Lakewood Public School District Curriculum Guide

Grade: 2	Content Area: Science

Original Adoption: Original Adoption: 2023 NJSLS English Language Arts and English as a Second Language (8-21-24); Math NJSLS Mathematics (8-21-24); 2020 NJSLS Science, Social Studies, Career Readiness, Life Literacies & Key Skills, Computer Design & Thinking, Visual & Performing Arts, World Language, Comprehensive Health and Physical Education (5-11-22)
Created By:

Recommended Pacing Guide	
Unit 1: Plant and Animal Relationships	60 days
Unit 2: Properties of Materials	60 days
Unit 3: Changing Landforms	60 days

Alignment with State Mandates

The following colors are used throughout this document to indicate areas in which the curriculum is aligned with the following NJSA requirements:

- Holocaust and genocides (N.J.S.A. 18A:35-28)
- History and contributions of African-Americans (Amistad Law) (N.J.S.A. 18A:35-4.43)
- Highlight and promote diversity and inclusion (Diversity & Inclusion Law) (N.J.S.A. 18A:35-4.36a)
- History of disabled and LGBT persons included in middle and high school curriculum (Section 18A:35-4.35)
- Climate Change - to prepare students to understand how and why climate change happens, the impact it has on our local and global communities and to act in informed and sustainable ways. Please click here for specific examples (by subject).

Unit 1: Plant and Animal Relationships	Duration: 60 days

New Jersey Student Learning Standards	
2-LS2-1	Plan and conduct an investigation to determine if plants need sunlight and water to grow.
2-LS2-2	Develop a simple model that mimics the function of an animal in dispersing seeds or pollinating plants.

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2-LS4-1	Make observations of plants and animals to compare the diversity of life in different habitats.
2-ESS2-2	Develop a model to represent the shapes and kinds of land and bodies of water in an area.

Science and Engineering Practices	Discipline Core Ideas/Unit Enduring Understandings	Crosscutting Concepts
• **Practice 3: Planning and Carrying Out Investigations:** Students conduct various hands-on investigations to gather evidence about plant growth and plant–animal relationships in a habitat, and they work together to make decisions about what and how to measure in their investigations to help them answer their questions. Students use this information as they work to understand and explain what plants need to grow and how seeds get to new places in a habitat. • **Practice 2: Developing and Using Models:** Students receive explicit instruction and opportunities to practice using, developing, and revising models by 1) developing and engaging in kinesthetic models to show seed growth, the structures that seeds use to get sunlight and water, and ways that animals help seeds get to new places in a habitat; and 2) creating and analyzing diagrams of the interdependent relationships of plants and animals in a habitat. • **Practice 1: Asking Questions:** As students are presented with new information about the	**LS2.A: Interdependent Relationships in Ecosystems:** • 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) **LS2.D: Biodiversity and Humans:** • 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) **ESS2.B: Plate Tectonics and Large-Scale System Interactions:** • Maps show where things are located. One can map the shapes and kinds of land and water in any area. (2-ESS2-2)	**Cause and Effect** • Events have causes that generate observable patterns. (2-LS2-1) **Structure and Function** • The shape and stability of structures of natural and designed objects are related to their function(s). (2-LS2-2) **Patterns** • Patterns in the natural world can be observed. (2-ESS2-2), (2-ESS2-3) ***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)

Bengal Tiger Reserve, they have opportunities to discuss what questions to investigate. Before each reading and hands-on investigation, students identify questions that can be answered by the investigation, define their purpose for an investigation, and return to the purpose throughout the unit to reflect on what they have learned. ● **Practice 4: Analyzing and Interpreting Data:** Investigations in this unit provide opportunities for students to collect and analyze data about real seeds and images of plant parts and plant growth over time, analyze secondhand data in books, and interpret measurements they collect during firsthand investigations of seed dispersal to draw conclusions about how seeds get what they need to grow into full-grown plants. ● **Practice 8: Obtaining, Evaluating, and Communicating Information:** Students have multiple opportunities and an increasing amount of responsibility to set a purpose prior to reading and investigating. Students gather evidence through firsthand and secondhand sources, as well as participate in a structured discourse routine that helps them communicate about and make sense of science ideas, using key vocabulary. ● **Practice 6: Constructing Explanations and Designing Solutions:** Students learn about scientific explanations and		

have multiple opportunities to write increasingly complex explanations over the course of the unit, based on evidence. ● **Practice 5: Using Mathematics and Computational Thinking:** Students explicitly learn and practice measurement throughout this unit with an increasing amount of responsibility. Students measure plant height to draw conclusions about plant growth over time under various conditions and count and compare quantities of seeds that end up in good places to grow in a habitat to explain seed dispersal. ● **Practice 7: Engaging in Argument from Evidence:** Prior to writing their explanations, students engage in talk with their peers, practice using the word because, and muster evidence to support their claims.		

New Jersey Social and Emotional Competencies and Sub-Competencies	
Self-Awareness	● Recognize one's feelings and thoughts. ● Recognize the impact of one's feelings and thoughts on one's own behavior. ● Recognize one's personal traits, strengths, and limitations. ● Recognize the importance of self-confidence in handling daily tasks and challenges.
Self-Management	● Understand and practice strategies for managing one's own emotions, thoughts, and behaviors. ● Recognize the skills needed to establish and achieve personal and educational goals. ● Identify and apply ways to persevere or overcome barriers through alternative methods to achieve one's goals.
Social Awareness	● Recognize and identify the thoughts, feelings, and perspectives of others. ● Demonstrate an awareness of the differences among individuals, groups, and others' cultural backgrounds.

	● Demonstrate an understanding of the need for mutual respect when viewpoints differ. ● Demonstrate an awareness of the expectations for social interactions in a variety of settings.
Responsible Decision Making	● Develop, implement, and model effective problem-solving and critical thinking skills. ● Identify the consequences associated with one's actions in order to make constructive choices. ● Evaluate personal, ethical, safety, and civic impact of decisions.
Relationship Skills	● Establish and maintain healthy relationships. ● Utilize positive communication and social skills to interact effectively with others. ● Identify ways to resist inappropriate social pressure. ● Demonstrate the ability to prevent and resolve interpersonal conflicts in constructive ways. ● Identify who, when, where, or how to seek help for oneself or others when needed.

Interdisciplinary Connections	
ELA Standards	
RI.CR.2.1	Ask and answer questions to demonstrate understanding of key details in an informational text, referring explicitly to the text as the basis for the answers.
RI.IT.2.3	Describe the connection between a series of historical events, scientific ideas or concepts, or steps in a sequence within a text.
RI.TS.2.4	Describe the overall structure of a text and effectively use various text features (e.g., graphs, charts, images, captions, bold print, subheadings, glossaries, indexes, electronic menus, icons) to locate key facts or information.
W.IW.2.2	Write informative/explanatory texts to examine a topic and convey ideas and information. opportunity to integrate climate change education. **A.** Introduce a topic clearly. **B.** Develop a topic with facts definitions, concrete details, text evidence, or other information and examples related to the topic. **C.** Provide a conclusion.
W.WR.2.5	Generate questions about a topic and locate related information from a reference source to obtain information on that topic through shared and independent research.
W.SE.2.6	Prioritize information provided by different sources on the same topic while gathering ideas and planning to write about a topic.
W.RW.2.7	Engage in both collaborative and independent writing tasks regularly, including extended and shorter time frames.

SL.PE.2.1	Participate in collaborative conversations with diverse partners about grade 2 topics and texts with peers and adults in small and larger groups. **A.** Follow agreed-upon norms for discussions (e.g., gaining the floor in respectful ways, listening to others with care, speaking one at a time about the topics and texts under discussion). **B.** Build on others' talk in conversations by linking their explicit comments to the remarks of others. **C.** Ask for clarification and further explanation as needed about the topics and texts under discussion.
SL.II.2.2	Recount or describe key ideas or details from a text read aloud or information presented orally or through other media.
L.RF.2.3	Know and apply grade-level phonics and word analysis skills in decoding words.
L.RF.2.4	Read with sufficient accuracy and fluency to support comprehension. **A.** Read grade-level text with purpose and understanding. **B.** Read grade-level text orally with accuracy, appropriate rate, and expression. **C.** Use context to confirm or self-correct word recognition and understanding, rereading as necessary.
L.KL.2.1	Use knowledge of language and its conventions when writing, speaking, reading, or listening. **A.** Use words and phrases acquired through conversations, reading and being read to, and responding to texts.
L.VL.2.2	Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade 2 reading and content, choosing flexibly from an array of strategies. **A.** Use sentence-level context as a clue to the meaning of a word or phrase. **B.** Determine the meaning of the new word formed when a known prefix is added to a known word (e.g., happy/unhappy, tell/retell). **C.** Use a known root word as a clue to the meaning of an unknown word with the same root (e.g., addition, additional). **D.** Use knowledge of the meaning of individual words to predict the meaning of compound words (e.g., birdhouse, lighthouse, housefly; bookshelf, notebook, bookmark). **E.** Use glossaries and beginning dictionaries, both print and digital, to determine or clarify the meaning of words and phrases.
Mathematics Standards	
MP1	Make sense of problems and persevere in solving them.
MP2	Reason abstractly and quantitatively.
MP5	Use appropriate tools strategically.
MP6	Attend to precision.
2.NBT.2	Count within 1000; skip-count by 5s, 10s, and 100s.

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2.NBT.3	Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.
2.NBT.5	With accuracy and efficiency, add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.
2.NBT.7	Add and subtract within 1000, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds.
2.M.1	Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.
2.M.2	Measure the length of an object twice, using length units of different lengths for the two measurements; describe how the two measurements relate to the size of the unit chosen.
2.M.4	Measure to determine how much longer one object is than another, expressing the length difference in terms of a standard length unit.
2.DL.3	Generate measurement data by measuring lengths of several objects to the nearest whole unit, or by making repeated measurements of the same object. Show the measurements by making a line plot, where the horizontal scale is marked off in whole-number units.
2.DL.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.

Computer Science & Design Thinking	
8.1.2.DA.1	Collect and present data, including climate change data, in various visual formats.
8.1.2.DA.4	Make predictions based on data using charts or graphs.
8.1.2.AP.4	Break down a task into a sequence of steps.
8.2.2.ED.2	Collaborate to solve a simple problem, or to illustrate how to build a product using the design process.
8.2.2.ED.3	Select and use appropriate tools and materials to build a product using the design process.
8.2.2.ITH.1	Identify products that are designed to meet human wants or needs.

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Career Readiness, Life Literacies & Key Skills	
9.1.2.CR.1	Recognize ways to volunteer in the classroom, school, and community.
9.1.2.CAP.1	Make a list of different types of jobs and describe the skills associated with each job.
9.4.2.CI.1	Demonstrate openness to new ideas and perspectives.
9.4.2.CI.2	Demonstrate originality and inventiveness in work.
9.4.2.CT.1	Gather information about an issue, such as climate change, and collaboratively brainstorm ways to solve the problem.
9.4.2.CT.2	Identify possible approaches and resources to execute a plan.
9.4.2.CT.3	Use a variety of types of thinking to solve problems.
9.4.2.DC.7	Describe actions peers can take to positively impact climate change.
9.4.2.IML.2	Represent data in a visual format to tell a story about the data.
9.4.2.IML.3	Use a variety of sources including multimedia sources to find information about topics such as climate change, with guidance and support from adults.

Career Readiness, Life Literacies, and Key Skills Practices	
CLKS.1	Act as a responsible and contributing community member and employee.
CLKS.2	Attend to financial well-being.
CLKS.3	Consider the environmental, social and economic impacts of decisions.
CLKS.4	Demonstrate creativity and innovation.
CLKS.5	Utilize critical thinking to make sense of problems and persevere in solving them.
CLKS.6	Model integrity, ethical leadership and effective management.
CLKS.7	Plan education and career paths aligned to personal goals.
CLKS.8	Use technology to enhance productivity, increase collaboration and communicate effectively.
CLKS.9	Work productively in teams while using cultural/global competence.

Evidence of Student Learning	
Formative Tasks: • Teacher observations • Class discussions	**Alternative Assessments:** • Oral assessments • Student Self-Assessments

● Whiteboard/Communicators ● On-the-Fly Assessments ● Daily classwork ● Checks for understanding ● Clipboard Assessment Tool ● Critical Juncture Assessment ● Crosscutting Concept Tracker	● Pre-Unit Assessments ● 3-D Assessments
Summative Assessments: ● End of Unit Assessment	**Benchmark Assessments:** ●

Knowledge & Skills	
Enduring Understandings: ● One way scientists study habitats is by observing the plants in them over time. ● There are many types of habitats. Each habitat has many different types of plants and animals. ● Plants make seeds that can grow into new plants. ● Only seeds that get enough sunlight and water sprout and grow into full-grown plants. ● Plants have leaves that get sunlight. Plants have roots that get water from the soil. ● Without enough space, plants can't get the sunlight and water they need to grow. ● Leaves need space to get sunlight. Roots need space in the soil to get water. ● Animals sometimes disperse seeds by eating fruit, moving to another place, and leaving droppings with the seeds inside. ● Before they investigate, scientists decide how they will measure the thing they want to learn about. ● Some plants depend on animals to disperse their seeds. These animals depend on the plants for food.	**Essential Questions:** ● How do scientists study habitats, such as the habitat in the Bengal Tiger Reserve? ● How do new plants, such as red silk trees and chalta trees, grow? ● How do plants, such as chalta trees, get the sunlight and water they need to grow? ● Why can't plants, such as chalta trees, always get the sunlight and water they need to grow? ● How can seeds, such as chalta seeds, get to new places in their habitats? ● How do seeds that animals don't use for food get dispersed?
Content *Students will know…*	**Skills** *Students will be able to …* ● Create a diagram of a habitat.

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● There are many different habitats on Earth. ● Plant scientists study plants and also other living things in a habitat. ● Reflecting on what you understand and don't understand allows you to prepare to learn new things. ● Scientists study habitats in multiple ways. ● Setting a purpose before reading can help readers focus their attention. ● A sample study site is a small part of a larger area. ● Scientists can use sample study sites to investigate the plants and animals in a habitat. ● A map identifies key features of a place. ● A map key identifies what the symbols on a map mean. ● One way scientists study habitats is by observing the plants in them over time. ● There are many types of habitats. Each habitat has many different kinds of plants and animals. ● Seeds come in a variety of shapes, sizes, and colors. ● First seeds sprout, and then they grow to become full-grown plants. ● Plants make seeds that can grow into new plants. ● Seeds will sprout if they get enough water; they do not need sunlight to sprout. ● Only the seeds that get enough water and sunlight will grow into full-grown plants. ● Measuring allows scientists to compare results from their investigations. ● Data are observations or measurements recorded in an investigation. Scientists use data to learn about things in the real world. ● Scientists write scientific explanations to explain how things work or why something happens. ● A scientific explanation answers a question.	● Identify parts of a plant, which seeds can move from one place to another. ● Read and gather information about how to study a habitat. ● Observe a chosen study site to see real plants in their habitats. ● Compare maps of the Bengal Tiger Reserve sample study site from 1995 to 2015, and discover that although various new trees have grown during that time period, no new chalta trees have grown. ● Write about different kinds of plants in another habitat of their choosing. ● Analyze data and discover new details about the central problem. ● Engage in a hands-on investigation of how seeds of various plants are similar and different. ● Sort different stages of a plant's growth. ● Identify what seeds need to sprout and grow and use this to predict why only some new trees are growing in the Bengal Tiger Reserve. ● Take accurate measurements. ● Write a scientific explanation of why no new chalta trees are growing. ● Observe and measure roots and leaves from a variety of plants and consider how a plant's roots and leaves might help the plant get what it needs to grow. ● Use the Concept Mapping to conceptualize and articulate the relationships among key science ideas related to how plants get what they need to grow. ● Create a model to explore what happens when multiple plants grow in the same space. ● Explain why the seeds from the chalta trees are not getting what they need to grow into full-grown trees. ● Gather and record information about the various parts of a habitat and how these parts might help seeds get to new places. ● Construct a model to show how animals can help move seeds around a habitat. ● Analyze collected data to discover how the two animals in the fictional habitat moved seeds around the habitat. ● Create a diagram to illustrate the relationships among plants and animals within a particular habitat.

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● A scientific explanation is based on science ideas learned through reading and investigating. ● Roots are plant parts that are underground. ● Leaves are the flat, green plant parts that grow above ground. ● Roots and leaves look different on different plants. ● Plants have leaves that get sunlight. Plants have roots that get water from the soil. ● A plant is a system with parts that help it get the things it needs to grow. ● Every part in a plant has a particular job. ● A plant needs to spread its roots so it can get the water it needs to grow. ● A plant needs to grow its leaves out of the shade of other leaves so it can get the sunlight it needs to grow. ● A model is something scientists make to answer questions about the real world. ● Without enough space, plants can't get sunlight and water they need to grow. ● Leaves need space to get sunlight. Roots need space in the soil to get water. ● Scientists use scientific vocabulary in their explanations. ● Words such as because can help link ideas together in a scientific explanation. ● A habitat is a system with many parts that affect each other. ● Habitats include not just where a plant or animal lives, but all the things it needs to grow in that place, such as sunlight, water, and other living things. ● There are many different plants and animals in the same habitat. ● Animals sometimes move seeds. ● Scientists use different ways to study the world. ● Scientists search for cause-and-effect relationships to explain natural events. ● Science knowledge helps us know about the world.	● Write to describe the relationship among plants and animals in a given habitat. ● Determine how the seeds in given habitats are dispersed. ● Write about how a plant and an animal in a habitat depend on each other. ● Construct a scientific explanation using data and science vocabulary. ● Summarize nonfiction reading. ● Plan and conduct an investigation. ● Record and compare data collected in two investigations to learn that both propellers and fluffy parts help seeds get dispersed to new places away from the plant that made the seeds. ● Write a scientific explanation about how the seeds from sal trees and red silk trees get dispersed. ● Use models to conduct investigations of different ways in which seeds can be dispersed in a habitat. ● Use the digital app to create diagrams for seed dispersal in specific habitats.

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● Scientists study the natural and material world. ● When animals eat fruit, they can eat the seeds inside the fruit and move those seeds around a habitat. ● Counting is a way of measuring. We can use counting to compare results. ● Models help scientists observe things that they can't normally observe. ● Animals sometimes disperse seeds by eating fruit, moving to another place, and leaving droppings with the seeds inside. ● Before scientists investigate, they decide how they will measure the thing they want to learn about. ● Scientists create diagrams to show how something works or what its parts are. ● Some plants and animals in a habitat depend on each other to get what they need to live and grow. ● Some plants depend on animals to disperse their seeds. These animals depend on the plants for food. ● A scientific explanation is written to be shared with someone. ● Seeds can be dispersed when they stick to animal fur and get carried to another place. ● Seeds can be dispersed when they blow in the wind. ● Scientists can use models to investigate how seeds are dispersed. ● Scientists make models to explore phenomena that they cannot observe directly. ● Scientists determine how to measure in an investigation based on what they are interested in learning about. ● Structures around seeds help those seeds get dispersed in certain ways. ● Propeller structures on seeds allow the seeds to be dispersed by wind. ● Fluffy structures on seeds allow the seeds to be dispersed by wind.	

● A tape measure can be used to measure distance. ● Performing an investigation the same way each time allows scientists to compare multiple investigations and tests. ● Analyzing seed structures and relationships between plants and animals can help a scientist determine how a seed is dispersed. ●	

Core Instructional & Supplemental Materials	
Suggested Activities/Resources: ● Books in This Unit ○ *My Nature Notebook* ○ *A Plant Is a System* ○ *Habitat Scientist* ○ *Investigating Seeds* ○ *Handbook of Habitats* ● *Plant and Animal Relationships* Kit	**Supplemental Materials** ● *Eliciting and Leveraging Students' Prior Knowledge, Personal Experiences, and Cultural Backgrounds* PDF ● Digital Resources included in each unit ○ 2.4 Plant Growth: City Park Model ○ 2.4 Plant Growth: Desert Model ○ 2.5 Plant Growth: Everglades Model ○ 4.4 Seed Dispersal ● Flextension Activity ● Multi-language glossary

Suggested Accommodations

English Language Learners:
- Multi-sensory instruction
- Flexible grouping
- Small group instruction
- Provide peer tutoring
- Use a strong student as a "buddy" (does not necessarily have to speak the primary language)
- Chunking information
- Scaffolded questioning
- Academic language support
- Vocabulary support
- Co-Constructed Word Banks
- Anchor charts
- Gradual release model
- Visual models
- Native language support when possible (Multi-language glossary)
- Sheltered English Instruction Strategies
- Sentence starters

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Special Education/Students with Disabilities:
- Allow extra time to complete assignments or tests
- Work in a small group
- Allow answers to be given orally or dictated
- Follow all IEP modifications
- Calculators
- Manipulatives/concrete models
- Directions repeated, clarified, and reworded
- Breakdown task into manageable parts

504 Plans:
- Allow extra time to complete assignments or tests
- Work in a small group
- Allow answers to be given orally or dictated
- Calculators
- Manipulatives/concrete models
- Follow all 504 modifications

Gifted and Talented:
- Higher level questioning
- Enriched assignments
- Tiered assignments
- Choice board to extend learning

Students at Risk of Failure:
- Provide peer tutoring
- Use a strong student as a “buddy”
- Allow extra time to complete assignments or tests
- Work in a small group
- One on one instruction
- Provide immediate praise and feedback
- Create a nurturing environment
- Provide visuals
- Be flexible with assignments and time frames
- Provide needed academic resources
- Chunking information
- Scaffolded questioning
- Tiered activities
- Manipulatives/concrete models
- Modified assignments
- Brain breaks

Economically Disadvantaged:
- Pre-teach vocabulary using visuals and gestures
- Chunk texts
- Summarize as you go
- Preview lessons
- Graphic organizers
- Highlight key words

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- Sentence starters
- Prompting and cueing
- Activate schema
- Build background knowledge

Culturally Diverse:

- Create an emotionally positive classroom climate.
- Create effective communication
- Model and teach cultural respect
- Build relationships with students by interviewing students to understand their background

Unit 2: Properties of Materials	Duration: 60 days

New Jersey Student Learning Standards	
2-PS1-1	Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.
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.
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.
2-PS1-4	Construct an argument with evidence that some changes caused by heating or cooling can be reversed and some cannot.
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.
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.
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.

Science and Engineering Practices	Discipline Core Ideas/Unit Enduring Understandings	Crosscutting Concepts
• **Practice 6: Constructing Explanations and Designing Solutions:** Working as glue engineers, students engage in all stages of an iterative cycle of design as they learn,	**PS1.A: Structure and Properties of Matter** • Different kinds of matter exist and many of them can be either solid or liquid, depending on temperature. Matter can be described and	**Patterns** • Patterns in the natural and human designed world can be observed. (2-PS1-1) **Cause and Effect** • Events have causes that

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plan, make, and test. Then, based on the evidence they gather, they repeat the cycle in order to make the best possible recipe for glue.

- **Practice 7: Engaging in Argument from Evidence:** As students investigate possible glue ingredients and glue mixtures, they make claims and support those claims with the evidence they have gathered through tests, a reference book, and their firsthand observations.
- **Practice 3: Planning and Carrying Out Investigations:** Students plan and conduct numerous fair tests of glue ingredients or glue designs. In addition, students are given repeated opportunities to engage in the practice of making predictions before they conduct tests on glue ingredients or their glue designs.
- **Practice 4: Analyzing and Interpreting Data:** Students have multiple opportunities to analyze the data they have collected from firsthand investigations in order to determine the best ingredients to include in their glue designs or to assess the success of their glues in meeting the design goals.
- **Practice 8: Obtaining, Evaluating, and Communicating Information:** Students read and search for evidence in a variety of books that are custom written for this unit. They receive explicit instruction and have multiple opportunities to use the reading comprehension strategy of making

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)

PS1.B: Chemical Reactions

- 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)

ETS1.A: Defining and Delimiting Engineering Problems:

- 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)

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)

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)

Energy and Matter

- Objects may break into smaller pieces and be put together into larger pieces or change shapes. (2PS1-3)

Structure and Function

- The shape and stability of structures of natural and designed objects are related to their function(s). (K-2-ETS1-2)

Connections to Engineering, Technology, and Applications of Science

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

- Every human-made product is designed by applying some knowledge of the natural world and is built using materials derived from the natural world. (2-PS1-2)

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)

predictions as they engage with the books in the unit. This strategy helps to activate prior knowledge, connect that knowledge to what students are about to read, and set a focus for reading. Revising predictions as they read, students become aware of the new information to which they are being exposed as they work their way through the text. The evidence students gather about glue ingredients from the unit's reference book is synthesized with firsthand evidence and becomes central to their design arguments throughout the unit. ● **Practice 1: Asking Questions:** Students define the problem of creating a glue by reflecting on and specifying design goals that will make their glue work well, and refining their goals over time. ● **Practice 5: Using Mathematics and Computational Thinking:** Students consider the quantity of each ingredient to include when combining multiple ingredients for their final glue recipe.		

New Jersey Social and Emotional Competencies and Sub-Competencies	
Self-Awareness	● Recognize one's feelings and thoughts. ● Recognize the impact of one's feelings and thoughts on one's own behavior. ● Recognize one's personal traits, strengths, and limitations. ● Recognize the importance of self-confidence in handling daily tasks and challenges.
Self-Management	● Understand and practice strategies for managing one's own emotions, thoughts, and behaviors.

	• Recognize the skills needed to establish and achieve personal and educational goals. • Identify and apply ways to persevere or overcome barriers through alternative methods to achieve one's goals.
Social Awareness	• Recognize and identify the thoughts, feelings, and perspectives of others. • Demonstrate an awareness of the differences among individuals, groups, and others' cultural backgrounds. • Demonstrate an understanding of the need for mutual respect when viewpoints differ. • Demonstrate an awareness of the expectations for social interactions in a variety of settings.
Responsible Decision Making	• Develop, implement, and model effective problem-solving and critical thinking skills. • Identify the consequences associated with one's actions in order to make constructive choices. • Evaluate personal, ethical, safety, and civic impact of decisions.
Relationship Skills	• Establish and maintain healthy relationships. • Utilize positive communication and social skills to interact effectively with others. • Identify ways to resist inappropriate social pressure. • Demonstrate the ability to prevent and resolve interpersonal conflicts in constructive ways. • Identify who, when, where, or how to seek help for oneself or others when needed.

Interdisciplinary Connections	
ELA Standards	
RI.CR.2.1	Ask and answer questions to demonstrate understanding of key details in an informational text, referring explicitly to the text as the basis for the answers.
RI.IT.2.3	Describe the connection between a series of historical events, scientific ideas or concepts, or steps in a sequence within a text.
RI.TS.2.4	Describe the overall structure of a text and effectively use various text features (e.g., graphs, charts, images, captions, bold print, subheadings, glossaries, indexes, electronic menus, icons) to locate key facts or information.
RI.PP.2.5	Identify the main purpose of a text, including what the author seeks to explore, answer, explain, or describe.
RI.MF.2.6	Explain how specific illustrations and images (e.g., a diagram showing how a machine works) contribute to and clarify a text.
W.AW.2.1	With prompts and support, write opinion pieces to present an idea with reasons or information.

	A. Introduce an opinion. **B.** Support the opinion with facts, definitions, concrete details, text evidence, or other information and examples related to the topic. **C.** Provide a conclusion.
W.WR.2.5	Generate questions about a topic and locate related information from a reference source to obtain information on that topic through shared and independent research.
W.SE.2.6	Prioritize information provided by different sources on the same topic while gathering ideas and planning to write about a topic.
W.RW.2.7	Engage in both collaborative and independent writing tasks regularly, including extended and shorter time frames.
SL.PE.2.1	Participate in collaborative conversations with diverse partners about grade 2 topics and texts with peers and adults in small and larger groups. **A.** Follow agreed-upon norms for discussions (e.g., gaining the floor in respectful ways, listening to others with care, speaking one at a time about the topics and texts under discussion). **B.** Build on others' talk in conversations by linking their explicit comments to the remarks of others. **C.** Ask for clarification and further explanation as needed about the topics and texts under discussion.
SL.II.2.2	Recount or describe key ideas or details from a text read aloud or information presented orally or through other media.
L.RF.2.3	Know and apply grade-level phonics and word analysis skills in decoding words.
L.RF.2.4	Read with sufficient accuracy and fluency to support comprehension. **A.** Read grade-level text with purpose and understanding. **B.** Read grade-level text orally with accuracy, appropriate rate, and expression. **C.** Use context to confirm or self-correct word recognition and understanding, rereading as necessary.
L.KL.2.1	Use knowledge of language and its conventions when writing, speaking, reading, or listening. **A.** Use words and phrases acquired through conversations, reading and being read to, and responding to texts.
L.VL.2.2	Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade 2 reading and content, choosing flexibly from an array of strategies. **A.** Use sentence-level context as a clue to the meaning of a word or phrase. **B.** Determine the meaning of the new word formed when a known prefix is added to a known word (e.g., happy/unhappy, tell/retell). **C.** Use a known root word as a clue to the meaning of an unknown word with the same root (e.g., addition, additional).

	D. Use knowledge of the meaning of individual words to predict the meaning of compound words (e.g., birdhouse, lighthouse, housefly; bookshelf, notebook, bookmark). **E.** Use glossaries and beginning dictionaries, both print and digital, to determine or clarify the meaning of words and phrases.
Mathematics Standards	
MP1	Make sense of problems and persevere in solving them.
MP2	Reason abstractly and quantitatively.
MP3	Construct viable arguments and critique the reasoning of others.
MP4	Model with mathematics.
MP5	Use appropriate tools strategically.
MP6	Attend to precision.
MP7	Look for and make use of structure.
2.OA.1	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.DL.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.

Computer Science & Design Thinking	
8.1.2.DA.1	Collect and present data, including climate change data, in various visual formats.
8.1.2.DA.4	Make predictions based on data using charts or graphs.
8.1.2.AP.4	Break down a task into a sequence of steps.
8.2.2.ED.2	Collaborate to solve a simple problem, or to illustrate how to build a product using the design process.
8.2.2.ED.3	Select and use appropriate tools and materials to build a product using the design process.
8.2.2.ITH.1	Identify products that are designed to meet human wants or needs.

Career Readiness, Life Literacies & Key Skills

Grade: 2	**Content Area: Science**

9.1.2.CR.1	Recognize ways to volunteer in the classroom, school, and community.
9.1.2.CAP.1	Make a list of different types of jobs and describe the skills associated with each job.
9.4.2.CI.1	Demonstrate openness to new ideas and perspectives.
9.4.2.CI.2	Demonstrate originality and inventiveness in work.
9.4.2.CT.1	Gather information about an issue, such as climate change, and collaboratively brainstorm ways to solve the problem.
9.4.2.CT.2	Identify possible approaches and resources to execute a plan.
9.4.2.CT.3	Use a variety of types of thinking to solve problems.
9.4.2.DC.7	Describe actions peers can take to positively impact climate change.
9.4.2.IML.2	Represent data in a visual format to tell a story about the data.
9.4.2.IML.3	Use a variety of sources including multimedia sources to find information about topics such as climate change, with guidance and support from adults.

Career Readiness, Life Literacies, and Key Skills Practices	
CLKS.1	Act as a responsible and contributing community member and employee.
CLKS.2	Attend to financial well-being.
CLKS.3	Consider the environmental, social and economic impacts of decisions.
CLKS.4	Demonstrate creativity and innovation.
CLKS.5	Utilize critical thinking to make sense of problems and persevere in solving them.
CLKS.6	Model integrity, ethical leadership and effective management.
CLKS.7	Plan education and career paths aligned to personal goals.
CLKS.8	Use technology to enhance productivity, increase collaboration and communicate effectively.
CLKS.9	Work productively in teams while using cultural/global competence.

Evidence of Student Learning	
Formative Tasks: ● Teacher observations ● Class discussions ● Whiteboard/Communicators ● On-the-Fly Assessments	**Alternative Assessments:** ● Oral assessments ● Student Self-Assessments ● Pre-Unit Assessments ● 3-D Assessments

• Daily classwork • Checks for understanding • Clipboard Assessment Tool • Critical Juncture Assessment • Crosscutting Concept Tracker	
Summative Assessments: • End of Unit Assessment	**Benchmark Assessments:** •

Knowledge & Skills	
Enduring Understandings: • Properties include how materials smell, look, taste, feel, and sound. • Different materials have different properties. • You can tell if materials and substances are different by observing their properties. • You can tell if materials and substances are different by observing their properties or by testing them. • Properties of mixtures can change when other ingredients are added. • Properties of substances are the same whether you have a small amount or a large amount. • Engineers test their designs to find out whether they meet their design goals. • When a substance is heated or cooled, its properties can change. • Some substances change back to the way they were before they were heated or cooled. • If a substance doesn't change back to the way it was, it has become a different substance. • Mixtures may have a combination of the properties of their ingredients. • Mixtures may have some of the properties of their ingredients. • Mixtures can be designed for certain purposes by using ingredients with certain properties.	**Essential Questions:** • What can be noticed about different materials? • How can you tell if substances are different? • How can the properties of a mixture change? • Which ingredients should we use (or not use) in our glue? • What can happen after a substance has been heated or cooled and returns to its original temperature? • How can mixtures be designed to have certain properties?

Lakewood Public School District Curriculum Guide

Grade: 2	Content Area: Science

Content

Students will know…

- Reflecting on what you understand and don't understand allows you to prepare for learning new things.
- Materials are the stuff that things are made of.
- Materials have properties.
- Properties include how materials smell, look, taste, feel, and sound.
- Materials have properties that make them good for some uses and NOT so good for others.
- Engineers design things to solve problems.
- Good readers make predictions about what they are going to read or learn.
- Different materials have different properties.
- You can tell if materials or substances are different by observing their properties.
- You can tell if materials or substances are different by observing their properties or by testing them.
- Scientists and engineers make predictions.
- Scientists and engineers support their thinking with evidence.
- Engineers use design goals to guide their work.
- Engineers make observations and gather information to learn about possible solutions to a design problem.
- Engineers analyze information from tests of different ingredients to compare the strengths and weaknesses of how each performs.
- When ingredients are combined a mixture is created.
- A mixture has different properties than its ingredients.
- Fair tests enable us to gather more accurate information.
- Engineers use tools, such as graphing apps, in their work.

Skills

Students will be able to …

- Make predictions while reading.
- Make observations about the properties of materials and gather evidence to respond to a scientific question.
- Use evidence to support an argument about a scientific idea.
- Write to explain and scientific argument, providing scientific evidence to support the argument.
- Make observations and use this to make predictions.
- Use scientific vocabulary to describe the properties of different materials.
- Gather and graph test results
- Evaluate evidence and summarize results.
- Reflect on their own similarities to a real-life engineer who designs mixtures.
- Make and modify predictions while reading.
- Make a claim (oral and written) and provide evidence to support it.
- Write and support a design argument with appropriate evidence from multiple sources.
- Observe and compare different wet glues and, based on the observations of the properties of each glue, decide whether the glues are the same or different.
- Reflect on key takeaways from a reading and apply this to what they already know about the topic.
- Complete a card sort to show understanding that after being heated or cooled, some substances can change back while others cannot.
- Navigate a reference text for information while gathering evidence.
- Understand and explain a cause and effect relationship.
- Synthesize learning and evidence-gathering into a written argument.
- Understand and give examples of the design cycle.
- Write design goals.
- Engage in a student-driven learning sequence to apply collected evidence.
- When presented with a design challenge, write about possible solutions.

Grade: 2	**Content Area: Science**

● Engineers search for evidence in their investigations. ● Engineers base their predictions and their conclusions on evidence. ● Properties of substances are the same whether you have a small amount or a large amount. ● Engineers use what they know about properties of ingredients to help them design mixtures. ● Engineers test their designs to find out whether they meet their design goals. ● Engineers go through a design cycle to find solutions to problems. ● Men and women of diverse backgrounds are scientists and engineers. ● Scientists and engineers study the natural and material world. ● Engineers plan how they will make something before they make it. ● When mixtures have different properties, their ingredients are different. ● When mixtures have the same properties, they probably have the same ingredients. ● When a substance is heated or cooled, its properties can change. ● Some substances change back to the way they were before they were heated or cooled. ● If a substance doesn't change back to the way it was, it has become a different substance. ● Adding an ingredient to a mixture can cause an effect on the properties of the mixture. ● Engineers may search for evidence in reference books. ● Providing multiple sources of evidence makes a more convincing argument. ● While each step in the design cycle is important, engineers don't always follow the same exact steps in the same order. ● Engineers often need to revise their plans and repeat some steps over again as they go along, based on what they learn.	● Engage in engineering practices while evaluating, designing, and testing substances. ● Match ingredients to mixtures based on the properties of mixture. ● Write a final design argument in the form of a letter in which they identify the design goals, make claims about the goals, and provide evidence to support the claims.

● Understanding cause and effect can help inform scientists, engineers, or students as they design mixtures. ● Engineers usually have multiple design goals. ● Mixtures can be designed to have particular properties for specific uses. ● Mixtures may have a combination of properties of their ingredients. ● Some ingredients are better suited for making a strong glue than others. ● Engineers and scientists communicate their results using graphs. ● Part of evaluating evidence involves considering how sure you are that the evidence is correct. ● Having multiple sources of evidence that are the same increases confidence that the evidence is accurate. ● There may be different solutions to a design problem. Testing and comparing those solutions will help show which one better met the design goals. ● Mixtures can be designed for certain purposes by using ingredients with certain properties. ● Engineers typically go through the design cycle multiple times before landing on a design that works to meet the design goals. ● Engineers evaluate designs based on whether they meet the design goals. ● Engineers share their ideas and accomplishments with others. ● One may be able to use the known properties of a mixture to make a conjecture about what ingredients are in the mixture. ● It is possible to make inferences about causes when one knows the effect. ● Mixtures can be designed for different purposes by understanding the properties needed to fulfill those purposes and utilizing ingredients with the necessary properties.	

●	

Core Instructional & Supplemental Materials	
Suggested Activities/Resources: ● Books in This Unit ○ *What If Rain Boots Were Made of Paper?* ○ *Can You Change It Back?* ○ *Jess Makes Hair Gel* ○ *Jelly Bean Engineer* ○ *The Handbook of Interesting Ingredients* ● *Properties of Materials* Kit	**Supplemental Materials** ● *Eliciting and Leveraging Students' Prior Knowledge, Personal Experiences, and Cultural Backgrounds* PDF ● Digital Resources included in each unit ○ 1.6 Sticky Test Results ○ 2.3 Cornstarch Test Results ○ 3.3 Strength Test Results ○ *Properties of Materials* Sorting Tool Activities ○ 2.2 Before and After ○ 2.2 Can It Change Back? ○ 4.3 Ingredient Properties 1 and Ingredient Properties 2 ○ 4.3 Mystery Mixtures 1 and Mystery Mixtures 2 ● Multi-language glossary ● *Galimoto* by Karen Lynn Williams ● *Too Sticky* by Jen Malia

Suggested Accommodations

English Language Learners:

- Multi-sensory instruction
- Flexible grouping
- Small group instruction
- Provide peer tutoring
- Use a strong student as a "buddy" (does not necessarily have to speak the primary language)
- Chunking information
- Scaffolded questioning
- Academic language support
- Vocabulary support
- Co-Constructed Word Banks
- Anchor charts
- Gradual release model
- Visual models
- Native language support when possible (Multi-language glossary)
- Sheltered English Instruction Strategies
- Sentence starters

Special Education/Students with Disabilities:

- Allow extra time to complete assignments or tests
- Work in a small group

- Allow answers to be given orally or dictated
- Follow all IEP modifications
- Calculators
- Manipulatives/concrete models
- Directions repeated, clarified, and reworded
- Breakdown task into manageable parts

504 Plans:
- Allow extra time to complete assignments or tests
- Work in a small group
- Allow answers to be given orally or dictated
- Calculators
- Manipulatives/concrete models
- Follow all 504 modifications

Gifted and Talented:
- Higher level questioning
- Enriched assignments
- Tiered assignments
- Choice board to extend learning

Students at Risk of Failure:
- Provide peer tutoring
- Use a strong student as a “buddy”
- Allow extra time to complete assignments or tests
- Work in a small group
- One on one instruction
- Provide immediate praise and feedback
- Create a nurturing environment
- Provide visuals
- Be flexible with assignments and time frames
- Provide needed academic resources
- Chunking information
- Scaffolded questioning
- Tiered activities
- Manipulatives/concrete models
- Modified assignments
- Brain breaks

Economically Disadvantaged:
- Pre-teach vocabulary using visuals and gestures
- Chunk texts
- Summarize as you go
- Preview lessons
- Graphic organizers
- Highlight key words
- Sentence starters
- Prompting and cueing
- Activate schema

Grade: 2	Content Area: Science

- Build background knowledge

Culturally Diverse:

- Create an emotionally positive classroom climate.
- Create effective communication
- Model and teach cultural respect
- Build relationships with students by interviewing students to understand their background

Unit 3: Changing Landforms	Duration: 60 days

New Jersey Student Learning Standards	
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.
2-ESS2-2	Develop a model to represent the shapes and kinds of land and bodies of water in an area.
2-ESS2-3	Obtain information to identify where water is found on Earth and that it can be solid or liquid.
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.

Science and Engineering Practices	Discipline Core Ideas/Unit Enduring Understandings	Crosscutting Concepts
• **Practice 2: Developing and Using Models:** Students receive explicit instruction and opportunities to practice using and creating models by 1) using physical models to gather evidence about the process of erosion; 2) learning about diagrams and maps as models, learning to interpret them, and gathering evidence from them; and 3) creating diagram models to	**ESS1.C: The History of Planet Earth** • Some events happen very quickly; others occur very slowly, over a time period much longer than one can observe. (2-ESS1-1) **ESS2.A: Earth Materials and Systems:** • Wind and water can change the shape of the land. (2-ESS2-1) **ESS2.B: Plate Tectonics and Large-Scale System**	**Stability of Change** • Things may change slowly or rapidly. (2-ESS1-1) • Things may change slowly or rapidly. (2-ESS2-1) **Patterns** • Patterns in the natural world can be observed. (2-ESS2-2), (2-ESS2-3) ***Connections to Engineering, Technology, and Applications of Science***

show their understanding of the process and results of erosion. ● **Practice 6: Constructing Explanations and Designing Solutions:** Students learn about scientific explanations and have multiple opportunities to write increasingly complex explanations over the course of the unit. They learn that an explanation may involve processes that occur at various timescales and spatial scales and that visualizing processes is a key strategy for making these explanations. ● **Practice 8: Obtaining, Evaluating, and Communicating Information:** Just as students focus on visualizing in science, they receive explicit instruction and have multiple opportunities to use the reading comprehension strategy of visualizing as they engage with the informational texts in the unit. Students gather evidence through firsthand and secondhand sources, as well as participate in various discourse routines that help them communicate about and make sense of science ideas, using key vocabulary. ● **Practice 7: Engaging in Argument from Evidence:** Students learn that scientists use evidence in order to answer questions. Students have multiple opportunities to engage in argument by using evidence from texts, data, maps, and physical models. ● **Practice 1: Asking Questions:** Students are	**Interactions** ● Maps show where things are located. One can map the shapes 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)	**Influence of Engineering, Technology, and Science on Society and the Natural World** ● Developing and using technology has impacts on the natural world. (2-ESS2-1) ***Connections to Nature of Science*** **Science Addresses Questions About the Natural and Material World** ● Scientists study the natural and material world. (2-ESS2-1)

encouraged to ask questions frequently during the unit, especially as new concepts or examples are introduced. ● **Practice 4: Analyzing and Interpreting Data:** Students analyze and interpret data about the cliff by the recreation center, as well as about the nearby cliff that changed more quickly. ● **Practice 3: Planning and Carrying Out Investigations:** Students conduct hands-on investigations of sand as they work to understand how rock can change. They use their observations to make inferences about changes to rock by using similar reasoning as is modeled in the book Gary's Sand Journal. ● **Practice 5: Using Mathematics and Computational Thinking:** Students use models to make sense of the idea that many small changes add up to big changes over time.		

New Jersey Social and Emotional Competencies and Sub-Competencies	
Self-Awareness	● Recognize one's feelings and thoughts. ● Recognize the impact of one's feelings and thoughts on one's own behavior. ● Recognize one's personal traits, strengths, and limitations. ● Recognize the importance of self-confidence in handling daily tasks and challenges.
Self-Management	● Understand and practice strategies for managing one's own emotions, thoughts, and behaviors. ● Recognize the skills needed to establish and achieve personal and educational goals. ● Identify and apply ways to persevere or overcome barriers through alternative methods to achieve one's goals.
Social Awareness	● Recognize and identify the thoughts, feelings, and perspectives of others.

	• Demonstrate an awareness of the differences among individuals, groups, and others' cultural backgrounds. • Demonstrate an understanding of the need for mutual respect when viewpoints differ. • Demonstrate an awareness of the expectations for social interactions in a variety of settings.
Responsible Decision Making	• Develop, implement, and model effective problem-solving and critical thinking skills. • Identify the consequences associated with one's actions in order to make constructive choices. • Evaluate personal, ethical, safety, and civic impact of decisions.
Relationship Skills	• Establish and maintain healthy relationships. • Utilize positive communication and social skills to interact effectively with others. • Identify ways to resist inappropriate social pressure. • Demonstrate the ability to prevent and resolve interpersonal conflicts in constructive ways. • Identify who, when, where, or how to seek help for oneself or others when needed.

Interdisciplinary Connections	
ELA Standards	
RI.CR.2.1	Ask and answer questions to demonstrate understanding of key details in an informational text, referring explicitly to the text as the basis for the answers.
RI.CI.2.2	Recount a text in oral and written form and determine main topic (in multi-paragraph informational text, focusing on specific paragraphs).
RI.TS.2.4	Describe the overall structure of a text and effectively use various text features (e.g., graphs, charts, images, captions, bold print, subheadings, glossaries, indexes, electronic menus, icons) to locate key facts or information.
RI.PP.2.5	Identify the main purpose of a text, including what the author seeks to explore, answer, explain, or describe.
RI.MF.2.6	Explain how specific illustrations and images (e.g., a diagram showing how a machine works) contribute to and clarify a text.
W.IW.2.2	Write informative/explanatory texts to examine a topic and convey ideas and information. opportunity to integrate climate change education. **A.** Introduce a topic clearly. **B.** Develop a topic with facts definitions, concrete details, text evidence, or other information and examples related to the topic. **C.** Provide a conclusion.
W.WP.2.4	With guidance and support from adults and peers, develop and strengthen writing as needed by planning, revising and editing.

	A. Identify audience and purpose before writing. **B.** Participate in self-evaluation of written work. **C.** With feedback and digital or print tools such as a primary dictionary, find and correct errors.
W.WR.2.5	Generate questions about a topic and locate related information from a reference source to obtain information on that topic through shared and independent research.
W.SE.2.6	Prioritize information provided by different sources on the same topic while gathering ideas and planning to write about a topic.
SL.PE.2.1	Participate in collaborative conversations with diverse partners about grade 2 topics and texts with peers and adults in small and larger groups.
SL.II.2.2	Recount or describe key ideas or details from a text read aloud or information presented orally or through other media.
SL.ES.2.3	Ask and answer questions about what a speaker says in order to clarify comprehension, gather additional information, or deepen understanding of a topic or issue.
L.RF.2.3	Know and apply grade-level phonics and word analysis skills in decoding words.
L.RF.2.4	Read with sufficient accuracy and fluency to support comprehension. **A.** Read grade-level text with purpose and understanding. **B.** Read grade-level text orally with accuracy, appropriate rate, and expression. **C.** Use context to confirm or self-correct word recognition and understanding, rereading as necessary.
L.KL.2.1	Use knowledge of language and its conventions when writing, speaking, reading, or listening. **A.** Use words and phrases acquired through conversations, reading and being read to, and responding to texts.
L.VL.2.2	Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade 2 reading and content, choosing flexibly from an array of strategies. **A.** Use sentence-level context as a clue to the meaning of a word or phrase. **B.** Determine the meaning of the new word formed when a known prefix is added to a known word (e.g., happy/unhappy, tell/retell). **C.** Use a known root word as a clue to the meaning of an unknown word with the same root (e.g., addition, additional). **D.** Use knowledge of the meaning of individual words to predict the meaning of compound words (e.g., birdhouse, lighthouse, housefly; bookshelf, notebook, bookmark). **E.** Use glossaries and beginning dictionaries, both print and digital, to determine or clarify the meaning of words and phrases.
Mathematics Standards	
MP1	Make sense of problems and persevere in solving them.

Grade: 2	Content Area: Science

MP2	Reason abstractly and quantitatively.
MP4	Model with mathematics.
MP5	Use appropriate tools strategically.
2.OA.1	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.OA.2	With accuracy and efficiency, add and subtract within 20 using mental strategies. By end of Grade 2, know from memory all sums of two one-digit numbers.
2.NBT.5	With accuracy and efficiency, add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.
2.M.3	Estimate lengths using units of inches, feet, centimeters, and meters.
2.M.4	Measure to determine how much longer one object is than another, expressing the length difference in terms of a standard length unit.
2.M.5	Use addition and subtraction within 100 to solve word problems involving lengths that are given in the same units.
2.DL.3	Generate measurement data by measuring lengths of several objects to the nearest whole unit, or by making repeated measurements of the same object. Show the measurements by making a line plot, where the horizontal scale is marked off in whole-number units.
2.DL.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.

Computer Science & Design Thinking	
8.1.2.CS.1	Select and operate computing devices that perform a variety of tasks accurately and quickly based on user needs and preferences.
8.1.2.DA.1	Collect and present data, including climate change data, in various visual formats.
8.1.2.DA.4	Make predictions based on data using charts or graphs.
8.1.2.AP.4	Break down a task into a sequence of steps.
8.2.2.ED.2	Collaborate to solve a simple problem, or to illustrate how to build a product using the design process.
8.2.2.ED.3	Select and use appropriate tools and materials to build a product using the design process.

Grade: 2	Content Area: Science

Career Readiness, Life Literacies & Key Skills	
9.1.2.CR.1	Recognize ways to volunteer in the classroom, school, and community.
9.1.2.CAP.1	Make a list of different types of jobs and describe the skills associated with each job.
9.4.2.CI.1	Demonstrate openness to new ideas and perspectives.
9.4.2.CI.2	Demonstrate originality and inventiveness in work.
9.4.2.CT.1	Gather information about an issue, such as climate change, and collaboratively brainstorm ways to solve the problem.
9.4.2.CT.2	Identify possible approaches and resources to execute a plan.
9.4.2.CT.3	Use a variety of types of thinking to solve problems.
9.4.2.DC.7	Describe actions peers can take to positively impact climate change.
9.4.2.IML.2	Represent data in a visual format to tell a story about the data.
9.4.2.IML.3	Use a variety of sources including multimedia sources to find information about topics such as climate change, with guidance and support from adults.

Career Readiness, Life Literacies, and Key Skills Practices	
CLKS.1	Act as a responsible and contributing community member and employee.
CLKS.2	Attend to financial well-being.
CLKS.3	Consider the environmental, social and economic impacts of decisions.
CLKS.4	Demonstrate creativity and innovation.
CLKS.5	Utilize critical thinking to make sense of problems and persevere in solving them.
CLKS.6	Model integrity, ethical leadership and effective management.
CLKS.7	Plan education and career paths aligned to personal goals.
CLKS.8	Use technology to enhance productivity, increase collaboration and communicate effectively.
CLKS.9	Work productively in teams while using cultural/global competence.

Evidence of Student Learning	
Formative Tasks: ● Teacher observations	**Alternative Assessments:** ● Oral assessments

● Class discussions ● Whiteboard/Communicators ● On-the-Fly Assessments ● Daily classwork ● Checks for understanding ● Clipboard Assessment Tool ● Critical Juncture Assessment ● Crosscutting Concept Tracker	● Student Self-Assessments ● Pre-Unit Assessments ● 3-D Assessments
Summative Assessments: ● End of Unit Assessment	**Benchmark Assessments:** ●

Knowledge & Skills	
Enduring Understandings: ● Landforms are made of rock. ● Even if geologists can't see a change happening, they can use models to visualize how it may have happened. ● Even though rock is hard, it can change shape. ● The shape of a landform changes when water causes pieces of rock to break off. ● Water hitting a landform causes tiny pieces of the landform to break off. ● Scientists make diagrams to show their ideas about how the world works, based on evidence from investigations, models, and books. ● Maps show where water and land are and where different landforms are. ● Many small changes that are hard to notice can add up to a bigger change that is easy to notice. ● When many small changes happen over a long time, the whole landform changes. ● Wind and water can erode a landform quickly if the landform is made of loose materials.	**Essential Questions:** ● What are landforms made of? ● How do geologists figure out how something changed when they can't observe it changing? ● What can make landforms change? ● How could water change a landform even though landforms are made of hard rock? ● If erosion moves small pieces of rock, how can it cause a big change? ● How can landforms erode quickly?
Content *Students will know…* ● A landform is a feature of Earth's surface, such as a mountain, a cliff, or a valley.	**Skills** *Students will be able to …* ● Use a chart to show what they already know about a topic.

Grade: 2	**Content Area: Science**

- A geologist is a scientist who studies the solid part of Earth.
- Reflecting on what you understand and don't understand allows you to prepare for learning new things.
- Landforms are made of rock.
- Water can be found in the ocean, rivers, lakes, and ponds.
- Evidence is information that supports an answer to a question.
- Observations can be used as evidence to answer a question.
- Sand can be different sizes, shapes, and colors.
- Scientists compare what they have observed to help them see how things are alike and different.
- Something that is stable stays mostly the same.
- Scientists use different ways to study the world.
- Science knowledge helps us know about the world.
- Scientists start with questions and conduct investigations to find answers.
- Visualizing while reading helps readers better understand the ideas in a text.
- Scientists can make observations to help them visualize how something may have happened.
- Scientists look for patterns when they make observations about the world.
- Sand is formed when rock or other materials break into small pieces.
- Observations and evidence can help scientists explain things that happened in the past.
- Scientists use information from books to help them answer their questions.
- A model can help scientists answer questions about the real world.
- Even if geologists can't see a change happening, they can use models to visualize how it may have happened.

- Modify the information displayed in the chart when new information is learned.
- Create a diagram of a landform.
- Use a reference book to gather evidence to support an idea.
- Observe and compare samples of a material/substance.
- Visualize while reading in order to better understand ideas.
- Make observations and determine if the observations can be used as evidence.
- Gather evidence of processes that cannot be easily observed by creating models.
- Write a scientific explanation to respond to a scientific question.
- Create a diagram to show how something happens.
- Investigate a model.
- Use observations as evidence to support an idea.
- Compile evidence gathered through multiple investigations into a single chart.
- Read and understand a map and map keys that indicate where water, low land, and high land are found.
- Create a simple map digitally.
- Create elevation maps.
- Write to reflect on new information learned.
- Group descriptions of changes that occur based on the time it takes for them to occur.
- Order a set of maps chronologically.
- Complete an evidence chart to reflect on evidence gathered.
- Make observations and draw conclusions.
- Reflect on how models are similar to the real world and why scientists use them to answer questions.
- Reflect on the importance of using evidence to revise initial ideas.
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● Even though rock is hard, it can change shape. ● Scientists write scientific explanations to explain how things work or why something happens. ● A scientific explanation answers a question, is based on science ideas, and is shared with someone. ● Scientists use diagrams to communicate and share their ideas about how the world works. ● Diagrams often include captions to help explain ideas more clearly. ● Comparing landforms helps geologists determine what could cause landforms to change. ● Observations of models can provide evidence of processes that occur in the real world. ● Water can change landforms. ● Visualizing is a useful strategy for making sense of things you cannot observe firsthand. ● Water can be solid or liquid in form. ● Liquid water and solid water can cause landforms to change shape. ● Erosion is when rock, soil, or sand is worn down and moved from one place to another. ● Visualizing before creating a diagram helps you include parts of a process in your diagram that may not be easily observed. ● Including captions in a diagram helps explain a process more clearly. ● The shape of a landform changes when water causes pieces of rock to break off. ● Water hitting a landform causes tiny pieces of the landform to break off. ● Scientists often have to think about things at very different scales. ● Scientists make diagrams to show their ideas about how the world works, based on evidence from investigations, models, and books.	

● Sharing ideas with others helps solidify an understanding of concepts before writing an explanation. ● A scientific explanation includes scientific vocabulary. ● Scientists support their explanations with ideas learned from investigations and books. ● Maps show where water and land are and where different landforms are. ● A map key identifies what the items on a map mean. ● Geologists can use maps to study landform changes over time. ● Some processes can be observed over a long timescale but are hard to observe over a shorter timescale. ● Geologists and other scientists think about changes at a variety of scales—big changes and small changes. ● Many small changes that are hard to notice can add up to a bigger change that is easy to notice. ● Geologists can think about the scale of erosion in terms of size and time. ● When many small changes happen over a long time, the whole landform changes. ● Scale refers to how big or small something is, or how fast or slow events happen. ● Scientists use drawings, sketches, and models as a way to communicate ideas. ● Scientists revise their ideas based on evidence from investigations, models, and books in order to write scientific explanations. ● Some landforms are made of loose materials. ● Landforms with cracks and landforms made of loose materials are less stable than landforms made of solid rock. ● Wind and water can erode a landform quickly if the landform is made of loose materials.	

● Scientists study the natural and material world. ● When scientists use models to help them answer their questions, they consider how their models are similar to and different from the real world. ● There are similarities and differences between landforms that erode quickly and landforms that erode slowly. ● Scientists are designing different solutions to slow or prevent erosion from changing the shape of the land.	

Core Instructional & Supplemental Materials	
Suggested Activities/Resources: ● Books in This Unit ○ *Landform Postcards* ○ *Gary's Sand Journal* ○ *Making Models of Streams* ○ *What's Stronger? How Water Causes Erosion* ○ *Handbook of Land and Water* ● *Changing Landforms* Kit	**Supplemental Materials** ● *Eliciting and Leveraging Students' Prior Knowledge, Personal Experiences, and Cultural Backgrounds* PDF ● Digital Resources included in each unit ○ *Changing Landforms* Modeling Tools ● Multi-language glossary ● *A Cool Drink of Water* by Barbara Kerley

Suggested Accommodations

English Language Learners:
- Multi-sensory instruction
- Flexible grouping
- Small group instruction
- Provide peer tutoring
- Use a strong student as a "buddy" (does not necessarily have to speak the primary language)
- Chunking information
- Scaffolded questioning
- Academic language support
- Vocabulary support
- Co-Constructed Word Banks
- Anchor charts
- Gradual release model
- Visual models
- Native language support when possible (Multi-language glossary)
- Sheltered English Instruction Strategies
- Sentence starters

Special Education/Students with Disabilities:

- Allow extra time to complete assignments or tests
- Work in a small group
- Allow answers to be given orally or dictated
- Follow all IEP modifications
- Calculators
- Manipulatives/concrete models
- Directions repeated, clarified, and reworded
- Breakdown task into manageable parts

504 Plans:
- Allow extra time to complete assignments or tests
- Work in a small group
- Allow answers to be given orally or dictated
- Calculators
- Manipulatives/concrete models
- Follow all 504 modifications

Gifted and Talented:
- Higher level questioning
- Enriched assignments
- Tiered assignments
- Choice board to extend learning

Students at Risk of Failure:
- Provide peer tutoring
- Use a strong student as a “buddy”
- Allow extra time to complete assignments or tests
- Work in a small group
- One on one instruction
- Provide immediate praise and feedback
- Create a nurturing environment
- Provide visuals
- Be flexible with assignments and time frames
- Provide needed academic resources
- Chunking information
- Scaffolded questioning
- Tiered activities
- Manipulatives/concrete models
- Modified assignments
- Brain breaks

Economically Disadvantaged:
- Pre-teach vocabulary using visuals and gestures
- Chunk texts
- Summarize as you go
- Preview lessons
- Graphic organizers
- Highlight key words
- Sentence starters

- Prompting and cueing
- Activate schema
- Build background knowledge

Culturally Diverse:

- Create an emotionally positive classroom climate.
- Create effective communication
- Model and teach cultural respect
- Build relationships with students by interviewing students to understand their background