Curriculum

Content Area: Science

Unit Title: Earth Science - Weather	**Duration:** 4-6 weeks

Grade Level: Kindergarten

Essential Questions:

- What is the weather?
- How can we predict the weather?
- How does a weather forecast help predict dangerous weather?

Enduring Understandings

- Weather is the condition of the air outdoors.
- Weather changes and weather patterns can be identified.
- Wind, sky and clouds can help predict dangerous weather.

Student Learning Targets (Objectives):

Students will be able to…

- create a weather calendar and analyze data.
- understand the purpose of weather forecasting to prepare for and respond to severe weather. (emphasis on local forms of severe weather.)

Focus Standards (Major Standards)

K-ESS2-1: Use and share observations of local weather conditions to describe patterns over time.

K-ESS3-2: Ask questions to obtain information about the purpose of weather forecasting to prepare for, and respond to, severe weather.

K-ESS3-3: Communicate solutions that will reduce the impact of climate change and humans on the land, water, air and/or other living things in the local environment.

Science and Engineering Practices	Discipline Core Ideas	Crosscutting Concepts

Analyzing and Interpreting Data Analyzing data in K–2 builds on prior experiences and progresses to collecting, recording, and sharing observations. ● Use observations (firsthand or from media) to describe patterns in the natural world in order to answer scientific questions. **(K-ESS2-1)** **Asking Questions and Defining Problems** Asking questions and defining problems in grades K–2 builds on prior experiences and progresses to simple descriptive questions that can be tested. ● Ask questions based on observations to find more information about the designed world. (K-ESS3-2) **Obtaining, Evaluating, and Communicating Information** Obtaining, evaluating, and communicating information in K–2 builds on prior experiences and uses observations and texts to communicate new information. ● Read grade-appropriate texts and/or use media to obtain scientific information to describe patterns in the natural world. (K-ESS3-2) ● Communicate solutions with others in oral and/or written forms using models and/or drawings that provide detail about scientific ideas. (K-ESS3-3)	**ESS2.D: Weather and Climate** ● Weather is the combination of sunlight, wind, snow or rain, and temperature in a particular region at a particular time. People measure these conditions to describe and record the weather and to notice patterns over time. **(K-ESS2-1)** **ESS3.B: Natural Hazards** ● Some kinds of severe weather are more likely than others in a given region. Weather scientists forecast severe weather so that the communities can prepare for and respond to these events. **(K-ESS3-2)** **ESS3.C: Human Impacts on Earth Systems** ● Things that people do to live comfortably can affect the world around them. But they can make choices that reduce their impacts on the land, water, air, and other living things. **(K-ESS3- 3)** **ETS1.A: Defining and Delimiting an Engineering Problem** ● Asking questions, making observations, and gathering information are helpful in thinking about problems. **(secondary to K-ESS3-2)** **ETS1.B: Developing Possible Solutions** ● Designs can be conveyed through sketches, drawings, or physical	**Patterns** ● Patterns in the natural world can be observed, used to describe phenomena, and used as evidence. **(K-ESS2-1)** **Cause and Effect** ● Events have causes that generate observable patterns. **(K-ESS3-2),(KESS3-3)** **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)**

	models. These representations are useful in communicating ideas for a problem's solutions to other people**. (secondary to K-ESS3-3)**	

New Jersey Student Learning Standards: Interdisciplinary Connections

Language Arts
RI.K.1 With prompting and support, ask and answer questions about key details in a text. (K-ESS3-2)
W.K.2 Use a combination of drawing, dictating, and writing to compose informative/explanatory texts in which they name what they are writing about and supply some information about the topic. (K-ESS3-3)
W.K.7 Participate in shared research and writing projects (e.g., explore a number of books by a favorite author and express opinions about them). (K-ESS2-1)
SL.K.3 Ask and answer questions in order to seek help, get information, or clarify something that is not understood. (K-ESS3-2)
SL.K.5 Add drawings or other visual displays to descriptions as desired to provide additional detail. (K-ESS3-1)

Mathematics
MP.2 Reason abstractly and quantitatively. (K-ESS3-1) (K-ESS2-1)
MP.4 Model with mathematics. (K-ESS3-1),(K-ESS3-2) (K-ESS2-1)
K.CC Counting and Cardinality (K-ESS3-1),(K-ESS3-2)
K.CC.A Know number names and the count sequence. (K-ESS2-1)
K.MD.A.1 Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object. (K-ESS2-1) **K.MD.B.3** Classify objects into given categories; count the number of objects in each category and sort the categories by count. (K-ESS2-1)

New Jersey Student Learning Standards: College and Career Readiness

9.4.2.CT.2: Identify possible approaches and resources to execute a plan

New Jersey Student Learning Standards: Computer Science and Design Thinking

8.1.2.DA.1: Collect and present data, including climate change data, in various visual formats

8.2.2.B.4 Identify how the ways people live and work has changed because of technology. (Students discuss the use of weather websites and apps to help prepare for daily life.)

Instructional Plan

- **Week 1-2:**
  - Discuss the different types of weather and how it can change (sunny, rainy, snowy, etc.).
  - Discuss how to dress appropriately for the weather.
  - Weather Calendar - Track the weather daily (4-5 days) and analyze the data. Ask questions based on observations of the weather.
  - Discuss the weather patterns and explain how there are weather patterns throughout the year as well; seasons.
  - Investigate the characteristics of each season. These seasons repeat in a cyclical pattern.
  - Obtain and evaluate information of a series of unnamed drawings of each season. Use clues in the picture to argue for the seasons they think the picture represents.
  - Sequence the seasons in the correct cycle.
- **Week 3:**
  - Discuss how weather tracking can help us know when to prepare for severe weather.
  - Weather forecasting provides information about approaching storms and severe weather so we can be prepared and stay safe.
  - Investigate and discuss how to prepare for a storm and other severe weather.
  - Investigate different types of severe weather (hurricanes, tornadoes, thunderstorms and blizzards). Ask questions about what is needed in order to stay safe in these different events.
- **Week 4-5:**
  - Observe and discuss how the weather changes when a storm is coming.
  - One way to forecast weather is to pay close attention to the sky, clouds and wind. Information about the wind can be used to describe the weather and prepare for approaching storms.
  - Wind Direction- Investigate how a windsock responds when air moves through it. Observe the wind direction and how hard the wind is blowing by using the windsock. .
- **Week 6:**
  - Investigate changing weather patterns and how to observe the weather.
  - Facilitate discussions about weather.
  - Obtain information through observations of the weather and communicate those observations by acting as a weather watcher.
  - Create drawings of the weather conditions observed.

Evidence of Student Learning

Formative Assessments

- Participating in morning meeting discussions about the calendar.
- Analyze the weather chart.
- Ask and answer questions to obtain information about the purpose of weather forecasting to prepare for and respond to severe weather.
- Identify and describe the seasons in sequential order.
- Illustrate a windsock in a strong wind vs a soft wind.

Summative Assessments

- Illustrate and describe the weather that day.
- Illustrate and describe a severe weather event.

Benchmark Assessments

- Create a weather chart/calendar and analyze the data.
- Choose a severe weather event and create a plan to prepare for it.

Alternative Assessments

- Oral presentations in lieu of written assignments.

Suggested Options for Differentiation

Modifications:

Special Education/504:

- Provide students with multiple choices for how they can represent their understanding of science topics (illustrations, oral retelling, etc.).
- Present new material in manageable chunks.
- Provide a word or picture bank for students to access when completing assessments and assignments.
- Provide small group instruction.
- Provide hands-on instruction.
- Preview new vocabulary.

Students at Risk for Failure:

- Provide students with a peer tutor and plenty of opportunities for small group interactions.
- Provide students with pictures to represent the science vocabulary being introduced.
- Allow students to orally demonstrate their understanding.

- Break investigations into smaller steps.

Gifted and Talented:

- Research the job of a meteorologist.
- Extend learning by investigating a severe weather event more deeply; causes, effects, preparation, etc,

ELL:

- Provide students with a picture chart displaying various weather examples (sunny, cloudy, rainy, snowy, etc).
- Provide students with illustrations or a picture chart displaying the different seasons and characteristics of each.
- Provide students with illustrations or a picture chart displaying various severe weather events.

Suggested Materials

- FOSS Trees & Weather teacher's manual
- Assorted materials to create a windsock: string, streamers, construction paper, glue, scissors
- Oh Say Can You Say What's the Weather Today by Dr. Seuss
- Weather Words and What they Mean by Gail Gibbons
- How's the Weather in Fall? by Rebecca Felix
- What is Today's Weather? by Jennifer Boothroyd
- Miss Mingo Weathers the Storm by Jamie Harper
- What's the Weather? by Children's Press
- The Wind Blew by Pat Hutchins
- Super Storms by Seymour Simon
- What Will the Weather Be Like Today? by Paul Rogers
- Thunder Cake by Patricia Polacco
- What Should we Wear by Rachael Martinez
- The Cloud Book by Tomie dePaola

Suggested l Resources

- https://www.fossweb.com/
- https://mysteryscience.com/
- https://www.pebblego.com/
- https://www.discoveryeducation.com/
- https://jr.brainpop.com/

- Scholastic News weekly readers

Curriculum	
Content Area: Science	
Unit Title: Physical Science - Effects of the Sun	**Duration:** 4-6 weeks
Grade Level: Kindergarten	

Essential Questions:

- How does the Sun affect the Earth?
- How can we reduce the Sun's effect?

Enduring Understandings

- The Sun warms Earth's surface.
- Shade can help reduce the warming effect of the sun.

Student Learning Targets (Objectives):

Students will be able to…

- understand that the Sun warms Earth's surface.
- understand that places that get a lot of sunlight have warmer temperatures while shaded places have cooler temperatures.

Focus Standards (Major Standards)

K-PS3-1: Make observations to determine the effect of sunlight on Earth's surface.

K-PS3-2: Use tools and materials to design and build a structure that will reduce the warming effect of sunlight on an area.

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	Crosscutting Concepts
Planning and Carrying Out Investigations Planning and carrying out investigations to answer questions or test solutions to	**PS3.B: Conservation of Energy and Energy Transfer** ● Sunlight warms Earth's surface. (K-PS3-1),(K-PS3-2)	**Cause and Effect** ● Events have causes that generate observable patterns. (K-PS3-1),(K-PS3-2)

problems in K–2 builds on prior experiences and progresses to simple investigations, based on fair tests, which provide data to support explanations or design solutions. ● Make observations (firsthand or from media) to collect data that can be used to make comparisons. (K-PS3-1) **Constructing Explanations and Designing Solutions** Constructing explanations and designing solutions in K–2 builds on prior experiences and progresses to the use of evidence and ideas in constructing evidence-based accounts of natural phenomena and designing solutions. ● Use tools and materials provided to design and build a device that solves a specific problem or a solution to a specific problem. (K-PS3- 2)		

New Jersey Student Learning Standards: Interdisciplinary Connections
Language Arts **W.K.7** Participate in shared research and writing projects (e.g., explore a number of books by a favorite author and express opinions about them). (K-PS3-1),(K-PS3-2)
Mathematics **K.MD.A.2** Directly compare two objects with a measurable attribute in common, to see which object has “more of”/”less of” the attribute, and describe the difference. (K-PS3-1),(KPS3-2)
New Jersey Student Learning Standards: College and Career Readiness
9.4.2.CT.2: Identify possible approaches and resources to execute a plan

CRP5. Consider the environmental, social and economic impact of decisions. (When discussing trees, students think about the environmental impacts of their decisions.)

New Jersey Student Learning Standards: Computer Science and Design Thinking

8.1.2.E.1. Use digital tools and online resources to explore a problem or issue. (Such as deforestation)

8.1.2.DA.1: Collect and present data, including climate change data, in various visual formats

Instructional Plan

- **Week 1-2:**
  - The Sun warms Earth's surface.
  - Measure and record the relative temperature (freezing, cold, cool, warm, hot). Place thermometers in different areas and analyze data (playground sunny spot, playground shady spot, inside window, outside window, etc.)
  - Make observations to define a problem: people and animals may need shade in order to stay cool.
  - Design and build a structure (i.e. umbrella, canopies, and tents) that will minimize the warming effect of the sun. Discuss, draw, and build a structure using a variety of materials (i.e. assortment of fabrics, rubber bands, popsicle sticks, paper, etc.)
- **Week 3-4:**
  - If a place doesn't get enough sunlight, it becomes very cold. Engineers can solve this problem by designing a tool that increases the warming effect of the sun on a specific place.
  - Make observations to define a problem: certain places may not get enough sunlight in the winter.
  - Design a solution to redirect or bring sunlight to a specific location or situation.
- **Week 5-6:**
  - The Sun warms Earth's surface throughout the year.
  - The pattern of the arc of the Sun and the duration of time the Sun is in the sky throughout the day is why it is warm during the summer and cold during the winter.
  - Discuss why an object would melt in one car and not in another car.
  - Investigate how the warmth of the Sun causes an object to melt.
  - Consider the effect of parking a car in a sunny area and how the heat of the Sun can cause things to heat up and melt.

Evidence of Student Learning

Formative Assessments

- Make observations to determine the effect of sunlight on Earth's surface.
- Identify places to stay cool and explain why.

Summative Assessments

- Explain and illustrate how the sun warms different surfaces and how those surfaces are affected.
- Illustrate how a person could keep cool under the hot Sun.

Benchmark Assessments

- First, discuss a design to minimize the warming effects of the sun. After, design and build a structure (i.e. umbrella, canopies, and tents) that will minimize the warming effect of the sun.

Alternative Assessments

- Oral presentations in lieu of written assignments.

Suggested Options for Differentiation

Modifications:

Special Education/504:

- Provide students with multiple choices for how they can represent their understanding of science topics (illustrations, oral retelling, etc.).
- Present new material in manageable chunks.
- Provide a word or picture bank for students to access when completing assessments and assignments.
- Provide small group instruction.
- Provide hands-on instruction.
- Preview new vocabulary.

Students at Risk for Failure:

- Provide students with a peer tutor and plenty of opportunities for small group interactions.
- Provide students with pictures to represent the science vocabulary being introduced.
- Allow students to orally demonstrate their understanding.
- Break investigations into smaller steps.

Gifted and Talented:

- Investigate and explore how the Sun warms the sand, how that sand is affected and how people can respond to that warming effect.
- Investigate and research why the Sun is warmer during various times of the year.

ELL:

- Provide students with pictures and videos portraying how the Sun warms the Earth's surface
- .Provide students with illustrations and/or videos about how to reduce the warming effect of the Sun.

Suggested Materials

- FOSS Trees & Weather teacher's manual
- Assortment of materials to build a structure (fabrics, paper, rubberbands, popsicle sticks, paper clips, tape, glue ,cardboard)
- Materials that could melt for experiments
- Thermometer
- *Cool Cows*- Digital Storybook

Suggested l Resources

- https://www.fossweb.com/
- https://mysteryscience.com/
- https://www.pebblego.com/
- https://www.discoveryeducation.com/
- https://jr.brainpop.com/
- Scholastic News weekly readers

Curriculum	
Content Area: Science	
Unit Title: Physical Science - Pushes & Pulls	**Duration:** 10-12 weeks
Grade Level: Kindergarten	
Essential Questions: ● What causes objects to move? ● How can we change the speed or direction of an object? ● What happens when objects collide?	
Enduring Understandings	

- Pushing or pulling moves an object and changes its direction.
- When objects touch or collide, they push one another, which can change motion.
- Gravity pulls things down.

Student Learning Targets (Objectives):
Students will be able to…
- create a model that compares the strengths of pushes and pulls on an object.
- understand the relationship between the size of the force on an object and the direction or speed it goes.

Focus Standards (Major Standards)

K-PS2-1: Plan and conduct an investigation to compare the effects of different strengths or different directions of pushes and pulls on the motion of an object.

K-PS2-2: Analyze data to determine if a design solution works as intended to change the speed or direction of an object with a push or pull.

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	Crosscutting Concepts
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. ● With guidance, plan and conduct an investigation in collaboration	**PS2.A: Forces and Motion** ● Pushes and pulls can have different strengths and directions. **(KPS2-1),(K-PS2-2)** ● Pushing or pulling on an object can change the speed or direction of its motion and can start or stop it. **(K-PS2-1),(K-PS2-2)** **PS2.B: Types of Interactions** ● When objects touch or collide, they push on one another and can change motion. **(K-PS2-1)**	**Cause and Effect** ● Simple tests can be designed to gather evidence to support or refute student ideas about causes. **(K-PS2-1),(K-PS2-2)**

with peers. **(K-PS2-1)** **Analyzing and Interpreting Data** Analyzing data in K–2 builds on prior experiences and progresses to collecting, recording, and sharing observations. ● Analyze data from tests of an object or tool to determine if it works as intended. **(K-PS2-2)**	**PS3.C: Relationship Between Energy and Forces** ● A bigger push or pull makes things speed up or slow down more quickly. **(secondary to K-PS2-1)** **ETS1.A: Defining Engineering Problems** ● A situation that people want to change or create can be approached as a problem to be solved through engineering. Such problems may have many acceptable solutions. **(secondary to KPS2-2)**	

New Jersey Student Learning Standards: Interdisciplinary Connections
Language Arts **L.K.6.** Use words and phrases acquired through conversations, reading and being read to, and responding to texts. **RI.K.1** With prompting and support, ask and answer questions about key details in a text. **W.K.7** Participate in shared research and writing projects (e.g., explore a number of books by a favorite author and express opinions about them). **SL.K.3** Ask and answer questions in order to seek help, get information, or clarify something that is not understood.
Math **MP.2** Reason abstractly and quantitatively. **K.MD.A.1** Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object. **K.MD.A.2** Directly compare two objects with a measurable attribute in common, to see which object has “more of”/”less of” the attribute, and describe the difference.
New Jersey Student Learning Standards: College and Career Readiness
9.4.2.CT.2: Identify possible approaches and resources to execute a plan **CRP8.** Utilize critical thinking to make sense of problems and persevere in solving them. (Students will need to problem solve to fix ramps, slopes, and moving objects to make a better design)

New Jersey Student Learning Standards: Computer Science and Design Thinking
8.1.2.E.1. Use digital tools and online resources to explore a problem or issue. (Students may use online resources to explore motions and forces) **8.1.2.DA.1:** Collect and present data, including climate change data, in various visual formats

Instructional Plan

- **Week 1-2:**
  - Discover that there are pushes and pulls. These pushes and pulls can be involved in any kind of work, including ones with machines.
  - Observe and describe how a push or pull causes something to move. Roll balls at different speeds (slow and fast) and determine the strength of the push required to achieve a certain speed.
  - Investigate gravity as a pulling force**.**
  - Investigate and gain an understanding of the concept of pushing and pulling.
  - Determine if an object moves with a push or a pull.
  - Investigate pushes, pulls and other work words.
- **Week 3-4:**
  - Understand forces at work.
  - Facilitate discussions to better understand the concept of various “work words”.
  - Discuss different forces of motion.
  - Investigate how machines use force.
- **Week 5-6:**
  - Investigate motion, speed and strength.
  - Machines create pushes and pulls or “forces”. You can make the force larger or smaller by changing the strength and direction.
  - Investigate the effect of force and how it relates to pushes and pulls.
  - Analyze the data collected to discuss force and changes to the strength and direction of its push.
- **Week 7-8:**
  - Investigate speed and direction of force.
  - When objects collide they push on one another causing a change in direction and speed.
  - By changing the force of an object you can change the motion of an object.
  - Explore the forces at work when one thing hits another and how changing the size of the force affects the motion of an

object.
    - Play a bowling game and discuss strategies to get all the pins down by using force and the motion of the ball**.**
    - Investigate how to achieve different speeds. Explore what happens when a moving object hits another object.
- **Week 9-10:**
    - Investigate direction of motion and engineering.
    - Pushes and pulls can have different strengths. The faster an object moves, the stronger it pushes on something when it bumps into it.
    - Pushing or pulling on an object can change the direction an object is going.
    - Pushing and pulling can be so strong that it makes an object start or stop moving.
    - Investigate slopes to set objects in motion. Predict the path of the object.
    - Investigate how to protect a town from a falling boulder. Design a solution to safely guide a boulder down a hill so it does not hit a town.
- **Week 11-12:**
    - Investigate forces and engineering.
    - Design a solution to solve a problem by using their knowledge of forces, motion and speed.
    - Define the problem then design a solution by sketching or building a device that could help them. Compare and discuss their solutions with their peers.
    - Consider the structure and function of materials and tools in order to solve a problem.

Evidence of Student Learning

Formative Assessments

- Identify the uses of machines, how they can help humans and describe what kind of work it is doing.
- Illustrate how certain playground equipment can be utilized based on pushes and pulls.
- Illustrate and describe why and how a wrecking ball can knock down a wall.

Summative Assessments

- Create a model that compares the strengths of pushes and pulls on an object as well as demonstrating understanding of how speed and direction affects that object.

Benchmark Assessments

- Sort pictures into two categories by determining if the object moves with a push or a pull. Complete before learning as a whole class and complete another sort after the unit to assess understanding.
- Create a KWL chart about force; pushes, pulls, direction or speed on an object.

Alternative Assessments

- Oral presentations in lieu of written assignments.

Suggested Options for Differentiation

Modifications:

Special Education/504:

- Provide students with multiple choices for how they can represent their understanding of science topics (illustrations, oral retelling, etc.).
- Present new material in manageable chunks.
- Provide a word or picture bank for students to access when completing assessments and assignments.
- Provide small group instruction.
- Provide hands-on instruction.
- Preview new vocabulary.

Students at Risk for Failure:

- Provide students with a peer tutor and plenty of opportunities for small group interactions.
- Provide students with pictures to represent the science vocabulary being introduced.
- Allow students to orally demonstrate their understanding.
- Break investigations into smaller steps.

Gifted and Talented:

- Create a functioning roller coaster using the appropriate speed and direction.
- Investigate/research the forces that contribute to a functioning roller coaster.

ELL:

- Provide students with pictures and videos portraying different forces, push, pull, speed, direction, motion and “work words”.
- .Provide students with illustrations and/or videos about how to reduce the warming effect of the Sun.

Suggested Materials

- FOSS teacher's manual: Materials & Motion
- Push and Pull picture sort
- Balls, ramps, blocks, tracks to simulate colliding objects
- All Kinds of Motion, by Jennifer Waters
- Move It! Motion Forces and You byAdrienne Mason
- I Can Push –Mondo
- What Makes Things Move by Althea
- Newton and Me by Lynne Mayer
- Roller Coaster by Marla Frazee

- The Magic School Bus Plays School
- And Everyone Shouted, "Pull!" A First Look at Forces and Motion
- Watch a video, such as Forces at Work

Suggested l Resources

- https://www.fossweb.com/
- https://mysteryscience.com/
- https://www.pebblego.com/
- https://www.discoveryeducation.com/
- https://jr.brainpop.com/
- Scholastic News weekly readers

Curriculum	
Content Area: Science	
Unit Title: Life Science - Basic Needs of Living Things (Plants, Animals & Humans)	**Duration:** 10-12 weeks
Grade Level: Kindergarten	

Essential Questions:

- What is a living thing and what does it need to survive?
- Where do plants and animals live and why do they live there?

Enduring Understandings

- A living thing is something that can move and grow.
- Animals have basic needs - water, air, food and space with shelter.
- Plants have basic needs - water, air, sunlight and space.
- Humans have basic needs - water, air, food and space with shelter.

Student Learning Targets (Objectives):
Students will be able to…

- understand the basic needs of plants, humans and animals.

- describe how plants and animals can change the environment to meet their needs.
- illustrate how plants, humans and animals meet their needs through their habitats.

Focus Standards (Major Standards)

K-LS1-1: Use observations to describe patterns of what plants and animals (including humans) need to survive.

K-ESS2-2: Construct an argument supported by evidence for how plants and animals (including humans) can change the environment to meet their needs.

K-ESS3-1: Use a model to represent the relationship between the needs of different plants or animals (including humans) and the places they live.

Science and Engineering Practices	Discipline Core Ideas	Crosscutting Concepts
Analyzing and Interpreting Data Analyzing data in K–2 builds on prior experiences and progresses to collecting, recording, and sharing observations. ● Use observations (firsthand or from media) to describe patterns in the natural world in order to answer scientific questions. (K-LS1-1) **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. (K-ESS2-2) **Developing and Using Models** Modeling in K–2 builds on prior experiences and progresses to include	**LS1.C: Organization for Matter and Energy Flow in Organisms** ● All animals need food in order to live and grow. They obtain their food from plants or from other animals. Plants need water and light to live and grow. (K-LS1-1) **ESS2.E: Biogeology** ● Plants and animals can change their environment. (K-ESS2-2) **ESS3.C: Human Impacts on Earth Systems** ● Things that people do to live comfortably can affect the world around them. But they can make choices that reduce their impacts on the land, water, air, and other living things. (secondary to K-ESS2-2) **ESS3.A: Natural Resources**	**Patterns** ● Patterns in the natural and human designed world can be observed and used as evidence. (K-LS1-1) **Systems and System Models** ● Systems in the natural and designed world have parts that work together. (K-ESS3-1) (K-ESS2-2)

using and developing models (i.e., diagram, drawing, physical replica, diorama, dramatization, storyboard) that represent concrete events or design solutions. ● Use a model to represent relationships in the natural world. (K-ESS3-1)	● Living things need water, air, and resources from the land, and they live in places that have the things they need. Humans use natural resources for everything they do. (K-ESS3-1)	

New Jersey Student Learning Standards: Interdisciplinary Connections

Language Arts
RI.K.1 With prompting and support, ask and answer questions about key details in a text. (K-ESS2-2)
W.K.1 Use a combination of drawing, dictating, and writing to compose opinion pieces in which they tell a reader the topic or the name of the book they are writing about and state an opinion or preference about the topic or book. (K-ESS2-2)
W.K.2 Use a combination of drawing, dictating, and writing to compose informative/explanatory texts in which they name what they are writing about and supply some information about the topic. (K-ESS2-2)
W.K.7 Participate in shared research and writing projects (e.g., explore a number of books by a favorite author and express opinions about them). (K-LS1-1)

Mathematics
MP.2 Reason abstractly and quantitatively. (K-ESS3-1)
MP.4 Model with mathematics. (K-ESS3-1)
K.CC Counting and Cardinality (K-ESS3-1)
K.MD.A.2 Directly compare two objects with a measurable attribute in common, to see which object has "more of"/"less of" the attribute, and describe the difference. (K-LS1-1)

New Jersey Student Learning Standards: College and Career Readiness

9.4.2.CT.1: Gather information about an issue, such as climate change, and collaboratively brainstorm ways to solve the problem
CRP5. Consider the environmental, social and economic impact of decisions. (When discussing animals, students think about the environmental impacts of their decisions.)

New Jersey Student Learning Standards: Computer Science and Design Thinking

8.1.2.E.1. Use digital tools and online resources to explore a problem or issue. (Such as harming animals' environments that make it hard for them to meet their basic needs.)

Instructional Plan

- **Week 1-2:**
  - All animals need to find food in order to survive.
  - Identify animals that live locally and understand their behaviors.
  - Obtain information through observations of different animal behaviors.
  - Use evidence from observations to support explanations of why animals act in certain ways.
  - Investigate and act out behaviors of different animals; including seeking out food to survive.
- **Week 3-4:**
  - Living things need food, water, shelter and many other resources to survive.
  - All living things live in places that provide the needs they have to survive.
  - Not all living things live in a house, like humans. Animals live in many different types of homes.
  - Obtain information through media about how different animal homes are built.
  - Discuss information about animal homes to identify patterns in the natural world.
  - Identify the pattern that all living things live where their needs are met.
  - Recognize that plants, animals and their surroundings make up a system as parts that work together.
- **Week 5-6:**
  - All animals need to find safety (protection) in order to survive.
  - Animals find safety in different ways, but they all need to feel safe. Understanding this will help make sense of their behaviors.
  - Investigate and understand behaviors of different animals.
  - Obtain information through observations of different animal behaviors.
  - Use evidence from observations to understand and explain why animals are acting in certain ways.
  - Study animal behaviors to identify the pattern that all animals have the behavior seeking out safety to survive.
- **Week 7-8:**
  - All living things need food and safety to survive.
  - Animals can't always find shelter or food, so they have to change their environment to meet their needs.
  - Animals can change the environment by digging for food, building homes, and creating hiding spots. Examples include a squirrel that digs in the ground to hide food, and birds collecting small twigs to build nests in trees.
  - Investigate which types of animals live locally and what their homes are like.
  - Analyze and interpret data by using their observations to describe the patterns they see.
  - Recognize that plants, animals and their surroundings make up a system as parts that work together.
- **Week 9-10:**
  - Plants are alive, just like animals.

- Plants grow over time and have similar needs.
- Plants and animals do have some big differences.
- Investigate what plants need to grow. Observe plants growing over time.
- Analyze and interpret observations of what plants need and how they respond to light.
- Study plant growth to identify the pattern that all plants need water.
- Observe the pattern that plants lean towards the light.
- Recognize that plants can change their environment to meet their needs. For example, tree roots can break rocks and concrete in order to continue to grow, plants will expand their root systems in search of water that might be found deeper in the earth, and plants can be found growing around and through man-made structures in search of light.

- **Week 11-12:**
  - People make changes to their environment.
  - People cut down trees, use energy to produce materials and products, which affects the environment.
  - These actions use resources needed by other living things.
  - Things that people do to live comfortably can affect the world around them. People can make choices that reduce their impacts on the land, water, air, and other living things.
  - Consider the cause and effect relationship between the changes people make to their environment and the impact it has on other living things that share their habitat.

Evidence of Student Learning

Formative Assessments

- Illustrate animals in their habitats and how they meet their needs.
- Illustrate plants in their habitats and how they meet their needs.
- Illustrate how humans can reduce their impact on the environment..

Summative Assessments

- Draw a picture of any animal and add many details to include its basic needs and label. Students then share their picture with peers.
- Describe how plants or animals change their environment to meet their needs.

Benchmark Assessments

- Complete a KWL chart about how plants, animals and humans can change their environment to meet their needs.

Alternative Assessments

- Oral presentations in lieu of written assignments.

Suggested Options for Differentiation

Modifications:

Special Education/504:

- Provide students with multiple choices for how they can represent their understanding of science topics (illustrations, oral retelling, etc.).
- Present new material in manageable chunks.
- Provide a word or picture bank for students to access when completing assessments and assignments.
- Provide small group instruction.
- Provide hands-on instruction.
- Preview new vocabulary.

Students at Risk for Failure:

- Provide students with a peer tutor and plenty of opportunities for small group interactions.
- Provide students with pictures to represent the science vocabulary being introduced.
- Allow students to orally demonstrate their understanding.
- Break investigations into smaller steps.

Gifted and Talented:

- Compare the lengths of night crawlers.
- Set up a vermicompost system.
- Look at worm paths- Have students dip their worms in water and let the wet worms crawl across dry construction paper. Have them compare the worm trails to snail trails.
- Observe a goldfish living in a simple aquarium. Look for and name different parts of the fish (fins, tail, mouth, and gills). Draw a picture and write a sentence to record what they see.
- Care for a goldfish, giving them food and fresh water, and adding plants to the aquarium. With each addition, students describe the fish behavior they observe. Add a tunnel to the aquarium to observe how the fish respond. They make their own paper aquariums to model the fish behavior they have observed.

ELL:

- Provide a picture chart displaying the needs of plants, animals and humans.
- Provide a picture chart displaying the habitats of plants and animals that are discussed.

Suggested Materials

- FOSS Animals Two By Two teacher's manual
- Seeds to observe plant growth and needs

- A House for Hermit by Eric Carle
- Animal Habitats by Judy Press

Suggested l Resources

- https://www.fossweb.com/
- https://mysteryscience.com/
- https://www.pebblego.com/
- https://www.discoveryeducation.com/
- https://jr.brainpop.com/
- Scholastic News weekly readers