***Interdisciplinary Connections
NJSL Standard Connections***

Progress Indicators for Language Arts

W.K.2 (Lesson 6.2)	Use a combination of drawing, dictating, and writing to compose informative/explanatory texts in which they name what they are writing about and supply some information about the topic.
SL.K.5 (Lesson 6.1)	Add drawings or other visual displays to descriptions as desired to provide additional detail.

NJSLS Mathematical Standards and Practices:

K.CC.A.3 (Lesson 6.1)	Write numbers from 0 to 20. Represent a number of objects with a written numeral 0-20 (with 0 representing a count of no objects).
K.CC.B.5 (Lesson 6.1) (Lesson 6.2)	Count to answer "how many?" questions about as many as 20 things arranged in a line, a rectangular array, or a circle, or as many as 10 things in a scattered configuration; given a number from 1-20, count out that many objects.
MP.2 (Lesson 6.1) (Lesson 6.2)	Reason abstractly and quantitatively.
MP.4 (Lesson 6.1) (Lesson 6.2)	Model with mathematics.

Technology:

- 8.1.P.A.4 Use basic technology terms in the proper context in conversation with peers and teachers (e.g., camera, tablet, Internet, mouse, keyboard, and printer).
- 8.1.P.A.5 Demonstrate the ability to access and use resources on a computing device.
- 8.1.2.A.4 Demonstrate developmentally appropriate navigation skills in virtual environments (i.e. games, museums).
- 8.1.2.A.5 Enter information into a spreadsheet and sort the information.
- 8.1.5.A.1 Select and use the appropriate digital tools and resources to accomplish a variety of tasks including solving problems.
- 8.1.P.C.1 Collaborate with peers by participating in interactive digital games or activities.
- 8.1.2.C.1 Engage in a variety of developmentally appropriate learning activities with students in other classes, schools, or countries using various media formats such as online collaborative tools, and social media.
- 8.1.P.E.1 Use the Internet to explore and investigate questions with a teacher's support.
- 8.1.2.E.1 Use digital tools and online resources to explore a problem or issue.
- 8.2.2.B.2 Demonstrate how reusing a product affects the local and global environment.

21st Century:

- 9.1.4.G.1 Describe how valuable items might be damaged or lost and ways to protect them.
- 9.2.4.A.1 Identify reasons why people work, different types of work, and how work can help a person achieve personal and professional goals.
- 9.2.4.A.2 Identify various life roles and civic and work-related activities in the school, home, and community.
- 9.2.4.A.3 Investigate both traditional and nontraditional careers and relate information to personal likes and dislikes.

- 9.2.4.A.4 Explain why knowledge and skills acquired in the elementary grades lay the foundation for future academic and career success.

Essential Questions:

- **What are natural resources?**
- **How can we save natural resources?**

Enduring Understandings:

- Explore natural resources
- Investigate and use evidence to support ideas
- Use model to identify use of natural resources to survive

Performance Expectation	Resources
<p>K-ESS3-1 Use a model to represent the relationship between the needs of different plants or animals (including humans) and the places they live.</p>	<p>HMH Science Dimensions Lesson 1</p>
<p>K-ESS3-3 Communicate solutions that will reduce the impact of humans on the land, water, air, and/or other living things in the local environment.</p>	<p>HMH Science Dimensions Lesson 2</p>
<p>Unit Assessments:</p> <ul style="list-style-type: none"> ● Unit Project ● Unit Performance Task ● Lesson Quizzes ● Unit Test ● Performance-Based Assessment ● End-of-Year Test ● Teacher Observation 	
<p>Resources/Websites:</p> <ul style="list-style-type: none"> ● PBSkids.org ● Nationalgeographic.org ● CrashCourseKids.com ● MysteryScience.com ● BetterLesson.com 	<p>Mentor Texts/Leveled Books:</p> <p>Leveled Readers</p>
<p style="text-align: center;">Accommodations & Modifications</p> <p>Accommodations & Modifications to address special populations such as: Special Education, Students at risk of failure, students with 504's, Gifted and Talented and English Language Learners can be found at the bottom of this document, or by clicking here: .Modifications & Adaptations for Special Populations:</p> <p>Additional Modifications and Accommodations specific to this lesson are:</p> <ul style="list-style-type: none"> ● Online HMH Science Dimensions audio and visual support ● Student Edition HMH Science Dimensions Workbook think pages 	

- **Science Notebook - My thinking**
- **Alternate Engage Strategy Lessons**
- **Collaborative Work with Partner**

First Grade

Unit Summary:

In this unit, students will define and identify problems and examples of technology. Students will describe how people understand problems and use technology to solve problems. They will further explore and apply a design process.

Next Generation Science Standards: ETS1-1, ETS1-2, ETS1-3

Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts
<p>Asking Questions and Defining Problems Asking questions and defining problems in K-2 builds on prior experiences and progresses to simple descriptive questions.</p> <ul style="list-style-type: none"> Ask questions based on observations to find more information about the natural and/or designed world(s). (K2-ETS1-1) Define a simple problem that can be solved through the development of a new or improved object or tool. (K-2-ETS1-1) <p>Developing and Using Models Modeling in K-2 builds on prior experiences and progresses to include using and developing models (i.e., diagram, drawing, physical replica, diorama, dramatization, or storyboard) that represent concrete events or design solutions.</p> <ul style="list-style-type: none"> Develop a simple model based on evidence to represent a proposed object or tool. (K-2-ETS1-2) <p>Analyzing and Interpreting Data Analyzing data in K-2 builds on prior experiences and progresses to collecting,</p>	<p>ETS1.A: Defining and Delimiting Engineering Problems</p> <ul style="list-style-type: none"> A situation that people want to change or create can be approached as a problem to be solved through engineering. (K-2-ETS1-1) Asking questions, making observations, and gathering information are helpful in thinking about problems. (K-2-ETS1-1) Before beginning to design a solution, it is important to clearly understand the problem. (K-2-ETS1-1) <p>ETS1.B: Developing Possible Solutions</p> <ul style="list-style-type: none"> Designs can be conveyed through sketches, drawings, or physical models. These representations are useful in communicating ideas for a problem's solutions to other people. (K-2-ETS1-2) <p>ETS1.C: Optimizing the Design Solution</p> <ul style="list-style-type: none"> Because there is always more than one possible solution to a problem, it is useful to compare and test designs. (K-2-ETS1-3) 	<p>Structure and Function</p> <ul style="list-style-type: none"> The shape and stability of structures of natural and designed objects are related to their function(s). (K-2-ETS1-2)

- recording, and sharing observations.
- Analyze data from tests of an object or tool to determine if it works as intended. (K-2-ETS1-3)

***Interdisciplinary Connections
NJSL Standard Connections***

Progress Indicators for Language Arts

W.1.2	Write informative/explanatory texts in which they name a topic, supply some facts about the topic, and provide some sense of closure.
W.1.8	With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question.

NJSL Mathematical Standards and Practices:

1.MD.C.4	Represent and interpret data- Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another.
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Technology/21st Century:

- 8.2.2.C.1 Brainstorm ideas on how to solve a problem or build a product.
- 8.2.2.C.2 Create a drawing of a product or device that communicates its function to peers and discuss.
- 8.2.2.C.3 Explain why we need to make new products.
- 8.2.2.C.4 Identify designed products and brainstorm how to improve one used in the classroom.
- 8.2.2.C.5 Describe how the parts of a common toy or tool interact and work as part of a system.
- 8.2.2.C.6 Investigate a product that has stopped working and brainstorm ideas to correct the problem.
- 8.2.2.D.1 Collaborate and apply a design process to solve a simple problem from everyday experiences

21st Century:

- 9.1.4.G.1 Describe how valuable items might be damaged or lost and ways to protect them.
- 9.2.4.A.1 Identify reasons why people work, different types of work, and how work can help a person achieve personal and professional goals.
- 9.2.4.A.2 Identify various life roles and civic and work-related activities in the school, home, and community.
- 9.2.4.A.3 Investigate both traditional and nontraditional careers and relate information to personal likes and dislikes.

- 9.2.4.A.4 Explain why knowledge and skills acquired in the elementary grades lay the foundation for future academic and career success.

Essential Questions:

- How Do Engineers Use Technology?
- How Can We Solve a Problem?

Enduring Understandings:

- Exploring, identifying and naming simply problems
- Defining a problem, gathering information, and building something to solve a problem
- Focusing on a design process to solve problems
- Exploring a design process to compare and test the shape and stability of objects to determine if they work as intended
- Develop and test simple models to solve problems through a design process

Performance Expectation

Resources

K-2 ETS1-1

Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.

HMH Science Dimensions
Unit 1 Lessons 1,2

K-2- ETS1-2

Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.

HMH Science Dimensions
Unit 1 Lessons 1,2

K-2- ETS1- 3

Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.

HMH Science Dimensions
Unit 1 Lessons 1,2

Assessments:

- Teacher observations
- Lesson quizzes
- Unit tests
- Unit projects
- You solve it
- Performance-Based Assessment
- End of Module Test

Resources/Websites:

- MysteryScience.com
- PBSKids.com
- Vocabulary cards
- anchor charts
- supplemental worksheets

Mentor Texts/Leveled Books:

- [Leveled Books](#)

Accommodations & Modifications

Accommodations & Modifications to address special populations such as: Special Education, Students at risk of failure, students with 504's, Gifted and Talented and English Language Learners can be found at the bottom of this document, or by clicking [here](#).

Additional Modifications and Accommodations specific to this lesson are:

- pre-printed vocabulary cards with pictures
- discussing extra examples of difficult words (ex. Engineer, technology)
- use of visuals in the classroom
- seating near the teacher of students who would need extra assistance

Physical Science

Units 2 & 3: Sound and Light

Recommended Pacing: 4 weeks

Unit Summary: In the sound unit, students will explore the relationship between sound and vibration. They will compare the volume and the pitch of different sounds, investigate how sound and materials move, identify ways people communicate using sound, and explore how technology is used to help people communicate with sound over distances.

In the light unit, students will provide evidence on observations, of the relationship between the amount of light and how an object is seen. They will explain, using evidence based on observations, why objects that give off their own light can be seen in the dark. They will further explain and demonstrate how different materials can allow different amounts of light to pass through. Students will also explain how shadows are made, observe that light shines in a straight line until it hits an object and explore how reflection can be used to redirect light and explore how technology is used to send and receive information using light.

Next Generation Science Standards: 1-PS4-1, 1-PS4-2, 1-PS4-3, 1-PS4-4

Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts
<p>Planning and Carrying Out Investigations Planning and carrying out investigations to answer questions or test solutions to</p>	<p>PS4.A: Wave Properties</p> <ul style="list-style-type: none"> • Sound can make matter vibrate, and vibrating matter can make sound. (1-PS4-1) 	<p>Cause and Effect</p> <ul style="list-style-type: none"> • Simple tests can be designed to gather evidence to support or refute student ideas about causes.

problems in K–2 builds on prior experiences and progresses to simple investigations, based on fair tests, which provide data to support explanations or design solutions.

- Plan and conduct investigations collaboratively to produce data to serve as the basis for evidence to answer a question. (1-PS4-1),(1-PS4-3)

Constructing Explanations and Designing Solutions

Constructing explanations and designing solutions in K–2 builds on prior experiences and progresses to the use of evidence and ideas in constructing evidence-based accounts of natural phenomena and designing solutions.

- Make observations (firsthand or from media) to construct an evidence-based account for natural phenomena. (1-PS4-2)
- Use tools and materials provided to design a device that solves a specific problem. (1-PS4-4)

Connections to Nature of Science

- Scientific Investigations Use a Variety of Methods Science investigations begin with a question. (1-PS4-1)
- Scientists use different ways to study the world. (1-PS4-1)

PS4.B: Electromagnetic Radiation

- Objects can be seen if light is available to illuminate them or if they give off their own light. (1-PS4-2)
- Some materials allow light to pass through them, others allow only some light through and others block all the light and create a dark shadow on any surface beyond them, where the light cannot reach. Mirrors can be used to redirect a light beam. (Boundary: The idea that light travels from place to place is developed through experiences with light sources, mirrors, and shadows, but no attempt is made to discuss the speed of light.) (1-PS4-3)

PS4.C: Information Technologies and Instrumentation

- People also use a variety of devices to communicate (send and receive information) over long distances. (1-PS4-4)

(1-PS4-1),(1-PS4-2),(1-PS4-3)

Connections to Engineering, Technology, and Applications of Science

Influence of Engineering, Technology, and Science, on Society and the Natural World

- People depend on various technologies in their lives; human life would be very different without technology. (1-PS4-4)

**Interdisciplinary Connections
NJSL Standard Connections**

Progress Indicators for Language Arts

W.1.2

Write informative/explanatory texts in which they name a topic, supply some facts about the topic, and provide some sense of closure

W.1.7	Participate in shared research and writing projects (e.g., explore a number of “how-to” books on a given topic and use them to write a sequence of instructions).
W.1.8	With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question
SL.1.1	Participate in collaborative conversations with diverse partners about grade 1 topics and texts with peers and adults in small and larger groups.

NJSLS Mathematical Standards and Practices:

MP.5	Use appropriate tools strategically
1.MD.A.1	Order three objects by length; compare the lengths of two objects indirectly by using a third object.
1.MD.A.2	Express the length of an object as a whole number of length units, by layering multiple copies of a shorter object (the length unit) end to end; understand that the length measurement of an object is the number of same-size length units that span it with no gaps or overlaps

Technology:

- 8.1.P.A.4 Use basic technology terms in the proper context in conversation with peers and teachers (e.g., camera, tablet, Internet, mouse, keyboard, and printer).
- 8.1.P.A.5 Demonstrate the ability to access and use resources on a computing device.
- 8.1.2.A.4 Demonstrate developmentally appropriate navigation skills in virtual environments (i.e. games, museums).
- 8.1.2.A.5 Enter information into a spreadsheet and sort the information.
- 8.1.5.A.1 Select and use the appropriate digital tools and resources to accomplish a variety of tasks including solving problems.
- 8.1.P.C.1 Collaborate with peers by participating in interactive digital games or activities.
- 8.1.2.C.1 Engage in a variety of developmentally appropriate learning activities with students in other classes, schools, or countries using various media formats such as online collaborative tools, and social media.
- 8.1.P.E.1 Use the Internet to explore and investigate questions with a teacher’s support.\
- 8.1.2.E.1 Use digital tools and online resources to explore a problem or issue.
- 8.2.2.B.2 Demonstrate how reusing a product affects the local and global environment.

21st Century:

- 9.1.4.G.1 Describe how valuable items might be damaged or lost and ways to protect them.
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- 9.2.4.A.2 Identify various life roles and civic and work-related activities in the school, home, and community.
- 9.2.4.A.3 Investigate both traditional and nontraditional careers and relate information to personal likes and dislikes.
- 9.2.4.A.4 Explain why knowledge and skills acquired in the elementary grades lay the foundation for future academic and career success.

Essential Questions:

Sound Unit:

- What is sound?
- What do you think is making the paint bounce into the air?
- Could sound make the paint bounce?
- How do vibrations make sound?
- How can we communicate with sounds?

Light Unit:

- How does light help us see?
- How do materials block light?
- How does light travel?
- What allows you to see the buildings?
- How can you make a rainbow?
- What happens to light when it hits water?
- What did you see when light passed through the glass of water?

Enduring Understandings:

Sound:

- Observing that sound can cause materials to move and that vibrating materials can make sound
- Explore the relationship between sound and vibration
- Plan and conduct investigations to produce data about the relationship between sound and vibrations
- Use tools and materials for making sound and communicating over a distance
- Investigate technologies people use to communicate with one another

Light

- Observe how light is necessary to see an object.
- Explore how the amount of light affects how much can be seen.
- Record observations and compare how much they can see in different amounts of light.
- Observe how light passes through objects.
- Develop an understanding of transparent, translucent and opaque objects.
- Explore how light travels, including how it can be reflected or redirected.
- Explore how people use light to communicate.

- Gather observations of how light travels and what causes light to be redirected.
- Design a way to communicate with light.

Performance Expectation	Resources
<p>1-PS4-1 Plan and conduct investigations to provide evidence that vibrating materials can make sound and that sound can make materials vibrate.</p>	<p>HMH Science Dimensions Unit 2, Lessons 1</p>
<p>1-PS4-2 Make observations to construct an evidence-based account that objects can be seen only when illuminated.</p>	<p>HMH Science Dimensions Unit 3, Lessons 1</p>
<p>1-PS4-3 Plan and conduct an investigation to determine the effect of placing objects made with different materials in the path of a beam of light.</p>	<p>HMH Science Dimensions Unit 3, Lessons 2,3</p>
<p>1-PS4-4 Use tools and materials to design and build a device that uses light or sound to solve the problem of communicating over a distance.</p>	<p>HMH Science Dimensions Unit 2, Lessons 2,3</p>

Assessments:

- Teacher observations
- Lesson quizzes
- Unit tests
- Unit projects
- You solve it
- Performance-Based Assessment
- End of Module Test

Resources/Websites:

- MysteryScience.com
- PBSKids.com
- Vocabulary cards
- anchor charts
- supplemental worksheets

Mentor Texts/Leveled Books:

- [Leveled Books](#)

Accommodations & Modifications to address special populations such as: Special Education, Students at risk of failure, students with 504's, Gifted and Talented and English Language Learners can be found at the bottom of this document, or by clicking [here](#).

Additional Modifications and Accommodations specific to this lesson are:

- pre-printed vocabulary cards with pictures
- discussing extra examples of difficult words (ex. vibrations)
- use of visuals in the classroom
- seating near the teacher of students who would need extra assistance

Units 4 & 5: Life Science

Recommended Pacing: 4 - 5 weeks

Unit Summary: In the plant and animal structures unit, students will describe how parts of a plant help it to survive and grow. They will explain how parts of an animal help it to survive and grow and relate the shape and stability of structures to their functions. Students will further use evidence to describe how plants and animals process and respond to information and describe how human-made products are designed by applying knowledge of the natural world and use observations to design a solution to a human problem by mimicking how plants use their parts to survive. In the living things and their young unit, students will compare young plants with parent plants. Students will also observe patterns to explain how plants of the same kind are alike and different and describe how plants and animals respond to their environments to meet their needs and describe how behavior patterns of parents and offspring help offspring survive.

Next Generation Science Standards: 1-LS1-1, 1-LS1-2, 1-LS3-1

Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts
<p>Developing and Using Models Modeling in K–2 builds on prior experiences and progresses to include using and developing models (i.e., diagram, drawing, physical replica, diorama, dramatization, or storyboard) that represent concrete events or design solutions. *Develop a simple model based on evidence to represent a proposed object or tool. (2-LS2-2)</p> <p>Planning and Carrying Out Investigations Planning and carrying out investigations to answer questions or test solutions to problems in K–2 builds on prior experiences and progresses to simple investigations, based on fair tests, which provide data to support explanations or design solutions. *Plan and conduct an investigation collaboratively to produce data to serve as the basis for evidence to answer a question. (2-LS2-1)</p> <p>Constructing Explanations and Designing Solutions Constructing explanations and designing solutions in K–2 builds on prior experiences and progresses to the use of evidence and ideas in constructing evidence-based accounts of natural phenomena and designing solutions. *Make observations (firsthand or from media) to construct an evidence-based account for natural phenomena. (1-LS3-1)</p>	<p>LS2.A: Interdependent Relationships in Ecosystems</p> <ul style="list-style-type: none"> Plants depend on water and light to grow. (2-LS2-1) Plants depend on animals for pollination or to move their seeds around. (2-LS2-2) <p>ETS1.B: Developing Possible Solutions *Designs can be conveyed through sketches, drawings, or physical models. These representations are useful in communicating ideas for a problem’s solutions to other people. (secondary to 2-LS2-2)</p> <p>LS3.A: Inheritance of Traits *Young animals are very much, but not exactly like, their parents. Plants also are very much, but not exactly, like their parents.</p> <p>(1- LS3-1) LS3.B: Variation of Traits *Individuals of the same kind of plant or animal are re</p>	<p>Cause and Effect *Events have causes that generate observable patterns. (2-LS2-1)</p> <p>Structure and Function *The shape and stability of structures of natural and designed objects are related to their function(s). (2-LS2-2)</p> <p>Patterns *Patterns in the natural world can be observed, used to describe phenomena, and used as evidence. (1-LS3-1)</p>
Interdisciplinary Connections:		

NJSLS Standard Connections

Progress Indicators for Language Arts

W.2.7	Participate in shared research and writing projects (e.g., read a number of books on a single topic to produce a report; record science observations). (2-LS2-1)
W.2.8	Recall information from experiences or gather information from provided sources to answer a question. (2-LS2-1)
SL.2.5	Create audio recordings of stories or poems; add drawings or other visual displays to stories or recounts of experiences when appropriate to clarify ideas, thoughts, and feelings. (2-LS2-2)
RI.1.1	Ask and answer questions about key details in a text. (1-LS3-1)
W.1.7	Participate in shared research and writing projects (e.g., explore a number of "how-to" books on a given topic and use them to write a sequence of instructions). (1-LS3- 1)
W.1.8	With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question. (1-LS3-1)

NJSLS Mathematical Standards and Practices:

MP.2	Reason abstractly and quantitatively. (2-LS2-1)(1-LS3-1)
MP.4	Model with mathematics. (2-LS2-1),(2-LS2-2)
MP.5	Use appropriate tools strategically. (2-LS2-1)(1-LS3-1)
2.MD.D.10	Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems. (2-LS2-2)
1.MD.A.1	Order three objects by length; compare the lengths of two objects indirectly by using a third object. (1-LS3-1)

Technology:

- 8.1.P.A.4 Use basic technology terms in the proper context in conversation with peers and teachers (e.g., camera, tablet, Internet, mouse, keyboard, and printer).
- 8.1.P.A.5 Demonstrate the ability to access and use resources on a computing device.
- 8.1.2.A.4 Demonstrate developmentally appropriate navigation skills in virtual environments (i.e. games, museums).
- 8.1.2.A.5 Enter information into a spreadsheet and sort the information.
- 8.1.5.A.1 Select and use the appropriate digital tools and resources to accomplish a variety of tasks including solving problems.
- 8.1.P.C.1 Collaborate with peers by participating in interactive digital games or activities.
- 8.1.2.C.1 Engage in a variety of developmentally appropriate learning activities with students in other classes, schools, or countries using various media formats such as online collaborative tools, and social media.
- 8.1.P.E.1 Use the Internet to explore and investigate questions with a teacher's support.
- 8.1.2.E.1 Use digital tools and online resources to explore a problem or issue.
- 8.2.2.B.2 Demonstrate how reusing a product affects the local and global environment.

21st Century:

- 9.1.4.G.1 Describe how valuable items might be damaged or lost and ways to protect them.
- 9.2.4.A.1 Identify reasons why people work, different types of work, and how work can help a person achieve personal and professional goals.
- 9.2.4.A.2 Identify various life roles and civic and work-related activities in the school, home, and community.
- 9.2.4.A.3 Investigate both traditional and nontraditional careers and relate information to personal likes and dislikes.
- 9.2.4.A.4 Explain why knowledge and skills acquired in the elementary grades lay the foundation for future academic and career success.

Essential Questions:

Plant and Animal Structures

- What parts help plants live?
- What body parts help animals stay safe?
- What body parts help animals meet their needs?
- How do plants and animals respond to their environment?

Living Things and Their Young

- How do plants look like their parents?
- How do animals look like their parents?
- How do animals take care of their young?

Enduring Understandings:

- Explore how the external parts of plants allow them to survive and grow
- Explore how people design solutions by mimicking how plant parts function
- Build a solution to a human problem
- Mimic animal parts to construct a solution to a human problem
- Explore how the body parts of animals allow them to meet their needs
- Explore how people design solutions to problems by mimicking animal parts
- Mimic animal body parts and function to build a solution
- Explore how plants and animals respond to their environments

	<ul style="list-style-type: none"> • Carry out an investigation about the effects of light on plant growth • Explore how animal senses help them process information • Focus on the similarities and differences between adult plants and their young • Focus on the similarities and differences between animals and their offspring • Compare parts of young animals and their parents • Compare and contrast coverings of young adults and animals • Focus on patterns in behavior of parents and offspring that help them survive • Explore how animals take care of their young
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Performance Expectation	Resources
<p>1-LS1-1 Use materials to design a solution to a human problem by mimicking how plants and/or animals use their external parts to help them survive, grow, and meet their needs.</p>	HMH Science Dimensions Unit 4, Lessons 1-4
<p>1-LS1-2 Read tests and use media to determine patterns in behavior of parents and offspring that help offspring survive.</p>	HMH Science Dimensions Unit 5, Lesson 3
<p>1-LS3-1 Make observations to construct an evidence-based account that young plants and animals are like, but not exactly like, their parents.</p>	HMH Science Dimensions Unit 5, Lessons 1 & 2

<p>Assessments:</p> <ul style="list-style-type: none"> • Teacher observations • Lesson quizzes • Unit tests • Unit projects • You solve it • Performance-Based Assessment • End of Module Test
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Resources/Websites:

- MysteryScience.com
- PBSKids.com
- Vocabulary cards
- anchor charts
- supplemental worksheets

Mentor Texts/Leveled Books:

- [Leveled Books](#)

Accommodations & Modifications to address special populations such as: Special Education, Students at risk of failure, students with 504's, Gifted and Talented and English Language Learners can be found at the bottom of this document, or by clicking [here](#).

Additional Modifications and Accommodations specific to this lesson are:

- pre-printed vocabulary cards with pictures
- discussing extra examples of difficult words
- use of visuals in the classroom
- seating near the teacher of students who would need extra assistance

Earth and Space

Unit 6: Objects and Patterns in the Sky

Recommended Pacing: 2 weeks

Unit Summary: In this unit, students will identify and describe objects in the sky as well as use evidence to describe predictable patterns of the sun, moon and stars. They will further observe and model patterns of the moon's phases. Students will continue with using observations to describe characteristics of each season and predicting patterns of change that take place from season to season. Students will then use observations to compare the amount of daylight from season to season. Students will also explore how seasons affect people and animals.

Next Generation Science Standards: ESS1-1, ESS1-2

Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts
<p>Planning and Carrying Out Investigations Planning and carrying out investigations to answer questions or test solutions to problems in K–2 builds on prior experiences and progresses to simple investigations, based on fair tests, which provide data to support explanations or design solutions. *Make observations (firsthand or from media) to collect data that can be used to make comparisons. (1-ESS1- 2)</p> <p>Analyzing and Interpreting Data Analyzing data in K–2 builds on prior experiences and progresses to collecting, recording, and sharing observations. *Use observations (firsthand or from media) to describe patterns in the natural world in order to answer scientific questions. (1-ESS1-1)</p>	<p>ESS1.A: The Universe and its Stars *Patterns of the motion of the sun, moon, and stars in the sky can be observed, described, and predicted. (1-ESS1-1)</p> <p>ESS1.B: Earth and the Solar System *Seasonal patterns of sunrise and sunset can be observed, described, and predicted. (1- ESS1-2)</p>	<p>Patterns *Patterns in the natural world can be observed, used to describe phenomena, and used as evidence. (1-ESS1-1),(1- ESS1-2)</p> <p>-----</p> <p>Connections to Nature of Science</p> <p>Scientific Knowledge Assumes an Order and Consistency in Natural Systems *Science assumes natural events happen today as they happened in the past. (1-ESS1-1) *Many events are repeated. (1-ESS1-1)</p>

**Interdisciplinary Connections
 NJSLS Standard Connections**

Progress Indicators for Language Arts	
W.1.7	Participate in shared research and writing projects (e.g., explore a number of “how-to” books on a given topic and use them to write a sequence of instructions). (1-ESS1-1),(1-ESS1-2)
W.1.8	With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question. (1- ESS1-1),(1-ESS1-2)

NJSLS Mathematical Standards and Practices:

MP.2	Reason abstractly and quantitatively. (1-ESS1-2)
MP.4	Model with mathematics. (1-ESS1-2)
MP.5	Use appropriate tools strategically. (1-ESS1-2)
1.OA.A.1	Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using objects, drawings, and equations to represent the problem. (1-ESS1-2)
1.MD.C.4	Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another. (1-ESS1-2)

Technology:

- 8.1.P.A.4 Use basic technology terms in the proper context in conversation with peers and teachers (e.g., camera, tablet, Internet, mouse, keyboard, and printer).
- 8.1.P.A.5 Demonstrate the ability to access and use resources on a computing device.
- 8.1.2.A.4 Demonstrate developmentally appropriate navigation skills in virtual environments (i.e. games, museums).
- 8.1.2.A.5 Enter information into a spreadsheet and sort the information.
- 8.1.5.A.1 Select and use the appropriate digital tools and resources to accomplish a variety of tasks including solving problems.
- 8.1.P.C.1 Collaborate with peers by participating in interactive digital games or activities.
- 8.1.2.C.1 Engage in a variety of developmentally appropriate learning activities with students in other classes, schools, or countries using various media formats such as online collaborative tools, and social media.
- 8.1.P.E.1 Use the Internet to explore and investigate questions with a teacher's support.
- 8.1.2.E.1 Use digital tools and online resources to explore a problem or issue.
- 8.2.2.B.2 Demonstrate how reusing a product affects the local and global environment.

21st Century:

- 9.1.4.G.1 Describe how valuable items might be damaged or lost and ways to protect them.
- 9.2.4.A.1 Identify reasons why people work, different types of work, and how work can help a person achieve personal and professional goals.
- 9.2.4.A.2 Identify various life roles and civic and work-related activities in the school, home, and community.

- 9.2.4.A.3 Investigate both traditional and nontraditional careers and relate information to personal likes and dislikes.
- 9.2.4.A.4 Explain why knowledge and skills acquired in the elementary grades lay the foundation for future academic and career success.

Essential Questions:

- How do objects in the sky seem to change?
- What are patterns of daylight?

Enduring Understandings:

- Observing, describing and predicting patterns in the way the sun, moon and stars appear to move across the sky
- Explore the apparent motion of objects as examples of natural events that are repeated through time
- Focus on how the amount of daylight in a day is related to the time of year
- Observe, describe and predict seasonal patterns of sunrise and sunset
- Observe how seasonal changes affect plants and animals

Performance Expectation	Resources
<p>1-ESS1-1 Use observations of the sun, moon and stars to describe patterns that can be predicted.</p>	<p>HMH Science Dimensions Unit 6, Lesson 1</p>
<p>1-ESS1-2 Make observations at different times of year to relate the amount of daylight to the time of year.</p>	<p>HMH Science Dimensions Unit 6, Lesson 1</p>

Assessments:

- Teacher observations
- Lesson quizzes
- Unit tests
- Unit projects
- You solve it
- Performance-Based Assessment
- End of Module Test

Resources/Websites:

-MysteryScience.com
-PBSKids.com
-Vocabulary cards
-anchor charts
-supplemental worksheets

Mentor Texts/Leveled Books:

- [Leveled Books](#)

Accommodations & Modifications to address special populations such as: Special Education, Students at risk of failure, students with 504's, Gifted and Talented and English Language Learners can be found at the bottom of this document, or by clicking [here](#).

Additional Modifications and Accommodations specific to this lesson are:

- pre-printed vocabulary cards with pictures
- discussing extra examples of difficult words
- use of visuals in the classroom
- seating near the teacher of students who would need extra assistance

Second Grade

Unit Summary: In this unit, students will ask questions, make observations and gather information to define a problem. Students will use a design process to solve a problem. Students will also compare the strengths and weaknesses of multiple design solutions.

Next Generation Science Standards: K-2-ETS1-1, K-2-ETS1-2, K-2ETS1-3

Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts
<p>Asking Questions and Defining Problems Asking questions and defining problems in K–2 builds on prior experiences and progresses to simple descriptive questions.</p> <ul style="list-style-type: none"> Ask questions based on observations to find more information about the natural and/or designed world(s). (K2-ETS1-1) Define a simple problem that can be solved through the development of a new or improved object or tool. (K-2- ETS1-1) <p>Developing and Using Models Modeling in K–2 builds on prior experiences and progresses to include using and developing models (i.e., diagram, drawing, physical replica, diorama, dramatization, or storyboard) that represent concrete events or design solutions.</p> <ul style="list-style-type: none"> Develop a simple model based on evidence to represent a proposed 	<p>ETS1.A: Defining and Delimiting Engineering Problems</p> <ul style="list-style-type: none"> A situation that people want to change or create can be approached as a problem to be solved through engineering. (K-2-ETS1-1) Asking questions, making observations, and gathering information are helpful in thinking about problems. (K-2-ETS1-1) Before beginning to design a solution, it is important to clearly understand the problem. (K-2-ETS1-1) <p>ETS1.B: Developing Possible Solutions</p> <ul style="list-style-type: none"> Designs can be conveyed through sketches, drawings, or physical models. These representations are useful in communicating ideas for a problem’s solutions to other people. (K-2-ETS1-2). 	<p>Structure and Function</p> <ul style="list-style-type: none"> The shape and stability of structures of natural and designed objects are related to their function(s). (K-2-ETS1-2)

object or tool. (K-2-ETS1-2)

Analyzing and Interpreting Data

Analyzing data in K–2 builds on prior experiences and progresses to collecting, recording, and sharing observations.

- Analyze data from tests of an object or tool to determine if it works as intended. (K-2-ETS1-3)

ETS1.C: Optimizing the Design Solution

- Because there is always more than one possible solution to a problem, it is useful to compare and test designs. (K-2-ETS1-3)

**Interdisciplinary Connections
NJSL Standard Connections**

Progress Indicators for Language Arts

RI.2.1 (Lesson 1)	Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text.
W.2.6 (Lessons 1, 2)	With guidance and support from adults, use a variety of digital tools to produce and publish writing, including in collaboration with peers.
W.2.8 (Lesson 2)	Recall information from experiences or gather information from provided sources to answer a question.
SL.2.5 (Lesson 1)	Create audio recordings of stories or poems; add drawings or other visual displays to stories or recounts of experiences when appropriate to clarify ideas, thoughts, and feelings.

NJSL Mathematical Standards and Practices:

2.MD.D.10 (Lessons 1, 2)	Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems using information presented in a bar graph.
MP.2 (Lessons 1, 2)	Reason abstractly and quantitatively.
MP.4 (Lessons 1,2)	Model with mathematics.

MP.5
(Lessons 1,2)

Use appropriate tools strategically.

Technology/21st Century:

- 8.2.2.C.1 Brainstorm ideas on how to solve a problem or build a product.
- 8.2.2.C.2 Create a drawing of a product or device that communicates its function to peers and discuss.
- 8.2.2.C.3 Explain why we need to make new products.
- 8.2.2.C.4 Identify designed products and brainstorm how to improve one used in the classroom.
- 8.2.2.C.5 Describe how the parts of a common toy or tool interact and work as part of a system.
- 8.2.2.C.6 Investigate a product that has stopped working and brainstorm ideas to correct the problem.
- 8.2.2.D.1 Collaborate and apply a design process to solve a simple problem from everyday experiences

21st Century:

- 9.1.4.G.1 Describe how valuable items might be damaged or lost and ways to protect them.
- 9.2.4.A.1 Identify reasons why people work, different types of work, and how work can help a person achieve personal and professional goals.
- 9.2.4.A.2 Identify various life roles and civic and work-related activities in the school, home, and community.
- 9.2.4.A.3 Investigate both traditional and nontraditional careers and relate information to personal likes and dislikes.
- 9.2.4.A.4 Explain why knowledge and skills acquired in the elementary grades lay the foundation for future academic and career success.

Essential Questions:

- What is a design process?
- How can we compare design solutions?

Enduring Understandings:

- Define and solve a problem
- Explore 5 steps of design process
- Ask questions, make observations and gather information.
- Use drawings and models to solve a real-life problem
- Explore design improvements
- Explore how structure of design is related to its purpose
- Communicate results

Performance Expectation	Resources
<p>K-2-ETS1-1 Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.</p>	<p>HMH Science Dimensions Lesson 1</p>
<p>K-2-ETS1-2 Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.</p>	<p>HMH Science Dimensions Lesson 1</p>
<p>K-2-ETS1-3 Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.</p>	<p>HMH Science Dimensions Lesson 2</p>
<p>Assessments:</p> <ul style="list-style-type: none"> ● Unit Project ● Unit Performance Task ● Lesson quizzes ● Unit Test ● Performance Based Assessment ● End of Year Test ● Teacher Observations 	
<p>Resources/Websites:</p> <ul style="list-style-type: none"> ● Pebble Go ● Pbskids.org ● Nationalgeographic.com ● Online You Solve It - Sort It Out ● Crash Course Kids (on youtube.com) 	<p>Mentor Texts/Leveled Books:</p> <ul style="list-style-type: none"> ● Leveled Readers

Accommodations & Modifications

Accommodations & Modifications to address special populations such as: Special Education, Students at risk of failure, students with 504's, Gifted and Talented and English Language Learners can be found at the bottom of this document, or by clicking [here](#).

Additional Modifications and Accommodations specific to this lesson are:

- Ask questions to draw out answers and facilitate discussion as needed
- Assist strugglers/groups as needed
- Provide/build additional background knowledge as needed
- Reword, Repeat and clarify directions as needed
- Allow for extra time as needed
- Allow peer assistance as needed
- Pair strugglers with peer leaders
- Provide additional modeling as needed

Physical Science

Unit 2 : Matter

Recommended Pacing: End of 1st - Beginning of 2nd Marking Period

Unit Summary: In this unit, students will describe and classify materials by their observable properties and select and use materials based on these properties. Students will use evidence to describe how heating and

cooling cause changes to matter and use evidence to describe reversible and irreversible changes to matter. Students will also explore how an object can be taken apart and its pieces used to make another object.

Next Generation Science Standards: 2-PS1-1, 2-PS1-2, 2-PS1-3, 2-PS1-4

Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts
<p>Planning and Carrying Out Investigations Planning and carrying out investigations to answer questions or test solutions to problems in K-2 builds on prior experiences and progresses to simple investigations based on fair tests, which provide data to support explanations or design solutions.</p> <ul style="list-style-type: none"> Plan and conduct an investigation collaboratively to produce data to serve as the basis for evidences to answer a question. (2-PS1-1) <p>Analyzing and Interpreting Data Analyzing data in K-2 builds on prior experiences and progresses to collecting, recording, and sharing observations.</p> <ul style="list-style-type: none"> Analyze data from tests of an object or tool to determine if it works as intended. (2-PS1-2) <p>Constructing Explanations and Designing Solutions Constructing explanations and designing solutions in K-2 builds on prior experiences and progresses to the use of evidence and ideas in constructing evidence-based accounts of natural phenomena and</p>	<p>PS1.A: Structure and Properties of Matter</p> <ul style="list-style-type: none"> Different kinds of matter exist and many of them can be either solid or liquid, depending on temperature. Matter can be described and classified by its observable properties. (2-PS1-1) Different properties are suited to different purposes. (2-PS1-2),(2-PS1-3) A great variety of objects can be built up from a small set of pieces. (2-PS1-3) <p>PS1.B: Chemical Reactions</p> <ul style="list-style-type: none"> Heating or cooling a substance may cause changes that can be observed. Sometimes these changes are reversible, and sometimes they are not. (2-PS1-4) 	<p>Patterns</p> <ul style="list-style-type: none"> Patterns in the natural and human designed world can be observed. (2-PS1-1) <p>Cause and Effect</p> <ul style="list-style-type: none"> Events have causes that generate observable patterns. (2-PS1-4) Simple tests can be designed to gather evidence to support or refute student ideas about causes. (2-PS1-2) <p>Energy and Matter</p> <ul style="list-style-type: none"> Objects may break into smaller pieces and be put together into larger pieces, or change shapes. (2-PS1-3) <p>-----</p> <p>Connections to Engineering, Technology, and Applications of Science</p> <p>Influence of Engineering, Technology, and Science on Society and the Natural World</p> <ul style="list-style-type: none"> Every human-made product is designed by applying some knowledge of the natural world and is built using materials derived from

designing solutions.

- Make observations (firsthand or from media) to construct an evidence-based account for natural phenomena. (2-PS1-3)

Engaging in Argument from Evidence

Engaging in argument from evidence in K–2 builds on prior experiences and progresses to comparing ideas and representations about the natural and designed world(s)

- Construct an argument with evidence to support a claim. (2-PS1-4)

Connections to Nature of Science

Science Models, Laws, Mechanisms, and Theories Explain Natural Phenomena

- Scientists search for cause and effect relationships to explain natural events. (2-PS1-4)

the natural world. (2-PS1-2)

***Interdisciplinary Connections
NJSL Standard Connections***

Progress Indicators for Language Arts

RI.2.1 (Lesson 2)	Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text.
RI.2.8 (Lessons 3, 4)	Describe how reasons support specific points the author makes in a text.
W.2.8	Recall information from experiences or gather information from provided sources to answer a question.

(Lessons
1 and 4)

NJSLS Mathematical Standards and Practices:

2.OA.A.1 (Lesson 3)	Use addition and subtraction within 100 to solve one-and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.
2.NBT.A.4 (Lesson 2)	Compare two three-digit numbers based on meanings of the hundreds, tens, and ones digits, using $>$, $=$. And $<$ symbols to record the results of comparisons.
2.MD.D.10 (Lesson 1)	Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems using information presented in a bar graph.
2.G.A.2 (Lesson 4)	Partition a rectangle into rows and columns of same-size squares and count to find the total number of them.
MP.4 (Lesson 1)	Model with mathematics.

Technology:

- 8.1.P.A.4 Use basic technology terms in the proper context in conversation with peers and teachers (e.g., camera, tablet, Internet, mouse, keyboard, and printer).
- 8.1.P.A.5 Demonstrate the ability to access and use resources on a computing device.
- 8.1.2.A.4 Demonstrate developmentally appropriate navigation skills in virtual environments (i.e. games, museums).
- 8.1.2.A.5 Enter information into a spreadsheet and sort the information.
- 8.1.5.A.1 Select and use the appropriate digital tools and resources to accomplish a variety of tasks including solving problems.
- 8.1.P.C.1 Collaborate with peers by participating in interactive digital games or activities.
- 8.1.2.C.1 Engage in a variety of developmentally appropriate learning activities with students in other classes, schools, or countries using various media formats such as online collaborative tools, and social media.

- 8.1.P.E.1 Use the Internet to explore and investigate questions with a teacher’s support.\
- 8.1.2.E.1 Use digital tools and online resources to explore a problem or issue.
- 8.2.2.B.2 Demonstrate how reusing a product affects the local and global environment.

21st Century:

- 9.1.4.G.1 Describe how valuable items might be damaged or lost and ways to protect them.
- 9.2.4.A.1 Identify reasons why people work, different types of work, and how work can help a person achieve personal and professional goals.
- 9.2.4.A.2 Identify various life roles and civic and work-related activities in the school, home, and community.
- 9.2.4.A.3 Investigate both traditional and nontraditional careers and relate information to personal likes and dislikes.
- 9.2.4.A.4 Explain why knowledge and skills acquired in the elementary grades lay the foundation for future academic and career success.

Essential Questions:

- What are properties of matter?
- How do heating and cooling change matter?
- How does matter change?
- How are objects put together?

Enduring Understandings:

- Describe and classify matter by properties
- Discover property patterns
- Plan and conduct investigation to determine which materials are best suited to a purpose based on these properties
- Explore how objects can be put together from a small set of pieces
- Explore how pieces can be taken apart and reused to make another
- Explore how heating and cooling can cause changes to matter
- Explore how changes generate observable patterns
- Use evidence to support claims
- Explore reversible/irreversible changes to matter
- Observe patterns in reversible/irreversible changes caused by heating/cooling

Performance Expectation

Resources

<p>2-PS1-1 Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.</p>	<p>HMH Science Dimensions Lesson 1</p>
<p>2-PS1-2 Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose.</p>	<p>HMH Science Dimensions Lesson 1</p>
<p>2-PS1-3 Make observations to construct an evidence-based account of how an object made of a small set of pieces can be disassembled and made into a new object.</p>	<p>HMH Science Dimensions Lesson 2</p>
<p>2-PS1-4 Construct an argument with evidence that some changes caused by heating or cooling can be reversed and some cannot.</p>	<p>HMH Science Dimensions Lesson 3 Lesson 4</p>
<p>Unit Assessments:</p> <ul style="list-style-type: none"> ● Unit Project ● Unit Performance Task ● Lesson quizzes ● Unit Test ● Performance Based Assessment ● End of Year Test ● Teacher Observations 	
<p>Resources/Websites:</p> <ul style="list-style-type: none"> ● Pebble Go ● Pbskids.org ● Nationalgeographic.com ● Online You Solve It ● Crash Course Kids (on youtube.com) 	<p>Mentor Texts/Leveled Books:</p> <p><u>Leveled Readers</u></p>

Accommodations & Modifications

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Additional Modifications and Accommodations specific to this lesson are:

- Ask questions to draw out answers and facilitate discussion as needed
- Assist strugglers/groups as needed
- Provide/build additional background knowledge as needed
- Reword, Repeat and clarify directions as needed
- Allow for extra time as needed
- Allow peer assistance as needed
- Pair strugglers with peer leaders
- Provide additional modeling as needed
- Provide additional guidance for claims/evidence as needed
- Clarify/review the definitions of property, patterns
- Remind students to use more than just their sense of sight to observe properties of matter (ie): touch, smell...etc.
- Alternate worksheets available for identifying properties of matter can be found by clicking [here](#)

Life Science

Unit 3: Environments for Living Things

Recommended Pacing: End of 3rd Marking Period

Unit Summary: In this unit, students will investigate what plants and animals need to live and grow and develop models to show how plants depend on animals. Students will explore environments to identify observable patterns and observe plants and animals to compare diversity of life in water habitats. Students will also observe plants and animals to compare diversity of life in land habitats.

Next Generation Science Standards: 2-LS2-1, 2-LS2-2, 2-LS4-1

Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts
<p>Developing and Using Models Modeling in K–2 builds on prior experiences and progresses to include using and developing models (i.e., diagram, drawing, physical replica, diorama, dramatization, or storyboard) that represent concrete events or design solutions.</p> <ul style="list-style-type: none"> Develop a simple model based on evidence to represent a proposed object or tool. (2-LS2-2) <p>Planning and Carrying Out Investigations Planning and carrying out investigations to answer questions or test solutions to problems in K–2 builds on prior experiences and progresses to simple investigations, based on fair tests, which provide data to support explanations or design solutions.</p> <ul style="list-style-type: none"> Plan and conduct an investigation collaboratively to produce data to serve as the basis for evidence to answer a question. (2-LS2-1) Make observations (firsthand or from media) to collect data that can 	<p>LS2.A: Interdependent Relationships in Ecosystems</p> <ul style="list-style-type: none"> Plants depend on water and light to grow. (2-LS2-1) Plants depend on animals for pollination or to move their seeds around. (2LS2-2) <p>ETS1.B: Developing Possible Solutions</p> <ul style="list-style-type: none"> Designs can be conveyed through sketches, drawings, or physical models. These representations are useful in communicating ideas for a problem’s solutions to other people. (secondary to 2-LS2-2) <p>LS4.D: Biodiversity and Humans</p> <ul style="list-style-type: none"> There are many different kinds of living things in any area, and they exist in different places on land and in water. (2-LS4-1) 	<p>Cause and Effect</p> <ul style="list-style-type: none"> Events have causes that generate observable patterns. (2-LS2-1) <p>Structure and Function</p> <ul style="list-style-type: none"> The shape and stability of structures of natural and designed objects are related to their function(s). (2-LS2-2)

be used to make comparisons.
(2-LS4-1)

Connections to Nature of Science

Scientific Knowledge is Based on Empirical Evidence

- Scientists look for patterns and order when making observations about the world. (2-LS4-1)

***Interdisciplinary Connections
NJSL Standard Connections***

Progress Indicators for Language Arts

W.2.7 (Lessons 1, 3, 4)	Participate in shared research and writing projects (e.g., read a number of books on a single topic to produce a report; record science observations).
W.2.8 (Lessons 1, 3, 4)	Recall information from experiences or gather information from provided sources to answer a question.
SL.2.5 (Lesson 2)	Create audio recordings of stories or poems; add drawings or other visual displays to stories or recounts of experiences when appropriate to clarify ideas, thoughts, and feelings.

NJSL Mathematical Standards and Practices:

2.OA.C.4 (Lesson 1)	Use addition to find the total number of objects arranged in rectangular arrays with up to 5 rows and up to 5 columns; write an equation to express the total as a sum of equal addends.
2.MD.D.10 (Lessons 2, 3, 4)	Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems using information presented in a bar graph.

MP.2 (Lessons 1,3,4)	Reason abstractly and quantitatively.
MP.4 (Lessons 1,2,3,4)	Model with mathematics.

Technology:

- 8.1.P.A.4 Use basic technology terms in the proper context in conversation with peers and teachers (e.g., camera, tablet, Internet, mouse, keyboard, and printer).
- 8.1.P.A.5 Demonstrate the ability to access and use resources on a computing device.
- 8.1.2.A.4 Demonstrate developmentally appropriate navigation skills in virtual environments (i.e. games, museums).
- 8.1.2.A.5 Enter information into a spreadsheet and sort the information.
- 8.1.5.A.1 Select and use the appropriate digital tools and resources to accomplish a variety of tasks including solving problems.
- 8.1.P.C.1 Collaborate with peers by participating in interactive digital games or activities.
- 8.1.2.C.1 Engage in a variety of developmentally appropriate learning activities with students in other classes, schools, or countries using various media formats such as online collaborative tools, and social media.
- 8.1.P.E.1 Use the Internet to explore and investigate questions with a teacher's support.\
- 8.1.2.E.1 Use digital tools and online resources to explore a problem or issue.
- 8.2.2.B.2 Demonstrate how reusing a product affects the local and global environment.

21st Century:

- 9.1.4.G.1 Describe how valuable items might be damaged or lost and ways to protect them.
- 9.2.4.A.1 Identify reasons why people work, different types of work, and how work can help a person achieve personal and professional goals.
- 9.2.4.A.2 Identify various life roles and civic and work-related activities in the school, home, and community.
- 9.2.4.A.3 Investigate both traditional and nontraditional careers and relate information to personal likes and dislikes.
- 9.2.4.A.4 Explain why knowledge and skills acquired in the elementary grades lay the foundation for future academic and career success.

Essential Questions:

- What do plants need?
- How do plants depend on animals?
- What plants and animals live in water habitats?
- What plants and animals live in land habitats?

Enduring Understandings:

- Explore the basic needs of a plant (water, sunlight, air, nutrients, space) and why plants need these elements
- Investigate how a plant uses water to meet its needs
- Explore ways animals move plant seeds based on shape and structure
- Plan and build a model tool to move seeds
- Explore how animals move pollen so new plants may grow
- Explore living things found in the habitats within a pond, a river delta, and a tide pool and why they live in each habitat.
- Explore living things found in land habitats within a rain forest, a forest, and a savanna.
- Compare the diversity of life found within each and across different habitats.

Performance Expectation**2-LS2-1**

Plan and conduct an investigation to determine if plants need sunlight and water to grow.

Resources

HMH Science Dimensions
Lesson 1

2-LS2-2

Develop a simple model that mimics the function of an animal in dispersing

HMH Science Dimensions
Lesson 2

seeds or pollinating plants.

2-LS4-1

Make observations of plants and animals to compare the diversity of life in different habitats.

HMH Science Dimensions

Lesson 3
Lesson 4

Unit Assessments:

- Unit Project
- Unit Performance Task
- Lesson quizzes
- Unit Test
- Performance Based Assessment
- End of Year Test
- Teacher Observations

Resources/Websites:

- **Pebble Go**
- **Pbskids.org**
- **Nationalgeographic.com**
- **Online You Solve It - Sort It Out**
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Mentor Texts/Leveled Books:

[Leveled Readers](#)

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- Assist strugglers/groups as needed
- Provide/build additional background knowledge as needed
- Reword, Repeat and clarify directions as needed
- Allow for extra time as needed
- Allow peer assistance as needed

- Pair strugglers with peer leaders
- Provide additional modeling as needed
- Provide additional guidance for claims/evidence as needed
- Do research as a whole group activity if needed
- Place an illustration of a labeled plant on a large chart or bulletin board
- Clarify/review the definitions of cause, effect, pattern, graphs, results, tide, canopy, savanna
- Provide additional information on horticulturalists

Earth and Space Science

Unit 4: Earth's Surface

Recommended Pacing: 2nd Marking Period

Unit Summary: In this unit students will gather information to identify where water is located on Earth and develop maps to represent locations of land and water on Earth.

Next Generation Science Standards: 2-ESS2-2, 2-ESS2-3

Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts
Developing and Using Models Modeling in K–2 builds on prior experiences and progresses to include using and developing models (i.e., diagram, drawing,	ESS2.B: Plate Tectonics and Large-Scale System Interactions <ul style="list-style-type: none"> ● Maps show where things are located. One can map the shapes 	Patterns <ul style="list-style-type: none"> ● Patterns in the natural world can be observed. (2-ESS2-2),(2-ESS2-3)

physical replica, diorama, dramatization, or storyboard) that represent concrete events or design solutions.

- Develop a model to represent patterns in the natural world. (2-ESS2-2)

Obtaining, Evaluating, and Communicating Information

Obtaining, evaluating, and communicating information in K–2 builds on prior experiences and uses observations and texts to communicate new information.

- Obtain information using various texts, text features (e.g., headings, tables of contents, glossaries, electronic menus, icons), and other media that will be useful in answering a scientific question. (2-ESS2-3)

and kinds of land and water in any area. (2-ESS2- 2)

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

- Water is found in the ocean, rivers, lakes, and ponds. Water exists as solid ice and in liquid form. (2-ESS2-3)

NJSLS Standard Connections

Progress Indicators for Language Arts

W.2.8
(Lessons 1,
2)

Recall information from experiences or gather information from provided sources to answer a question.

NJSLS Mathematical Standards and Practices:

2.NBT.A.3
(Lesson 2)

Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.

2.NBT.A.4
(Lesson 1)

Compare two three-digit numbers based on meanings of the hundreds, tens, and ones digits, using >, =, and < symbols to record the results of comparisons.

2.MD.B.5 (Lesson 2)	Use addition and subtraction within 100 to solve word problems involving lengths that are given in the same units, e.g., by using drawings (such as drawings of rulers) and equations with a symbol for the unknown number to represent the problem.
2.MD.D.10 (Lessons 1)	Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems using information presented in a bar graph.
MP.2 (Lessons 1,2)	Reason abstractly and quantitatively.
MP.4 (Lessons 1,2)	Model with mathematics.

Technology:

- 8.1.P.A.4 Use basic technology terms in the proper context in conversation with peers and teachers (e.g., camera, tablet, Internet, mouse, keyboard, and printer).
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- 8.1.2.A.4 Demonstrate developmentally appropriate navigation skills in virtual environments (i.e. games, museums).
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- 8.1.P.E.1 Use the Internet to explore and investigate questions with a teacher's support.\
- 8.1.2.E.1 Use digital tools and online resources to explore a problem or issue.
- 8.2.2.B.2 Demonstrate how reusing a product affects the local and global environment.

21st Century:

- 9.1.4.G.1 Describe how valuable items might be damaged or lost and ways to protect them.
- 9.2.4.A.1 Identify reasons why people work, different types of work, and how work can help a person achieve personal and professional goals.
- 9.2.4.A.2 Identify various life roles and civic and work-related activities in the school, home, and community.
- 9.2.4.A.3 Investigate both traditional and nontraditional careers and relate information to personal likes and dislikes.
- 9.2.4.A.4 Explain why knowledge and skills acquired in the elementary grades lay the foundation for future academic and career success.

Essential Questions:

- Where is water found on Earth?
- How can we map land and water?

Enduring Understandings:

- Explore different bodies of water.
- Explore that water exists in solid and liquid form
- Explore conservation and protection of Earth's water
- Observe local bodies of water
- Explore maps as drawings or models that show where things are located, and different types of land and bodies of water
- Explore the parts of a map
- Use a map key
- Make a map of the school playground

Performance Expectation**2-ESS2-2**

Develop a model to represent the shapes and kinds of land and bodies of water in an area.

Resources

HMH Science Dimensions
Lesson 2

2-ESS2-3

Obtain information to identify where water is found on Earth and that it can be solid or liquid.

HMH Science Dimensions
Lesson 1

Unit Assessments:

- Unit Project
- Unit Performance Task
- Lesson quizzes
- Unit Test
- Performance Based Assessment
- End of Year Test
- Teacher Observations

Resources/Websites:

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- Pbskids.org
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- Provide/build additional background knowledge as needed
- Reword, Repeat and clarify directions as needed
- Allow for extra time as needed
- Allow peer assistance as needed
- Pair strugglers with peer leaders
- Provide additional modeling as needed
- Provide additional guidance for claims/evidence as needed
- Complete the research as a whole group activity if needed
- Identify local bodies of water as a whole group activity if needed
- Provide a checklist of map requirements for the performance task

Unit Summary: In this unit, students will use evidence to explain that some changes to Earth happen slowly and use evidence to explain that some changes to Earth happen quickly. Students will also find solutions to prevent wind and water from changing the land.

Next Generation Science Standards: 2-ESS1-1, 2-ESS2-1

Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts
<p>Constructing Explanations and Designing Solutions Constructing explanations and designing solutions in K-2 builds on prior experiences and progresses to the use of evidence and ideas in constructing evidence-based accounts of natural phenomena and designing solutions.</p> <ul style="list-style-type: none"> • Make observations from several sources to construct an evidence-based account for natural phenomena. (2-ESS1-1) • Compare multiple solutions to a problem. (2-ESS2-1) 	<p>ESS1.C: The History of Planet Earth</p> <ul style="list-style-type: none"> • Some events happen very quickly; others occur very slowly, over a time period much longer than one can observe. (2-ESS1-1) <p>ESS2.A: Earth Materials and Systems</p> <ul style="list-style-type: none"> • Wind and water can change the shape of the land. (2-ESS2-1) <p>ETS1.C: Optimizing the Design Solution</p> <ul style="list-style-type: none"> • Because there is always more than one possible solution to a problem, it is useful to compare and test designs. (secondary to 2-ESS2-1) 	<p>Stability and Change</p> <ul style="list-style-type: none"> • Things may change slowly or rapidly. (2-ESS1-1, 2-ESS2-1) <hr/> <p>Connections to Engineering, Technology, and Applications of Science</p> <p>Influence of Engineering, Technology, and Science on Society and the Natural World</p> <ul style="list-style-type: none"> • Developing and using technology has impacts on the natural world. (2-ESS2-1) <hr/> <p>Connections to Nature of Science</p> <p>Science Addresses Questions About the Natural and Material World</p> <ul style="list-style-type: none"> • Scientists study the natural and material world. (2-ESS2-1)

***Interdisciplinary Connections
NJSL Standard Connections***

Progress Indicators for Language Arts

RI.2.1 (Lesson 1, 3)	Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text.
W.2.7 (Lessons 1, 2)	Participate in shared research and writing projects (e.g., read a number of books on a single topic to produce a report; record science observations).
W.2.8 (Lesson 1)	Recall information from experiences or gather information from provided sources to answer a question.
SL.2.2 (Lesson 1)	Recount or describe key ideas or details from a text read aloud or information presented orally or through other media.

NJSL Mathematical Standards and Practices:

2.NBT.A.1 (Lessons 1,2)	<p>Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones; e.g., 706 equals 7 hundreds, 0 tens, and 6 ones. Understand the following as special cases:</p> <ul style="list-style-type: none">• 2.NBT.A.1.A - 100 can be thought of as a bundle of ten tens - called a "hundred"• 2.NBT.A.1.B - The numbers 100, 200, 300, 400, 500, 600, 700, 800, 900 refer to one two, three, four, five, six, seven, eight, or nine hundreds (and 0 tens and 0 ones).
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2.MD.B.5 (Lesson 3)	Use addition and subtraction within 100 to solve word problems involving lengths that are given in the same units, e.g., by using drawings (such as drawings of rulers) and equations with a symbol for the unknown number to represent the problem.
MP.2 (Lessons 2, 3)	Reason abstractly and quantitatively.
MP.4 (Lesson 3)	Model with mathematics.
MP.5 (Lesson 3)	Use appropriate tools strategically.

Technology:

- 8.1.P.A.4 Use basic technology terms in the proper context in conversation with peers and teachers (e.g., camera, tablet, Internet, mouse, keyboard, and printer).
- 8.1.P.A.5 Demonstrate the ability to access and use resources on a computing device.
- 8.1.2.A.4 Demonstrate developmentally appropriate navigation skills in virtual environments (i.e. games, museums).
- 8.1.2.A.5 Enter information into a spreadsheet and sort the information.
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- 9.2.4.A.4 Explain why knowledge and skills acquired in the elementary grades lay the foundation for future academic and career success.

Essential Questions:

- What changes on Earth happen slowly?
- What changes on Earth happen quickly?
- How can we prevent wind and water from changing the land?

Enduring Understandings:

- Observe how weathering and erosion cause slow changes to Earth
- Model erosion by water
- Explore how earthquakes, volcanoes, landslides, hurricanes, and floods cause Earth's surface to change quickly
- Model how a flood can change Earth's surface quickly
- Explore ways to prevent changes to land through use of technology
- Design, test and compare solutions to prevent water from changing the land

Performance Expectation**2-ESS1-1**

Use information from several sources to provide evidence that Earth events can occur quickly or slowly.

2-ESS2-1

Compare multiple solutions designed to slow or prevent wind or water from changing the shape of the land.

Resources**HMH Science Dimensions**

Lesson 1
Lesson 2

HMH Science Dimensions

Lesson 3

Unit Assessments:

- Unit Project
- Unit Performance Task
- Lesson quizzes
- Unit Test
- Performance Based Assessment
- End of Year Test
- Teacher Observations

Resources/Websites:

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- Provide/build additional background knowledge as needed
- Reword, Repeat and clarify directions as needed
- Allow for extra time as needed
- Allow peer assistance as needed
- Pair strugglers with peer leaders
- Provide additional modeling as needed
- Provide additional guidance for claims/evidence as needed
- Clarify the difference between weathering and erosion
- Review/clarify the definitions of eruption, prevent
- Provide assistance with measuring the banks if needed

Assessment and Testing Strategies:

Assessments will take place throughout the units. They can be used to monitor progress during the units and as an evaluation tool at the end of the units.

Evaluations may include the following:

- Formative Assessments
- Summative Assessments-written and performance based tests and quizzes
- Group and individual participation in learning activities
- Completion of work products
- Writing prompts and journal activities
- Oral presentations
- Group and individual projects
- Teacher observations
- Computer-based activity

Anything students do can be used for assessment purposes. Teachers will use all available information to determine students' progress

Modifications & Adaptations for Special Populations:

The information provided below contains recommended curricular modifications and adaptations. It is recognized that teachers will use their professional judgment to make sure every child's needs are met.

<p><u>Special Education:</u></p> <ul style="list-style-type: none"> ● Computer Based Activities ● Teacher Support ● Teacher Read Aloud Text (<i>If Necessary</i>) ● Small Group Instruction ● Additional Time ● Seating Arrangements ● Adapting to IEP ● Books on Tape ● Modified Assessments ● Full / Partial Support on all tests ● Alternate Test Format ● Study Guides ● Copies of Classroom / Lecture Notes ● Partner to Assist in Classroom Activities ● Student Buddies ● Alternative Leveled Reading Material ● Sound & Spelling Cards ● Graphic Organizers 	<p><u>Students at Risk of Failure</u></p> <ul style="list-style-type: none"> ● Teacher Support ● Teacher Read Aloud Text (<i>If Necessary</i>) ● Small Group Instruction ● Additional Time ● Seating Arrangements ● Study Guides ● Copies of Classroom / Lecture Notes ● Partner to Assist in Classroom Activities ● Student Buddies ● Graphic Organizers 	<p><u>Students with 504</u></p> <ul style="list-style-type: none"> ● Small Group Instruction ● Additional Time ● Seating Arrangements ● Study Guides ● Copies of Classroom / Lecture Notes ● Partner to Assist in Classroom Activities ● Assistance with organization of materials/notebook ● Use of a consistent daily routine ● Break down tasks into manageable units
<p><u>Gifted & Talented:</u></p> <ul style="list-style-type: none"> ● Independent Special Interest Study ● Interest and learning centers ● Computer Based Activities ● Peer-Conferencing ● Small Group Instruction ● Learning Contracts ● Tiered Activities and Lessons ● Graphic Organizers ● Problem Based Learning activities ● Socratic Seminars ● Independent Study 	<p><u>ELL:</u></p> <ul style="list-style-type: none"> ● Vocabulary Instruction & Demonstration (<i>Visual Representation</i>) ● Computer Based Activities ● Teacher Support ● Teacher Read Aloud All Text (<i>If Necessary</i>) ● Picture Dictionaries ● Small Group Instruction ● Additional Time ● Seating Arrangements ● Books on Tape ● Student Buddies ● Graphic Organizers 	<p>For additional Modifications/Accommodations for special populations please visit:</p> <p><u>Full list of Accommodations/Modifications for Special Populations</u></p>

<ul style="list-style-type: none">• Activities to apply Kohlberg's Theory Of Moral Reasoning• Partner Problem Solving• Compacting opportunities	<ul style="list-style-type: none">• Use of native language to English dictionary• Administration of test by ELL teacher or in a small group setting as appropriate	
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