

MENDHAM TOWNSHIP SCHOOLS

SCIENCE CURRICULUM

Kindergarten

Revised: July 2015

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Mendham Township School District
Science Curriculum
KDGN

Grade KDGN Unit 1: Weather and Climate

Kid Friendly Title: Trees & Weather

Stage 1: Desired Results

Level Benchmarks:

Students who demonstrate understanding can:

- Use observations to determine the effect of sunlight on Earth's surface.
- Use tools and materials to design and build a structure that will reduce the warming effect of sunlight on an area.
- Use and share observations of local weather conditions to describe patterns over time.
- Ask questions to obtain information about the purpose of weather forecasting to prepare for, and respond to, severe weather.

Enduring Understandings:

- Student will develop and understanding of patterns and variations in local weather and the purpose of weather forecasting to prepare for, and respond to, severe weather.

Essential Questions:

- What effect does the sun have on Earth's surface?
- How do structures reduce warming effect of sunlight on an area?
- What is the weather like today and how is it different from yesterday?
- Why do scientist forecast weather?

Skills/Knowledge:

Science and Engineering Practices

Asking Questions and Defining Problems

- Ask questions based on observations to find more information about the designed world. (K-ESS3-2)

Planning and Carrying

- Make observations (firsthand of the media) to collect data that can be used to make comparisons. (K-PS3-1)

Analyzing and Interpreting Data

- Make observations (firsthand of the media) to describe patterns in the natural world in order to answer scientific questions. (K-ESS2-1)

Constructing Explanations 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)

Obtaining, Evaluating, and Communicating Information

- Read grade-appropriate texts and/or use media to obtain scientific information to describe patterns in the natural world. (K-ESS3-2)

Connections to Nature of Science

Scientific Investigations Use a Variety of Methods

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

Science Knowledge is Based on Empirical Evidence

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

Disciplinary Core Idea

PS3.B: Conservation of Energy and Energy Transfer

- Sunlight warms Earth's surface. (K-PS3-1),(K-PS3-2) 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)

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)

Crosscutting Concepts

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-PS3-1),(K-PS3-2),(K-ESS3-2) 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)

NJSLS Unit Standards:

K-PS3-1. Use observations to determine the effect of sunlight on Earth's surface. (*Clarification Statement: Examples of Earth's surface could include sand, soil, rocks, and water. Assessment of temperature is limited to relative measures such as warmer/cooler.*)

K-PS3-2. Use tools and materials to design and build a structure that will reduce the warming effect of sunlight on an area. (*Clarification Statement: Examples of structures could include umbrella, canopies, and tents that minimize the warming effect of the sun.*)

K-ESS2-1 Use and share observations of local weather conditions to describe patterns over time. (*Clarification Statement: Examples of qualitative observation could include descriptions of the weather, such as sunny, cloudy, rainy, and warm, could include that it is usually cooler in the morning than in the afternoon and the number of sunny days versus cloudy days in different months. Assessment of quantitative observations limited to whole numbers and relative measure such as warmer/cooler.*)

K-ESS3-2. Ask questions to obtain information about the purpose of weather forecasting to prepare for, and respond to, severe weather. (*Clarification Statement: Emphasis is on local forms of severe weather.*)

Interdisciplinary Connections:**ELA/Literacy**

RI.K.1 With prompting and support, ask and answer questions about key details in a text. (K-ESS3-2)

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-PS3-1),(K-PS3-2),(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)

Mathematics

MP.2 Reason abstractly and quantitatively. (K-ESS2-1)

MP.4 Model with mathematics. (K-ESS2-1),(K-ESS3-2)

K.CC Counting and Cardinality (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.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),(K-PS3-2)

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)

Stage 2-Assessment**Assessment:**

- Formative - observations, discussions, participation, science notebooks, performance-based tasks
- Summative Assessment - written responses, written explanations, science notebooks, inquiry-Based Activities, portfolios
- Benchmark Assessment - unit assessments

Stage 3- Learning Plan

Investigation 1: Observing Trees

Summary:

Students begin their study of trees by looking at the variety and structure of trees in the schoolyard. They work with representational materials to look more closely at the shapes of trees and their parts. They adopt schoolyard trees to observe changes through the year. A living tree becomes part of the classroom for several weeks, and students complete the investigation by planting their class tree on the school grounds.

Focus Questions:

What did we learn about our schoolyard trees?

What are the parts of trees?

Which trees have similar shapes?

What can we find out about our adopted trees?

What do trees need to grow?

Content Related to Disciplinary Core Ideas:

- Trees are living plants.

- Trees have structures: branches, leaves, trunk, and roots.
- Trees differ in size and shape.
- Plants have basic needs: water, light, air, nutrients, and space.

Reading/Technology:

Science Resources Book “Where Do Trees Grow?” “What Do Plants Need?”

Posters and Story “A Tree Comes to Class”

Embedded Assessment:

Teacher observation

NJSLS Performance Expectations

K-LS1-1 K-ESS2-2 K-ESS3-1

Investigation 2: Observing Leaves

Summary:

Students begin with a schoolyard walk, focusing on the leaves of trees. They match leaves with geometric shapes, go on a leaf hunt to compare properties of leaves, work at centers with representational materials, and make a leaf book. This investigation concludes with a story, *Our Very Own Tree*.

Focus Questions:

- What can we observe about leaves?
- What shapes are leaves?
- How are leaves different?
- How are leaf edges different?
- What can we observe about leaves?

Content Related to Disciplinary Core Ideas:

- Different kinds of trees have different leaves.
- Leaves have properties: size, shape, tip, edge, texture, and color.
- Leaves properties vary.
- Leaves can be described and compared by their properties.

Reading/Technology:

Books *How Do We Learn? Our Very Own Tree*

Video *Once There Was a Tree*

Online Activity “Leaf Sorting”

Embedded Assessment:

Teacher observation

NJSLS Performance Expectations

K-LS1-1 K-ESS2-2

Investigation 3: Observing Weather

Summary:

Students share what they know about weather and how it relates to air. A class weather monitor begins recording daily weather observation on a class calendar. Students use weather pictures to indicate five basic types of weather. They use a thermometer to measure relative temperature (how hot or cold it is) and make a

wind sock to observe the wind direction and speed. Students observe and compare objects in the sky during the day and at night.

Focus Questions:

What is the weather today?
How can we measure the air temperature?
What does a wind sock tell us about the wind?

Content Related to Disciplinary Core Ideas:

- Weather is the condition in the air outdoors and can be described; weather changes.
- Temperature is how hot or cold it is; thermometers measure temperature.
- Sunlight warms Earth's surface.
- Wind is moving air; a wind sock indicates wind direction and speed.
- Weather forecasts help people prepare for the severe weather that is likely in that area.

Reading/Technology:

Science Resources Book "Up in the Sky" "Weather"

Embedded Assessment:

Teacher observation

NJSLS Performance Expectations

K-PS3-1 K-ESS2-1 K-ESS3-2

Investigation 4: Trees Through The Seasons

Summary:

Students extend their understanding of trees as a growing, changing, living part of their world. During each season, students visit the schoolyard; observe their twigs, leaves, flowers, and seeds; and compare them to those from a previous season.

Focus Questions:

What do fall trees look like?
What do winter trees look like?
What do spring trees look like?

Content Related to Disciplinary Core Ideas:

- Seasons change in a predictable annual pattern: fall, winter, spring, and summer.
- Bark, twigs, leaves, buds, flowers, fruits, and seeds are parts of trees.
- The buds on twigs grow into leaves or flowers.
- Trees change through the seasons.
- Some trees produce seeds that can grow into new trees of the same kind.
- Some trees lose their leaves in winter; others do not.
- Trees are living, growing plants.

Reading/Technology:

Science Resources Book "My Apple Tree" "Orange Trees" "Maple Trees"

Video *Once There Was a Tree Summer*

Online Activity "Who Lives Here?"

Book *Our Very Own Tree*

Embedded Assessment:

Teacher observation

NJSLS Performance Expectations

K-LS1-1 K-ESS2-1

Integrated accommodations and modifications for students with IEP's 504s, ELLs, and gifted and talented students:

- Principle 1. Provide multiple means of representation. Give learners various ways to acquire information and knowledge.
- Principle 2. Provide multiple means of action and expression. Offer students alternatives for demonstrating what they know.
- Principle 3. Provide multiple means of engagement. Help learners get interested, be challenged, and stay motivated.
- Use of small group centers, partner work and 1-1
- Questioning strategies using higher order thinking to promote critical analysis

List of Core Instructional and Supplemental Materials:

Foss Kit: Trees & Weather (NJSLS Edition)

DSM Kit: Sunshine and Shadows

School Weather Station

Integration of 21st Century Skills and Life and Career Standard

CRP1, 2, 4, 6, 8, 11

Integration of the Technology Standard

NJSLS.8.1

Grade K DGN Unit 2: Forces and Interactions: Pushes and Pulls

Kid Friendly Title: Materials & Motion

Stage 1: Desired Results

Level Benchmark:

Student who demonstrate understand can:

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

Enduring Understandings:

- Students are expected to develop an understanding of the effects of different strengths or different directions of pushes and pulls on the motion of an object to analyze a design solution.

Essential Questions:

- What happens if you push or pull an object harder?
- What are the effects of different strength or directions of pushes and pulls on the motion of an object.
- What happens when two objects collide?

Skills/Knowledge:

Science and Engineering Practices:

Planning and Carrying Out Investigations

- With guidance, plan and conduct an investigation in collaboration with peers. (K-PS2-1)

Analyzing and Interpreting Data

- Analyze data from tests of an object or tool to determine if it works as intended. (K-PS2-2)

Connections to Nature of Science

Scientific Investigations Use a Variety of Methods

- Scientists use different ways to study the world. (K-PS2-1)

Disciplinary Core Idea:

PS2.A: Forces and Motion

- Pushes and pulls can have different strengths and directions. (K- PS2-1),(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)

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 K- PS2-2)

Crosscutting Concepts:

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)

NJSLS Unit Standards:

Students who demonstrate understanding can:

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. [Clarification Statement: Examples of pushes or pulls could include a string attached to an object being pulled, a person pushing an object, a person stopping a rolling ball, and two objects colliding and pushing on each other.] [Assessment Boundary: Assessment is limited to different relative strengths or different directions, but not both at the same time. Assessment does not include non-contact pushes or pulls such as those produced by magnets.]

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 a pull.* [Clarification Statement: Examples of problems requiring a solution could include having a marble or other object move a certain distance, follow a particular path, and knock down other objects. Examples of solutions could include tools such as a ramp to increase the speed of the object and a structure that would cause an object such as a marble or ball to turn.] [Assessment Boundary: Assessment does not include friction as a mechanism for change in speed.]

Interdisciplinary Connections:

ELA/Literacy:

- **RI.K.1** With prompting and support, ask and answer questions about key details in a text. (K-PS2-2)
- **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-PS2-1)
- **SL.K.3** Ask and answer questions in order to seek help, get information, or clarify something that is not understood. (K-PS2-2)

Mathematics :

- **MP.2** Reason abstractly and quantitatively. (K-PS2-1)
- **K.MD.A.1** Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object. (K-PS2-1)
- **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-PS2-1)

Stage 2-Assessment

Assessment:

- Formative - observations, discussions, participation, science notebooks, performance-based tasks
- Summative Assessment - written responses, written explanations, science notebooks, inquiry-Based Activities, portfolios
- Benchmark Assessment - unit assessments

Stage 3- Learning Plan

Investigation 1: Getting to Know Wood

Summary:

Students work with five different wood samples to observe their properties. They begin with free exploration, go on a hunt for matching samples, drop water on the samples, and float them in basins. They test the wood to find out how many paper clips it takes to sink it, then organize their results by making a concrete graph. Students use sandpaper to change the shape of wood. They compare sawdust and shavings and how they interact with water. They simulate the manufacture of two kinds of wood-particleboard and plywood.

Focus Questions:

Where does wood come from?
What is made of wood?
What happens when wood gets wet?
How can you sink wood?
How many passengers can a wood raft hold?
How can you change the shape of wood?
How are sawdust and shavings the same?
How are sawdust and shavings different?
How is particleboard made?
How if plywood made?

Content Related to Disciplinary Core Ideas:

- Wood can be described in terms of its properties.
- Different kinds of wood come from different kinds of trees. Trees are natural resources. Some kinds of wood are processed and made by people.
- Wood floats in water but can be made to sink.
- Wood can be changed by sanding and mixing with water.
- Sawdust is tiny wood pieces that can be recycled.
- Basic materials can be transformed into new materials (particleboard and plywood).

Reading/Technology:

Science Resources Book “The Story of a Chair” “Are You an Engineer?”

Video *What Is Agriculture?*

Embedded Assessment:

Teacher observation

NJSLS Performance Expectations

2-PS1-2 K-ESS3-3 K-2-ETS1-1 K-2-ETS1-2 K-2-ETS1-3

Investigation 2: Getting to Know Paper

Summary:

Students observe and compare the properties of ten kinds of paper and go on a hunt for matching samples. They compare how well the papers fold and which has the best surface for writing. They test papers for absorption, then soak the samples overnight. Students learn how to recycle paper by making new paper from old and crafting papier-mache bowls.

Focus Questions:

What is made of paper?
What makes paper good for writing?
What makes paper easy to fold?
What happens when water gets on paper?
How can new paper be made from old paper?
How can paper be made strong to form a bowl?

Content Related to Disciplinary Core Ideas:

- Paper has many observable properties.
- People make paper from wood.
- The properties of papers determine their uses.
- Some papers absorb water; others do not.
- Some paper changes when soaked in water. Some paper breaks down into small fibers.
- Paper can be reused, recycled, and fabricated.

Reading/Technology:

Science Resources Book “The Story of a Box”

Online Activity “Where Is Wood?”

Embedded Assessment:

Teacher observation

NJSLS Performance Expectations

K-ESS3-3 K-2-ETS1-1 K-2-ETS1-2

Investigation 3: Getting to Know Fabric

Summary:

Students observe and compare the properties of ten kinds of fabric and search for different ways fabrics are used. They take apart fabrics to learn how they are woven from threads. Students investigate how fabrics interact with water. They consider the properties of different fabrics and decide which fabric are good choices for clothing. Students plan how they can conserve, reuse, and recycle. They observe the warming effect of the Sun and design a structure to reduce the effect of heating.

Focus Questions:

How are fabrics different?
What is made of fabric?
How is fabric made?
What happens when water gets on fabric?
How are different kinds of fabric used?
How can we conserve natural resources?
What happens to water in sunshine and shade?
How can we design a structure to keep water cool in sunshine?

Content Related to Disciplinary Core Ideas:

- Fabric is a flexible material with a wide range of properties. The properties of fabrics determine their uses.
- Fabric can be made of woven threads.
- Fabrics can absorb, transmit, or repel water.
- Wet fabric dries when water evaporates, leaving the fabric unchanged.

- Land, air, water, and trees are natural resources.
- People reuse and recycle to conserve natural resources.
- The Sun warms Earth’s surface.
- Engineers design and test solutions to problems.

Reading/Technology:

Science Resources Book “What Is Fabric Made From?” “How Are Fabrics Used?” “Land, Air, and Water” “I Am Wood”

Videos *What Is Agriculture? Environmental Health Clothing & Building Materials*

Online Activities “Weave a Pattern” “Recycling Center”

Embedded Assessment:

Teacher observation

NJSLS Performance Expectations

2-PS1-2 K-PS3-1 K-PS3-2 K-ESS3-3 K–2-ETS1-1 K–2-ETS1-2 K–2-ETS1-3

Investigation 4: Getting Things To Move

Summary:

Students investigate the strength of pushes and pulls needed to move objects. They use gravity to pull balls down slopes to investigate collisions. Students find ways to change the strength and direction of the pull on a rolling ball to meet design challenges. Students change the strength of the push on a balloon rocket flying on a line to explore cause and effect.

Focus Questions:

What causes objects to move?

What happens when objects collide?

Where can balls roll on the schoolyard?

How can we change how far a balloon rocket travels?

Content Related to Disciplinary Core Ideas:

- Pushing or pulling on an object can change the speed or direction of its motion and can start or stop it.
- Gravity pulls things down.
- A bigger push or pull makes things go faster.
- When objects touch or collide, they push on one another and can change motion.

Reading/Technology:

Science Resources Book “Pushes and Pulls” “Collisions”

Online Activity “Build a Roller Coaster”

Embedded Assessment:

Teacher observation

NJSLS Performance Expectations

K-PS2-1; K-PS2-2 K–2-ETS1-1 K–2-ETS1-2 K–2-ETS1-3

Integrated accommodations and modifications for students with IEP's 504s, ELLs, and gifted and talented students:

- Principle 1. Provide multiple means of representation. Give learners various ways to acquire information and knowledge.
- Principle 2. Provide multiple means of action and expression. Offer students alternatives for demonstrating what they know.
- Principle 3. Provide multiple means of engagement. Help learners get interested, be challenged, and stay motivated.
- Use of small group centers, partner work and 1-1
- Questioning strategies using higher order thinking to promote critical analysis

List of Core Instructional and Supplemental Materials:

Foss Kit: Materials & Motion (NJSLs Edition)

Integration of 21st Century Skills and Life and Career Standard

CRP1, 2, 4, 6, 8, 11

Integration of the Technology Standard

NJSLs.8.1

Grade K DGN Unit 3: Interdependent Relationships in Ecosystems: Animals, Plants, and Their Environment

Kid Friendly Title: Animals Two By Two

Stage 1: Desired Results

Level Benchmark:

Students who demonstrate understanding can:

- Use observations to describe patterns of what plants and animals (including humans) need to survive.
- Construct an argument supported by evidence for how plants and animals (including humans) can change the environment to meet their needs.
- Use a model to represent the relationship between the needs of different plants or animals (including humans) and the places they live.
- Communicate solutions that will reduce the impact of humans on the land, water, air, and/or other living things in the local environment.

Enduring Understandings:

- Students are expected to develop an understanding of what plants and animals (including humans) need to survive and the relationship between their needs and where they live.

Essential Questions:

- Where do animals live and why do they live there?
- What do plants and animals need in order to survive?
- What impact do humans have on Earth's systems?

Skills/Knowledge:

Science and Engineering Practices

Developing and Using Models

- Use a model to represent relationships in the natural world. (K-ESS3-1)

Analyzing and Interpreting Data

- 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

- Construct an argument with evidence to support a claim. (K-ESS2-2)

Obtaining, Evaluating, and Communicating Information

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

Disciplinary Core Ideas

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.A: Natural Resources

- 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)

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),(K-ESS3-3)

ETS1.B: Developing Possible Solutions

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

Crosscutting Concepts

Patterns

- Patterns in the natural and human designed world can be observed and used as evidence. (K-LS1-1)

Cause and Effect

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

Systems and System Models

- Systems in the natural and designed world have parts that work together. (K-ESS2-2),(K-ESS3-1)

NJSLS Unit Standards:

K-LS1-1. Use observations to describe patterns of what plants and animals (including humans) need to survive. [Clarification Statement: Examples of patterns could include that animals need to take in food but plants do not; the different kinds of food needed by different types of animals; the requirement of plants to have light; and that all living things need water.]

K-ESS2-2. Construct an argument supported by evidence for how plants and animals (including humans) can change the environment to meet their needs. [Clarification Statement: Examples of plants and animals changing their environment could include a squirrel digs in the ground to hide its food and tree roots can break concrete.]

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. [Clarification Statement: Examples of relationships could include that deer eat buds and leaves, therefore, they usually live in forested areas, and grasses need sunlight so they often grow in meadows. Plants, animals, and their surroundings make up a system.]

K-ESS3-3. Communicate solutions that will reduce the impact of humans on the land, water, air, and/or other living things in the local environment.* [Clarification Statement: Examples of human impact on the land could include cutting trees to produce paper and using resources to produce bottles. Examples of solutions could include reusing paper and recycling cans and bottles.]

Interdisciplinary Connections:

ELA/Literacy

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),(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-LS1-1)

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)

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)

Stage 2-Assessment

Assessment:

- Formative - observations, discussions, participation, science notebooks, performance-based tasks
- Summative Assessment - written responses, written explanations, science notebooks, inquiry-Based Activities, portfolios
- Benchmark Assessment - unit assessments

Stage 3- Learning Plan

Investigation 1: Goldfish & Guppies

Summary:

Students observe the structures and behaviors of goldfish. They feed the fish and enrich the environment in which the fish live. They compare the structures and behaviors of the goldfish to those of other fish, guppies. Students compare photos of fish and read about fish. They go bird watching in the schoolyard and compare features and behaviors of birds.

Focus Questions:

What are the parts of a goldfish?

What do goldfish need to live?

What do goldfish do?

How are guppies and goldfish different?

How are they the same?

What birds visit our schoolyard?

Content Related to Disciplinary Core Ideas:

- Fish are animals and have basic needs.
- Fish have structures that help them live and grow.
- Different kinds of fish have similar but different structures and behaviors.
- Birds are animals that have basic needs.
- Different kinds of birds have similar but different structures and behaviors.

Reading/Technology:

“Fish Same and Different”

“Fish Live in Many Places”

“Birds Outdoors”

Video

“The Urban Habitat of Peregrine Falcons” in Is This a House for Hermit Crab? (Extension)

Embedded Assessment:

Teacher observation

NJSLS Performance Expectations

K-LS1-1

K-ESS2-2

K-ESS3-1

Investigation 2: Water & Land Snails

Summary:

Students observe the structures and behaviors of two kinds of water snails. Students work with a variety of seashells, discussing similarities and differences in their size, shape, color, and texture. Students match shell pairs, make designs, and create patterns. Students explore the schoolyard to find local land snails and compare their structures and behaviors to water snails.

Focus Questions:

What are the parts of a water snail?

How can shells be grouped?

What do land snails do?

Content Related to Disciplinary Core Ideas:

- Different kinds of snails have some structures and behaviors that are the same and some that are different.
- Snails are animals and have basic needs—water, air, food, and space with shelter.
- There is great diversity among snails.
- Shells differ in size, shape, pattern, and texture.
- Snails have senses.

Reading/Technology:

Science Resources Book

“Water and Land Snails”

Video

Seashore Surprises

Embedded Assessment:

Teacher observation

NJSLS Performance Expectations

K-LS1-1

K-ESS2-2

K-ESS3-1

Investigation 3: Big & Little Worms

Summary:

Students dig for redworms, rinse them off, and look at their structures. They study their behavior. They construct worm jars and provide for the needs of the composting worms. Students observe how the worms change the plant material into soil. They compare the redworms to night crawlers, which are much larger. Students compare photos and read about worms and their activities in soil.

Focus Questions:

What are the parts of a redworm?
What do redworms need to live?
How are redworms and night crawlers different?
How are they the same?

Content Related to Disciplinary Core Ideas:

- Worms are animals and have basic needs.
- Worms have identifiable structures.
- Different kinds of worms have similar structures and behaviors; they also have differences (size, color).
- Worm behavior is influenced by conditions in the environment.
- Worms change plant material into soil.

Reading/Technology:

Science Resources Book
“Worms in Soil”

Embedded Assessment:

Teacher observation
NJSL Performance Expectations
K-LS1-1
K-ESS2-2
K-ESS3-1

Investigation 4: Pill Bugs & Sow Bugs

Summary:

Students observe structures of two kinds of isopods. They learn to identify which are pill bugs and which are sow bugs. They hold isopod races. Students make a terrarium in which all the land animals live together. They compare photos and read about isopods. They read about and compare illustrations of a variety of animals and discuss the differences between living and nonliving things.

Focus Questions:

What are isopods?
How are pill bugs and sow bugs different?
How are they the same?
How do isopods move?
What do animals need to live?

Content Related to Disciplinary Core Ideas:

- Isopods are animals and have basic needs—water, air, food, and space with shelter.

- Different kinds of isopods have some structures and behaviors that are the same and some that are different.
- There is great diversity among isopods.
- Isopod behavior is influenced by conditions in the environment.

Reading/Technology:

Science Resources Book

“Isopods”

“Animals All around Us”

“Living and Nonliving”

Book

Animals Two By Two

Online Activity

“Find the Parent”

Embedded Assessment:

Teacher observation

NJSLS Performance Expectations

K-LS1-1

K-ESS2-2

K-ESS3-1

Integrated accommodations and modifications for students with IEP’s 504s, ELLs, and gifted and talented students:

- Principle 1. Provide multiple means of representation. Give learners various ways to acquire information and knowledge.
- Principle 2. Provide multiple means of action and expression. Offer students alternatives for demonstrating what they know.
- Principle 3. Provide multiple means of engagement. Help learners get interested, be challenged, and stay motivated.
- Use of small group centers, partner work and 1-1
- Questioning strategies using higher order thinking to promote critical analysis

List of Core Instructional and Supplemental Materials:

Foss Kit: Animals Two By Two (NJSLS Edition)

Integration of 21st Century Skills and Life and Career Standard

CRP1, 2, 4, 6, 8, 11

Integration of the Technology Standard

NJSLS.8.1

Pacing Guide

<u>Unit</u>	<u>NJSLS</u>	<u>Marking Period</u>	<u>Duration (Weeks)</u>
1	K-LS1-1 K-ESS2-2 K-ESS3-1	1-2	10-11
2	K-PS2-1 K-PS2-2 K-2-ETS1-1 K-2-ETS1-2 K-2-ETS1-3	2-3	10-12
3	K-LS1-1 K-ESS2-2 K-ESS3-1 K-LS1-1	3-4	10-12