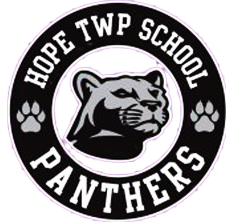


Belvidere Clusterwide Curriculum



Science

2nd Grade

Updated Summer, 2024

All Belvidere Cluster curriculum and instruction areas are aligned to the New Jersey Student Learning Standards (NJSLs) in accordance with the NJ Department of Education's curriculum implementation requirements.

Curriculum Coordinator:

Timm Gast

Author:

Timm Gast

UNITS	Duration	Essential Questions:
Unit 1: Animal Biodiversity	1st Trimester	<ul style="list-style-type: none"> ● How does the diversity of plants and animals compare among different habitats? ● What do plants need to live and grow? ● Why do some plants rely on animals for reproduction? ● How many different kinds of animals are there? ● Why would a wild animal visit a playground?
Unit 2: Material Properties	2nd Trimester	<ul style="list-style-type: none"> ● How can we sort objects into groups that have similar patterns? ● Can some materials be a solid or a liquid? ● What should the three little pigs have used to build their houses? ● What evidence can we find to prove that Earth events can occur quickly or slowly? ● In what ways do humans slow or prevent wind or water from changing the shape of the land? ● How can we identify where water is found on Earth and if it is solid or liquid? ● In what ways can you represent the shapes and kinds of land and bodies of water in an area? ● Why do we wear clothes? ● Can you really fry an egg on a hot sidewalk? ● Why are so many toys made out of plastic? ● What materials might be invented in the future? ● Could you build a house out of paper? ● How do you build a city out of mud? ● How do we recycle metal?
Unit 3: Plant Adaptations	3rd Trimester	<ul style="list-style-type: none"> ● How did a tree travel halfway around the world? ● Why do seeds have so many different shapes? ● Could a plant survive without light? ● How much water should you give a plant? ● Where do plants grow best? ● How can anything live in Death Valley?
Unit 4: Erosion & Earth's Surface	3rd Trimester	<ul style="list-style-type: none"> ● What evidence can we find to prove that Earth events can occur quickly or slowly? ● In what ways do humans slow or prevent wind or water from changing the shape of the land? ● How can we sort objects into groups that have similar patterns? ● What evidence can we find to prove that Earth events can occur quickly or slowly?

		<ul style="list-style-type: none">● In what ways do humans slow or prevent wind or water from changing the shape of the land?● How can we identify where water is found on Earth and if it is solid or liquid?● In what ways can you represent the shapes and kinds of land and bodies of water in an area?● If you floated down a river, where would you end up?● Why is there sand at the beach?● Where do flash floods happen?● What is strong enough to make a canyon?● How can you stop a landslide?● How long is the shortest river?
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Student Learning

Career Education (NJDOE CTE Clusters)

21st Century Life and Careers

- 9.1.2.CR.1: Recognize ways to volunteer in the classroom, school and community.
- 9.1.2.FP.1: Explain how emotions influence whether a person spends or saves.
- 9.2.2.CAP.1: Make a list of different types of jobs and describe the skills associated with each job.
- 9.2.2.CAP.2: Explain why employers are willing to pay individuals to work.
- 9.4.2.CI.1: Demonstrate openness to new ideas and perspectives
- 9.4.2.CT.3: Use a variety of types of thinking to solve problems (e.g., inductive, deductive).
- 9.4.2.DC.6: Identify respectful and responsible ways to communicate in digital environments

Technology:

- 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.NI.1: Model and describe how individuals use computers to connect to other individuals, places, information and ideas through a network.
- 8.1.2.NI.2: Describe how the Internet enables Individuals to connect with others worldwide.
- 8.2.2.ITH.3: Identify how technology impacts or improves life.
- 8.2.2.ITH.4: Identify how various tools reduce work and improve daily tasks.
- 8.2.2.NT.2: Brainstorm how to build a product, improve a designed product, fix a product that has stopped working, or solve a simple problem.
- 8.2.2.ETW.1: Classify products as resulting from nature or produced as a result of technology.
- 8.2.2.EC.1: Identify and compare technology used in different schools, communities, regions, and parts of the world.

Modifications and Accommodations:

Special Education

- Printed copy of board work/notes provided
- Additional time for skill mastery
- Assistive technology
- Behavior management plan
- Center-Based Instruction
- Check work frequently for understanding
- Computer or electronic device utilization
- Extended time on tests/ quizzes
- Have student repeat directions to check for understanding
- Highlighted text visual presentation
- Modified assignment format
- Modified test content
- Modified test format
- Modified test length
- Multiple test sessions
- Multi-sensory presentation
- Preferential seating
- Preview of content, concepts, and vocabulary
- Reduced/shortened written assignments
- Secure attention before giving instruction/directions
- Shortened assignments
- Student working with an assigned partner

- Teacher initiated weekly assignment sheet
- Use open book, study guides, test prototypes
- Cubing activities
- Exploration by interest
- Flexible grouping
- Goal setting with students
- Jigsaw
- Mini workshops to re-teach or extend skills Open-ended activities
- Think-Pair-Share
- Varied supplemental materials
-
- **ELL**
- Allowing students to correct errors (looking for understanding)
- Teaching key aspects of a topic Eliminate nonessential information Using videos, illustrations, pictures, and drawings to explain or clarify
- allowing products (projects, timelines, demonstrations, models, drawings, dioramas, poster boards, charts, graphs, slideshows, videos, etc.) to demonstrate student's learning
- Allowing students to correct errors (looking for understanding)
- Allowing the use of note cards or open-book during testing
- Decreasing the amount of work presented or required
- Having peers take notes or providing a copy of the teacher's notes
- Modifying tests to reflect selected objectives
- Providing study guides
- Reducing the number of answer choices on a multiple choice test
- Tutoring by peers
- Explain/clarify key vocabulary terms
-
- **At Risk**
- Allowing students to correct errors (looking for understanding)
- Teaching key aspects of a topic Eliminate nonessential information allowing products (projects, timelines, demonstrations, models, drawings, dioramas, poster boards, charts, graphs, slideshows, videos, etc.) to demonstrate student's learning
- Allowing students to select from given choices .
- Allowing the use of note cards or open-book during testing
- Collaborating (general education teacher and specialist) to modify vocabulary, omit or modify items to reflect objectives for the student, eliminate sections of the test, and determine how the grade will be determined prior to giving the test
- decreasing the amount of work presented or required .
- Having peers take notes or providing a copy of the teacher's notes
- Marking students' correct and acceptable work, not the mistakes
- Modifying tests to reflect selected objectives
- Providing study guides
- Reducing the number of answer choices on a multiple choice test
- Tutoring by peers
- Using authentic assessments with real-life problem-solving
- Using true/false, matching, or fill in the blank tests in lieu of essay tests
- using videos, illustrations, pictures, and drawings to explain or clarify
- Flexible grouping
- Goal setting with students
- Jigsaw
- Mini workshops to re-teach or extend skills Open-ended activities

- Think-Pair-Share
- Varied supplemental materials
-
- **Gifted and Talented**
- Alternative formative and summative assessments
- Choice boards
- Games and tournaments
- Group investigations
- Independent research and projects Interest groups for real world application
- Learning contracts
- Leveled rubrics
- Multiple intelligence options
- Personal agendas
- Project-based learning
- Problem-based learning
- Stations/centers
- Think-Tac-Toes
- Tiered activities/assignments
- Tiered products_____

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- **504**

- Printed copy of board work/notes provided
- Additional time for skill mastery
- Assistive technology
- Behavior management plan
- Center-Based Instruction
- Check work frequently for understanding
- Computer or electronic device utilization
- Extended time on tests/ quizzes
- Have student repeat directions to check for understanding
- Highlighted text visual presentation
- Modified assignment format
- Modified test content
- Modified test format
- Modified test length
- Multiple test sessions
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- Reduced/shortened written assignments
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- Shortened assignments
- Student working with an assigned partner
- Seacher initiated weekly assignment sheet
- Use open book, study guides, test prototype
- Exploration by interest
- Flexible grouping
- Goal setting with students
- Mini workshops to re-teach or extend skills Open-ended activities
- Think-Pair-Share
- Varied supplemental materials



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Unit 1 Overview: Animal Biodiversity

Unit 1 Summary: Students begin to develop an understanding of the world's animal biodiversity. They explore animal classification and the traits that define each group. Students then turn their focus to habitats and how the surrounding environment affects what organisms live in a particular environment.

Essential Questions:

- How does the diversity of plants and animals compare among different habitats?
- What do plants need to live and grow?
- Why do some plants rely on animals for reproduction?
- How many different kinds of animals are there?
- Why would a wild animal visit a playground?

New Jersey Student Learning Standards

New Jersey Student Learning Standards: Science

- 2-LS4-1 Make observations of plants and animals to compare the diversity of life in different habitats. [Clarification Statement: Emphasis is on the diversity of living things in each of a variety of different habitats.] [Assessment Boundary: Assessment does not include specific animal and plant names in specific habitats.]
- K-2-ETS1-1 Ask questions, make observations, and gather information about a situation people want to change (e.g., climate 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.

Interdisciplinary Connections:

ELA:

- **RI.2.1.** Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text.
- **RI.2.3.** Describe the connection between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text
- **RI.2.4.** Determine the meaning of words and phrases in a text relevant to a grade 2 topic or subject area.
- **RI.2.5.** Know and use various text features (e.g., captions, bold print, subheadings, glossaries, indexes, electronic menus, icons) to locate key facts or information in a text efficiently.
- **RI.2.9.** Compare and contrast the most important points presented by two texts on the same topic.
- **RI.2.10.** Read and comprehend informational texts, including history/social studies, science, and technical texts, at grade level text complexity proficiently with scaffolding as needed.
- **RF.2.4.** Read with sufficient accuracy and fluency to support comprehension.
- **RF.2.3.** Know and apply grade-level phonics and word analysis skills in decoding words

Speaking and Listening:

- **SL.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.2.2.** Recount or describe key ideas or details from a text read aloud of information presented orally or through other media.
- **SL.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.
- **SL.2.4.** Tell a story or recount an experience with appropriate facts and relevant, descriptive details, speaking audibly in coherent sentences.
- **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.
- **SL.2.6.** Produce complete sentences when appropriate to task and situation in order to provide requested detail or clarification.

SEL:

Self Management

- Recognize the skills needed to establish and achieve personal and educational goals

Mathematics:

- **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 using information presented in a bar graph. (2-LS2-2), (2-LS4-1)
- **MP.2** - Reason abstractly and quantitatively. (2-LS2-1), (2-LS4-1)
- **MP.4** - Model with mathematics. (2-LS2-1), (2-LS2-2), (2-LS4-1)

Disciplinary Core Ideas

- **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)

Science and Engineering Practices

Asking Questions and Defining Problems

- 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)

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)

Crosscutting Connections

Structure and Function

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

Unit 1 Student Learning Objectives

Students will know:

- What animals are and that there are different groups of animals
- Traits of animals and how they impact classification of animal types
- Types of animals- mammals, birds, reptiles, and invertebrates
- What a habitat is
- What nonliving and living things are
- How the nonliving and living things make up the habitat
- What biodiversity is
- The difference between a frog and toad
- The difference between the sounds of frogs based on their habitats
- The different food birds eat based on habitats

Students will be able to:

- Sort animals into groups using their traits
- Understand how animals live in a habitat
- Observe animals in their habitats
- Observe frogs in their habitats and the different sounds
- Design a bird feeder for a specific type of bird

Unit 1 Assessments

Formative Assessments:

- Entrance/Exit Tickets, Science Notebook Entries, Activities

Summative Assessments:

- Science Lesson Assessments, Rubrics for Exploration

Benchmark Assessments:

- End of Unit Assessment

Alternative Assessments:

- Journal

Unit 2 Overview: Material Properties

Unit 2 Summary: Students explore the properties of materials and matter! They describe and classify different types of materials by properties like hardness, flexibility, and absorbency, and they investigate how those properties are useful in meeting basic human needs (such as clothing and cooking). They also investigate how heating and cooling affect the properties of materials.

Essential Questions:

- How can we sort objects into groups that have similar patterns?
- Can some materials be a solid or a liquid?
- What should the three little pigs have used to build their houses?
- What evidence can we find to prove that Earth events can occur quickly or slowly?
- In what ways do humans slow or prevent wind or water from changing the shape of the land?
- How can we identify where water is found on Earth and if it is solid or liquid?
- In what ways can you represent the shapes and kinds of land and bodies of water in an area?
- Why do we wear clothes?
- Can you really fry an egg on a hot sidewalk?
- Why are so many toys made out of plastic?
- What materials might be invented in the future?
- Could you build a house out of paper?
- How do you build a city out of mud?
- How do we recycle metal?

New Jersey Student Learning Standards

New Jersey Student Learning Standards: Science

- 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.

Interdisciplinary Connections:

ELA:

- **RI.2.1.** Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text.
- **RI.2.3.** Describe the connection between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text
- **RI.2.4.** Determine the meaning of words and phrases in a text relevant to a grade 2 topic or subject area.
- **RI.2.5.** Know and use various text features (e.g., captions, bold print, subheadings, glossaries, indexes, electronic menus, icons) to locate key facts or information in a text efficiently.
- **RI.2.9.** Compare and contrast the most important points presented by two texts on the same topic.
- **RI.2.10.** Read and comprehend informational texts, including history/social studies, science, and technical texts, at grade level text complexity proficiently with scaffolding as needed.
- **RF.2.4.** Read with sufficient accuracy and fluency to support comprehension.
- **RF.2.3.** Know and apply grade-level phonics and word analysis skills in decoding words

Speaking and Listening:

- **SL.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.2.2.** Recount or describe key ideas or details from a text read aloud of information presented orally or through other media.
- **SL.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.
- **SL.2.4.** Tell a story or recount an experience with appropriate facts and relevant, descriptive details, speaking audibly in coherent sentences.
- **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.
- **SL.2.6.** Produce complete sentences when appropriate to task and situation in order to provide requested detail or clarification.

SEL:

Self Management

- Recognize the skills needed to establish and achieve personal and educational goals

Mathematics:

- **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 using information presented in a bar graph. (2-PS1-1), (2-PS1-2)
- **MP.2** - Reason abstractly and quantitatively. (2-PS1-2)
- **MP.4** - Model with mathematics. (2-PS1-1), (2-PS1-2)

- **MP.5** - Use appropriate tools strategically. (2-PS1-2)

Disciplinary Core Ideas

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 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)

Science and Engineering Practices

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-PS1-1)

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. (2-PS1-2)

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. (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)

Crosscutting Connections

Patterns

- Patterns in the natural and human designed world can be observed. (2-PS1-1)

Cause and Effect

- 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)

Energy and Matter

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

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)

Unit 2 Student Learning Objectives

Students will know:

- The properties of matter
- What absorbency is
- What flexibility is
- What texture is
- What conducting is
- What insulating material means
- The effects and impacts of different properties of matter and what they could be used for
- What a solid and liquid is
- The effects of melting and what it looks like
- How and why plastic was invented
- How little pieces of a building help create a large building

Students will be able to:

- Explore materials used for clothing
- Observe different materials and their properties in different environments and uses
- Create a hat to protect themselves from the sun using properties of materials
- Test different materials to identify which is conducting and which is insulating to touch warm and cold bottles
- Observe solid and liquid matter
- Observe matter that melts and describe what it looks like after melting in hot water
- Predict which candy will melt using properties of matter and changes
- Design a new house using different unconventional material

Unit 2 Assessments

Formative: Entrance/Exit Tickets, Science Notebook Entries, Activities

Summative: Science Lesson Assessments, Rubrics for Exploration

Benchmark: End of Unit Assessment

Alternative Assessment: Interactive Notebook

Unit 3 Overview: Plant Adaptations

Unit 3 Summary: Students continue to explore the needs of plants through hands-on investigations. They explore why and how plants disperse their seeds, what those seeds need in order to grow, and what the adult plants need in order to survive and thrive.

Essential Questions:

- How did a tree travel halfway around the world?
- Why do seeds have so many different shapes?
- Could a plant survive without light?
- How much water should you give a plant?
- Where do plants grow best?
- How can anything live in Death Valley?

New Jersey Student Learning Standards

New Jersey Student Learning Standards: Science

- 2-LS2-1. Plan and conduct an investigation to determine if plants need sunlight and water to grow. [Assessment Boundary: Assessment is limited to testing one variable at a time.]
- 2-LS2-2. Develop a simple model that mimics the function of an animal in dispersing seeds or pollinating plants.*

Interdisciplinary Connections:

ELA:

- **RI.2.1.** Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text.
- **RI.2.3.** Describe the connection between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text
- **RI.2.4.** Determine the meaning of words and phrases in a text relevant to a grade 2 topic or subject area.
- **RI.2.5.** Know and use various text features (e.g., captions, bold print, subheadings, glossaries, indexes, electronic menus, icons) to locate key facts or information in a text efficiently.
- **RI.2.9.** Compare and contrast the most important points presented by two texts on the same topic.
- **RI.2.10.** Read and comprehend informational texts, including history/social studies, science, and technical texts, at grade level text complexity proficiently with scaffolding as needed.
- **RF.2.4.** Read with sufficient accuracy and fluency to support comprehension.
- **RF.2.3.** Know and apply grade-level phonics and word analysis skills in decoding words

Speaking and Listening:

- **SL.2.1.** Participate in collaborative conversations with diverse partners about *grade 2 topics and texts* with peers and adults in small and larger groups.
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- **SL.2.6.** Produce complete sentences when appropriate to task and situation in order to provide requested detail or clarification.

SEL:

Self Management

- Recognize the skills needed to establish and achieve personal and educational goals

Mathematics:

- **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 using information presented in a bar graph. (2-LS2-2), (2-LS4-1)
- **MP.2** - Reason abstractly and quantitatively. (2-LS2-1), (2-LS4-1)
- **MP.4** - Model with mathematics. (2-LS2-1), (2-LS2-2), (2-LS4-1)
- **MP.5** - Use appropriate tools strategically. (2-LS2-1)

Disciplinary Core Ideas

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)

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)

Science and Engineering Practices

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)

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)

Crosscutting Connections

Cause and Effect

- Events have causes that generate observable patterns. (K-ESS3-2),(K-ESS3-3)

Systems and System Models

- Systems in the natural and designed world have parts that work together. (K-ESS3-1)

Connections to Engineering, Technology, and Applications of Science Interdependence of Science, Engineering, and Technology

- People encounter questions about the natural world every day. (K-ESS3-2)

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. (K-ESS3- 2)

Unit 3 Student Learning Objectives

Students will know:

- What a seed is
- Why a seed needs to travel from the parent plant
- What a plant needs to survive
- Importance of sunlight to the plant
- The effect of the seed shape on how it is dispersed
- The difference between plants and their needs in the amount of sunlight and water
- The impacts of the plants' needs and the best habitat for them

Students will be able to:

- Create a model seed and observe how different seeds travel from parent plants
- Compare the growth of seeds in both the dark and in the sunlight
- Explore how the structure of seeds enable them to disperse and how animals disperse the seeds

- Predict where a plant will grow best based on its needs and habitats

Unit 3 Assessments

Formative Assessments

- Entrance/Exit Tickets, Science Notebook, Activities

Summative Assessments

- Science Lesson Assessments, Rubrics for Exploration

Benchmark Assessments

- End of Unit Assessment

Alternative Assessment:

- Journal

Unit 4 Overview: Erosion and Earth's Surface

Unit 4 Summary: Students explore how water shapes the Earth's surface. Students construct and use models of mountains to demonstrate that water flows downhill, and in the process, transforms huge rocks into the tiny grains of sand we find at the beach. Students also construct and use model hills to determine the causes of erosion, and to design solutions to problems caused by erosion.

Essential Questions:

- What evidence can we find to prove that Earth events can occur quickly or slowly?
- In what ways do humans slow or prevent wind or water from changing the shape of the land?
- How can we sort objects into groups that have similar patterns?
- What evidence can we find to prove that Earth events can occur quickly or slowly?
- In what ways do humans slow or prevent wind or water from changing the shape of the land?
- How can we identify where water is found on Earth and if it is solid or liquid?
- In what ways can you represent the shapes and kinds of land and bodies of water in an area?
- If you floated down a river, where would you end up?
- Why is there sand at the beach?
- Where do flash floods happen?
- What is strong enough to make a canyon?
- How can you stop a landslide?
- How long is the shortest river?

New Jersey Student Learning Standards
(Please Bold all Climate related standards met throughout all Units)

New Jersey Student Learning Standards: Science

- 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.
- ETS1.B: Designing Possible Solutions Designs can be conveyed through sketches, drawings, or physical models. These representations are useful in communicating ideas for a problem's solutions, such as **climate change**, to other people. (K-2-ETS1-2)

Interdisciplinary Connections:

ELA:

- **RI.2.1.** Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text.
- **RI.2.3.** Describe the connection between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text
- **RI.2.4.** Determine the meaning of words and phrases in a text relevant to a grade 2 topic or subject area.
- **RI.2.5.** Know and use various text features (e.g., captions, bold print, subheadings, glossaries, indexes, electronic menus, icons) to locate key facts or information in a text efficiently.
- **RI.2.9.** Compare and contrast the most important points presented by two texts on the same topic.
- **RI.2.10.** Read and comprehend informational texts, including history/social studies, science, and technical texts, at grade level text complexity proficiently with scaffolding as needed.
- **RF.2.4.** Read with sufficient accuracy and fluency to support comprehension.
- **RF.2.3.** Know and apply grade-level phonics and word analysis skills in decoding words

Speaking and Listening:

- **SL.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.2.2.** Recount or describe key ideas or details from a text read aloud of information presented orally or through other media.
- **SL.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.
- **SL.2.4.** Tell a story or recount an experience with appropriate facts and relevant, descriptive details, speaking audibly in coherent sentences.
- **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.
- **SL.2.6.** Produce complete sentences when appropriate to task and situation in order to provide requested detail or clarification.

SEL:

Self Management

- Recognize the skills needed to establish and achieve personal and educational goals

Mathematics:

- **2.MD.B.5** - 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-ESS2-1)

- **2.NBT.A** - Understand place value. (2-ESS1-1)
- **2.NBT.A.3** - Read and write numbers to 1000 using base-ten numerals, number names, and expanded form. (2-ESS2-2)
- **MP.2** - Reason abstractly and quantitatively. (2-ESS1-1), (2-ESS2-1), (2-ESS2-2)
- **MP.4** - Model with mathematics. (2-ESS1-1), (2-ESS2-1), (2-ESS2-2)
- **MP.5** - Use appropriate tools strategically. (2-ESS2-1)

Disciplinary Core Ideas

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)

Science and Engineering Practices

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 from several sources to construct an evidence-based account for natural phenomena. (2-ESS1-1)

Crosscutting Connections

Stability and Change

- Things may change slowly or rapidly. (2-ESS1-1)

Unit 4 Student Learning Objectives

Students will know:

- What mountains are and how they look
- What a river is and how it flows
- The effects of rocks tumbling down the mountains in rivers
- What erosion is and what it looks like
- How water changes the earth's surface
- What a canyon is
- What can stop erosion
- What climate is
- What weather is
- What climate change is and its effects on their lives, the community, and the earth
- What fossil fuels are

Students will be able to:

- Observe the earth's surface
- Predict how rivers flow observing a map of the United States and where rivers and mountains are
- Make rivers using spray bottles and mountains using paper to observe how rivers flow
- Observe the effects of rocks tumbling in a river
- Explain why there is sand at the beach

- Make predictions about how canyons form
- Model a landform using cornmeal and observe the effects of water/rain on the landform
- Compare multiple solutions for stopping erosion
- Observe differences between climate and weather
- Identify the link between the earth's systems-land, air, living things and water- and how if one changes it impacts all systems
- Develop possible solutions to climate change
- Create a new mass transportation vehicle using non traditional fossil fuels
- Describe and draw a city where climate change is mitigated

Unit 4 Assessments

Formative Assessments

- Entrance/Exit Tickets, Slate Work, Science Notebook Entries, Activities

Summative Assessments

- Science Lesson Assessments, Rubrics for Exploration

Benchmark Assessments

- End of Unit Assessment

Alternative Assessment:

- Notebook- Use of composition notebook for a journal