Earth and Space Science- Trees and Water

Content Area: **Science**
Course(s): **Kindergarten**
Time Period: **Third Trimester**
Length: **12 Weeks**
Status: **Published**

Unit Overview

In this unit, students will develop an understanding of what plants (and animals) need to survive and the relationship between their needs and where they live. By monitoring local weather, students experience the patterns and variations in weather and come to understand the importance of weather forecasts to prepare for severe weather.

Throughout the module, students engage in science and engineering practices by asking questions, participating in collaborative investigations, observing, recording, and interpreting data to build explanations, and obtaining information from photographs. Students gain experiences that will contribute to an understanding of the crosscutting concepts of patterns; cause and effect, scale, proportion, and quantity; systems and system models; structure and function; and stability and change.

STAGE 1- DESIRED RESULTS

Educational Standards

2020 New Jersey Student Learning Standards- Science

Performance Expectations

Physical Sciences

SCI.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.
SCI.K-PS3-2	Use tools and materials to design and build a structure that will reduce the warming effect

	of sunlight on an area.
SCI.K-PS2	Motion and Stability: Forces and Interactions
SCI.K-PS3-1	Make observations to determine the effect of sunlight on Earth's surface.
SCI.K-PS3	Energy
SCI.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.

Life Sciences

SCI.K-LS1-1	Use observations to describe patterns of what plants and animals (including humans) need to survive.
SCI.K-LS1	From Molecules to Organisms: Structures and Processes

Earth and Space Sciences

SCI.K-ESS2-1	Use and share observations of local weather conditions to describe patterns over time.
SCI.K-ESS2	Earth's Systems
SCI.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.
SCI.K-ESS3-2	Ask questions to obtain information about the purpose of weather forecasting to prepare for, and respond to, severe weather.
SCI.K-ESS2-2	Construct an argument supported by evidence for how plants and animals (including humans) can change the environment to meet their needs.
SCI.K-ESS3	Earth and Human Activity
SCI.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.

Engineering Design

SCI.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.
SCI.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.
SCI.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

- Practice #1: Asking Questions and Defining Problems
- Practice #2: Developing and Using Models

- Practice #3: Planning and Carrying Out Investigations
- Practice #4: Analyzing and Interpreting Data
- Practice #5: Using Mathematics and Computational Thinking
- Practice #6: Constructing Explanations and Designing Solutions
- Practice #7: Obtaining, Evaluating, and Communicating Information
- Practice #8: Engaging in Argument from Evidence

Cross Cutting Concepts

- Cause and Effect
- Energy and Matter
- Influence of Engineering, Technology, and Science on Society and the Natural World
- Interdependence of Science, Engineering, and Technology
- Patterns
- Scale, Proportion, and Quantity
- Stability and Change
- Structure and Functions
- Systems and System Models

Disciplinary Core Ideas

Physical Sciences

- PS3.B Conservation of Energy and Energy Transfer

Life Sciences

- LS1.A- Structure and function
- LS1.C- Growth and development of organisms

Earth and Space Sciences

- ESS2.D- Weather and climate
- ESS2.E- Biogeology
- ESS3.A- Natural resources
- ESS3.B- Natural hazards

Essential Questions

Investigation 1: Observing Trees

Part 1: What did we learn about our schoolyard trees?

Part 2: What are the parts of trees?

Part 3: What shapes are trees?

Part 4: Which trees have similar shapes?

Part 5: What can we find out about our adopted trees?

Part 6: What do trees need to grow?

Investigation 2: Observing Leaves

Part 1: What can we observe about leaves?

Part 2: What shapes are leaves?

Part 3: How are leaves different?

Part 4: How are leaf edges different?

Part 5: What can we observe about leaves?

Investigation 3: Observing Weather

Part 1: What is the weather today?

Part 2: How can we measure the air temperature?

Part 3: What does a windsock tell us about the wind?

Investigation 4: Trees Through the Seasons

Part 1: What do fall trees look like?

Part 2: What do fall trees look like?

Part 3: What do fall trees look like?

Part 4: What do winter trees look like?

Part 5: What do winter trees look like?

Part 6: What do winter trees look like?

Part 7: What do spring trees look like?

Part 8: What do spring trees look like?

Part 9: What do spring trees look like?

Enduring Understanding

This earth and space unit develops students' understanding of how: 1) And why Earth is constantly changing; 2) Earth's surface processes and human activities affect each other; 3) Organisms live, grow, respond to their environment, and reproduce; and 4) Energy is transferred and conserved.

Students will know...

VOCABULARY

Investigation 1: Observing Trees

adopt, bark, branch, circumference, compare, cone, conifer, desert, different, flower, hardwood, leaves, living, mountain, observe, ocean, pattern, plant, river, root, rubbing, seed, shape, similar, stem, swamp, texture, tree, trunk, twig, valley

Investigation 2: Observing Leaves

color, edge, heart, line, lobed, longer, narrower, outline, oval, paddle, pointed, property, rough, rounded, shorter, silhouette, size, smooth, spear, tip, toothed, triangle, wider

Investigation 3: Observing Weather

air, blowing, calendar, cloud, cold, cool, direction, freezing, hot, monitor, moving air, overcast, partly cloudy, rainy, snowy, streamer, sunny, temperature, thermometer, warm, weather, weather instrument, wind, wind sock

Investigation 4: Trees through the Seasons

blossom, bud, evergreen, fall, flower, food, forcing, fruit, growth ring, leaf scar, needle, scale, season, seed, spring, summer, swollen, winter

Students will be able to...

Investigation 1: Observing Trees

- Ask questions about trees and the places where they live.
- Develop and use models of trees to show the relationship between parts of the system and to compare features and differences.
- Plan and carry out investigations in collaboration with peers and with adult guidance involving trees to observe their structures and study their environmental needs.
- Analyze and interpret data by describing observations of the trees over time, recording information, using and sharing notebook entries, including writing and labeled pictures. Students use their firsthand observations and those of others in the classroom to describe the patterns they observe in trees to answer scientific questions. Students compare their predictions to actual outcomes.
- Construct explanations by making firsthand observations of trees and using this as evidence to answer questions about the needs of plants. Students support arguments with evidence.
- Engage in argument from evidence about whether a tree changes its environment.
- Obtain, evaluate, and communicate information about structures of trees, their needs, and where they live by reading grade-appropriate text and communicating in oral and written formats.

Investigation 2: Observing Leaves

- Ask questions after making leaf observations.
- Develop and use models of leaves to illustrate comparisons of properties.
- Plan and carry out investigations on tree leaves in order to make comparisons of properties.
- Analyze and interpret data by describing observations of leaves from different plants, recording information, using and sharing notebook entries, including writing and labeled pictures. Students use their firsthand observations and those of others in the classroom to describe the patterns they observe in leaves to answer scientific questions.
- Construct explanations by making firsthand observations of tree leaves. Students support arguments with evidence.
- Engage in argument from evidence about whether all leaves are the same or different.
- Obtain, evaluate, and communicate information about structures of trees, and how they provide resources for animals and humans by reading grade-appropriate text and communicating in oral and written formats.

Investigation 3: Observing Weather

- Plan and carry out investigations in collaboration with peers and with adult guidance to monitor local weather conditions; make weather predictions based on prior experience.
- Analyze and interpret data by describing observations of the local weather conditions over time, recording information, using and sharing notebook entries, including writing and labeled pictures. Students use their firsthand observations and those of others in the classroom to describe the patterns they observe in the weather to answer scientific questions. Students compare their predictions to actual outcomes.
- Construct explanations and design solutions by making firsthand observations of weather using simple tools such as a thermometer and wind sock; collect observations to determine that the Sun is out during the day and warms the surface of Earth. Use knowledge of how objects behave in the wind, along with tools and materials to design a wind catcher.
- Obtain, evaluate, and communicate information about weather measurement tools and weather conditions by reading grade-appropriate text and communicating in oral and written formats.

Investigation 4: Trees through the Seasons

- Plan and carry out investigations on trees through the seasons in order to make comparisons of structures as they change.
- Analyze and interpret data by describing observations of structures of different plants, recording information, using and sharing notebook entries, including writing and labeled pictures. Students use their firsthand observations and those of others in the classroom to describe the patterns they observe to answer scientific questions.
- Construct explanations by making firsthand observations of tree structures through the seasons. Students support arguments with evidence.

Obtain, evaluate, and communicate information about structures of trees through the seasons, and how they provide resources for animals and humans by reading grade-appropriate text and communicating in oral and written formats.

STAGE 2- EVIDENCE OF LEARNING

Formative Assessment Suggestions

- 3- Minute Pause
- A-B-C Summaries
- Analogy Prompt
- Choral Response
- Debriefing
- Exit Card / Ticket

- Hand Signals
- Idea Spinner
- Index Card Summaries
- Inside-Outside Circle Discussion (Fishbowl)
- Journal Entry
- Misconception Check
- Observation
- One Minute Essay
- One Word Summary
- Portfolio Check
- Questions & Answers
- Quiz
- Self-Assessment
- Student Conference
- Think-Pair-Share
- Web or Concept Map

Authentic Assessments Suggestions

Investigation 1: Observing Trees

- Teacher observations
- Notebook entries

Investigation 2: Observing Leaves

- Teacher observations
- Notebook entries

Investigation 3: Observing Weather

- Teacher observations
- Notebook entries

Investigation 4: Trees through the Seasons

- Teacher observations
- Notebook entries

Benchmark Assessments

Assessment Checklists

STAGE 3- LEARNING PLAN

Instructional Map

Investigation 1: Observing Trees

Investigation 2: Observing Leaves

Investigation 3: Observing Weather

Investigation 4: Trees through the Seasons

Investigation 1: Observing Trees

Investigation 1: Part 1- Observing Schoolyard Trees

Students go on a walk around the schoolyard, developing general concepts about trees and discussing how trees are useful to people and wild animals.

Content:

- Trees are living plants.
- Trees provide resources for animals including people (shade, food, lumber, fuel).

Investigation 1: Part 2- Tree Parts

Students use picture and word cards to identify the main parts of trees. Students' understanding of tree parts is enhanced as they put together their own pictures of tree parts.

Content:

- Trees have structures: branches, leaves, trunk, and roots.

Investigation 1: Part 3- Tree Puzzles

Students use puzzles to learn and compare the different shapes of trees.

Content:

- Trees differ in size and shape.
- Trees have structures: branches, leaves, trunk, and roots.

Investigation 1: Part 4- Tree-Silhouette Cards

Students play a matching game, using matched sets of Tree-Silhouette Cards.

Content:

- Trees differ in size and shape.

Investigation 1: Part 5- Adopt Schoolyard Trees

The class adopts several schoolyard trees to observe throughout the school year. Students start a classroom scrapbook to document their observations.

Content:

- Trees differ in size and shape.
- Trees have structures: branches, leaves, trunk, and roots.
- Trees are living plants.

Investigation 1: Part 6- A Tree Comes to Class

A living tree enters the classroom. Students learn that a tree is alive and discuss what it needs to grow and stay healthy. The whole class goes outdoors to plant the tree that they have been observing in the classroom. Students

discuss what all plants need to live and grow.

Content:

- Trees are living plants.
- Trees have basic needs: light, air, nutrients, water, and space.

Investigation 2: Observing Leaves

Investigation 2: Part 1- Leaf Walk

Students read about and discuss how we use our senses to learn. They take a schoolyard walk to observe leaves on trees, noting similaritiesand differences and gathering leaves to press and keep.

Content:

- Different kinds of trees have different leaves.
- Leaves have properties: size, shape, tip, edge, texture, and color.

Investigation 2: Part 2- Leaf Shapes

Students look closely at the shapes of leaves and match leaves to geometric shapes.

Content:

- Leaf properties vary.
- Leaves can be described and compared by their properties.

Investigation 2: Part 3- Comparing Leaves

Students go outdoors for a leaf hunt. Using a paper reference leaf, they look for leaves that differ in size and shape.

Content:

- Leaves can be described and compared by their properties.

Investigation 2: Part 4: Matching Silhouettes

Students work in centers with representational materials to develop their skills of observation and comparison, matching leaf silhouettes and outlines. Leaf shape, size, and edges are the properties students use for comparisons.

Content:

- Leaves have properties: size, shape, tip, edge, texture, and color.
- Leaves can be described and compared by their properties.

Investigation 2: Part 5- Leaf Books

Students make leaf books to add to their science notebooks. The teacher reads *Our Very Own Tree*, which summarizes many of the ways students have studied trees.

Content:

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

Investigation 3: Observing Weather

Investigation 3: Part 1- Weather Calendar

Students share what they know about weather and how it relates to air. A class weather monitor begins recording daily weather observations on a class calendar. Weather pictures (symbols) are used to indicate five basic types of weather.

Content:

- Weather is the condition of the air outdoors.
- Weather can be described as sunny, partly cloudy, overcast, rainy, or snowy.
- Weather changes.
- The Sun, Moon, and clouds are objects we see in the sky.

Investigation 3: Part 2- Recording Temperature

Students use a thermometer and take turns measuring and recording the relative temperature (freezing, cold, cool, warm, hot).

Content:

- Temperature is how hot or cold it is.
- Thermometers measure temperature.
- Air temperature tells something about weather.
- Sunlight warms Earth's surface.

Investigation 3: Part 3- Wind Direction

Students construct a wind sock and observe how it responds when air moves through it. They find out that they can determine direction by using a wind sock.

Content:

- Wind is moving air.
- A wind sock indicates wind direction and speed.
- Some severe weather conditions are more likely in some areas than others.
- Weather forecasts help people to prepare for severe weather.

Investigation 4: Trees through the Seasons

Investigation 4: Part 1- Fall: What Comes from Trees?

Students visit the schoolyard to look for objects from trees. Indoors, they make a chart of what they collected.

Content:

- Trees are living, growing plants.
- Bark, twigs, leaves, buds, flowers, fruits, and seeds are parts of trees.

Investigation 4: Part 2- Fall: Food from Trees

Students search for, observe, and compare seeds found in the fruits that come from trees.

Content:

- Bark, twigs, leaves, buds, flowers, fruits, and seeds are parts of trees.
- Seeds grow into the same kind of plant as the parent tree.

Investigation 4: Part 3- Fall: Visiting Adopted Trees

Students visit their adopted schoolyard trees. They observe the trees' bark, twigs, leaves, flowers, fruit, and seeds and add information to the class scrapbook.

Content:

- Trees are living, growing plants.
- Trees change through the seasons.

Investigation 4: Part 4- Winter: Evergreen Hunt

Students hunt for evergreen trees that match samples of needles from schoolyard trees.

Content:

- Bark, twigs, leaves, buds, flowers, fruits, and seeds are parts of trees.
- Some trees lose their leaves in winter; others do not.

Investigation 4: Part 5- Winter: Twigs

Students observe the inside of tree twigs and look for growth rings, buds, and leaf scars.

Content:

- Bark, twigs, leaves, buds, flowers, fruits, and seeds are parts of trees.
- Twigs have structures such as leaf scars and buds.

Investigation 4: Part 6- Winter: Visiting Adopted Trees

Students revisit their adopted trees to observe any changes to the twigs, leaves, and areas around their trees.

Content:

- Trees are living, growing plants.
- Bark, twigs, leaves, buds, flowers, fruits, and seeds are parts of trees.
- Trees change through the seasons.

Investigation 4: Part 7- Spring: Forcing Twigs

Students bring twigs into the warmth of the classroom to force them to bloom or put out leaves.

Content:

- Bark, twigs, leaves, buds, flowers, fruits, and seeds are parts of trees.
- The buds on twigs grow into leaves or flowers.

Investigation 4: Part 8- Spring: Bark Hunt

Students observe and compare bark on a variety of trees as they search for matches to photos of the bark on schoolyard trees.

Content:

- Bark, twigs, leaves, buds, flowers, fruits, and seeds are parts of trees.
- Trees can be identified by the pattern of the bark.

Investigation 4: Part 9- Spring: Visiting Adopted Trees

Students revisit their trees. They look for evidence of new growth in the leaves and flowers.

Content:

- Trees are living, growing plants.
- Trees change through the seasons.

Seasons change in a predictable annual pattern: fall, winter, spring, and summer.

Modifications/Differentiation of Instruction

Differentiation Strategies for Special Education Students

- Remove unnecessary material, words, etc., that can distract from the content
- Use of off-grade level materials
- Provide appropriate scaffolding
- Limit the number of steps required for completion
- Time allowed
- Level of independence required
- Tiered centers, assignments, lessons, or products
- Provide appropriate leveled reading materials
- Deliver the content in “chunks”
- Varied texts and supplementary materials
- Use technology, if available and appropriate
- Varied homework and products
- Varied questioning strategies
- Provide background knowledge
- Define key vocabulary, multiple-meaning words, and figurative language.
- Use audio and visual supports, if available and appropriate
- Provide multiple learning opportunities to reinforce key concepts and vocabulary
- Meet with small groups to reteach idea/skill
- Provide cross-content application of concepts
- Ability to work at their own pace
- Present ideas using auditory, visual, kinesthetic, & tactile means
- Provide graphic organizers and/or highlighted materials
- Strategy and flexible groups based on formative assessment
- Differentiated checklists and rubrics, if available and appropriate

Differentiation Strategies for Gifted and Talented Students

- Increase the level of complexity
- Decrease scaffolding
- Variety of finished products
- Allow for greater independence

- Learning stations, interest groups
- Varied texts and supplementary materials
- Use of technology
- Flexibility in assignments
- Varied questioning strategies
- Encourage research
- Strategy and flexible groups based on formative assessment or student choice
- Acceleration within a unit of study
- Exposure to more advanced or complex concepts, abstractions, and materials
- Encourage students to move through content areas at their own pace
- After mastery of a unit, provide students with more advanced learning activities, not more of the same activity
- Present information using a thematic, broad-based, and integrative content, rather than just single-subject areas

Differentiated Strategies for ELL Students

- Remove unnecessary materials, words, etc., that can distract from the content
- Provide appropriate scaffolding
- Limit the number of steps required for completion
- Gradually increase the level of independence required
- Tiered centers, assignments, lessons, or products
- Provide appropriate leveled reading materials
- Deliver the content in “chunks”
- Varied texts and supplementary materials, including visuals
- Use technology, if available and appropriate
- Differentiate homework and products
- Varied questioning strategies
- Provide background knowledge
- Define key vocabulary, multiple-meaning words, and figurative language.
- Use audio and visual supports, if available and appropriate
- Provide multiple learning opportunities to reinforce key concepts and vocabulary
- Meet with small groups to reteach idea/skill
- Provide cross-content application of concepts
- Allow students to work at their own pace
- Presenting ideas through auditory, visual, kinesthetic, & tactile means
- Role play
- Provide graphic organizers, highlighted materials
- Strategy and flexible groups based on formative assessment

Differentiation Strategies for At Risk Students

- Remove unnecessary materials, words, etc., that can distract from the content
- Provide appropriate scaffolding
- Limit the number of steps required for completion
- Gradually increase the level of independence required
- Tiered centers, assignments, lessons, or products
- Provide appropriate leveled reading materials
- Deliver the content in "chunks"
- Varied texts and supplementary materials
- Use technology, if available and appropriate
- Differentiate homework and products
- Varied questioning strategies
- Provide background knowledge
- Define key vocabulary, multiple-meaning words, and figurative language
- Use audio and visual supports, if available and appropriate
- Provide multiple learning opportunities to reinforce key concepts and vocabulary
- Meet with small groups to reteach idea/skill
- Provide cross-content application of concepts
- Presenting ideas through auditory, visual, kinesthetic, & tactile means
- Provide graphic organizers and/or highlighted materials
- Strategy and flexible groups based on formative assessment

504 Plans

Students can qualify for 504 plans if they have physical or mental impairments that affect or limit any of their abilities to:

- walk, breathe, eat, or sleep
- communicate, see, hear, or speak
- read, concentrate, think, or learn
- stand, bend, lift, or work

Examples of accommodations in 504 plans include:

- preferential seating
- extended time on tests and assignments
- reduced homework or classwork
- verbal, visual, or technology aids
- modified textbooks or audio-video materials
- behavior management support
- adjusted class schedules or grading

- verbal testing
- excused lateness, absence, or missed classwork
- pre-approved nurse's office visits and accompaniment to visits
- occupational or physical therapy

Modification Strategies

- Extended Time
- Frequent Breaks
- Highlighted Text
- Interactive Notebook
- Modified Test
- Oral Directions
- Peer Tutoring
- Preferential Seating
- Re-Direct
- Repeated Drill / Practice
- Shortened Assignments
- Teacher Notes
- Tutorials
- Use of Additional Reference Material
- Use of Audio Resources

High Preparation Differentiation

- Alternative Assessments
- Choice Boards
- Games and Tournaments
- Group Investigations
- Guided Reading
- Independent Research / Project
- Interest Groups
- Learning Contracts
- Leveled Rubrics
- Literature Circles
- Menu Assignments
- Multiple Intelligence Options

- Multiple Texts
- Personal Agendas
- Project Based Learning (PBL)
- Stations / Centers
- Think-Tac-Toe
- Tiered Activities / Assignments
- Varying Graphic Organizers

Low Preparation Differentiation

- Choice of Book / Activity
- Cubing Activities
- Exploration by Interest (using interest inventories)
- Flexible Grouping
- Goal Setting With Student
- Homework Options
- Jigsaw
- Mini Workshops to Extend Skills
- Mini Workshops to Re-teach
- Open-ended Activities
- Think-Pair-Share by Interest
- Think-Pair-Share by Learning Style
- Think-Pair-Share by Learning Style
- Think-Pair-Share by Readiness
- Use of Collaboration
- Use of Reading Buddies
- Varied Journal Prompts
- Varied Product Choice
- Varied Supplemental Materials
- Work Alone / Together

Horizontal Integration- Interdisciplinary Connections

New Jersey Student Learning Standards for Mathematics

N-Q.A.Reason quantitatively and use units to solve problems.

1. Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; chose and interpret the scale and the origin in graphs and

data displays
2. Define appropriate quantities for the purpose of descriptive modeling.
3. Choose the level of accuracy appropriate to limitations on measurement when reporting quantities.

N-CN.A. Perform arithmetic operations with complex numbers.

1. Know there is a complex number.
2. Use the commutative, associative, and distributive properties.

A-SSE.A. Interpret the structure of expressions

1. Interpret expressions that represent a quantity in terms of its context.

A-SSE.B. Write expressions in equivalent forms to solve problems.

1. Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression.

F-IF.A. Understand the concept of a function and use functional notation.

1. Understand that a function from one set to another set.

F-IF.B Interpret functions that arise in applications in terms of the context.

F-IF.C. Analyze functions using different representations

S-ID.A. Summarize, represent, and interpret data on a single count or measurement variable

1. Represent data with plots on a real number line.

S-ID.B. Summarize, represent, and interpret data on two categorical and quantitative variables.

S-ID.C. Interpret linear models.

S-IC.A. Understand and evaluate random processes underlying statistical experiments.

S-IC.B. Make inferences and justify conclusions from surveys, experiments, and observational studies.

Kindergarten English Language Arts Standards

RF 1: Demonstrate understanding of the organization and basic features of print.

RF 2: Demonstrate understanding of spoken words, syllables, and sounds.

RF 4: Read text with purpose and understanding.

RI 1: Ask and answer questions about key details.

RI 2: Identify main topic and retell key details.

RI 3: Describe the connection between two ideas.

RI 4: Ask and answer questions about unknown words.

RI 5: Identify the front cover, back cover, and title page of a book.

RI 7: Describe the relationship between illustrations and the text.

RI 8: Identify the reasons an author gives to support points.

RI 9: Identify similarities in and differences between text on the same topic.

RI 10: Actively engage in group reading activities with purpose and understanding.

W 2: Write informative/explanatory text.

W 5: Respond to questions and suggestions from peers.

W 5: Strengthen writing by revising and editing.

W 7: Participate in shared research and writing projects.

W 8: Gather information to answer a question.

SL 1: Participate in collaborative conversations.

SL 2: Ask and answer questions about key details and request clarification.

SL 3: Ask and answer questions to seek help, information, or to clarify.

SL 4: Describe with details.

SL 6: Speak audibly, express clearly.

L 1: Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.

L 4: Determine or clarify the meaning of unknown or multiple meaning words and phrases.

L 5: Demonstrate understanding of word relationships and nuances in word meanings.

L 5a: Sort words and objects into categories.

L 6: Use acquired words and phrases.

RL 1: Ask and answer questions about key details in a text.

RL 2: Retell stories, including key details.

RL 6: Name and define the role of the author and illustrator.

RL 10: Actively engage in group reading activities with purpose and understanding.

2020 New Jersey Student Learning Standards- Computer Science and Design Thinking

Computer Science and Design Thinking Practices

CSDT.K-12.CSDTP1	Fostering an Inclusive Computing and Design Culture
CSDT.K-12.CSDTP2	Collaborating Around Computing and Design
CSDT.K-12.CSDTP3	Recognizing and Defining Computational Problems
CSDT.K-12.CSDTP4	Developing and Using Abstractions
CSDT.K-12.CSDTP5	Creating Computational Artifacts
CSDT.K-12.CSDTP6	Testing and Refining Computational Artifacts
CSDT.K-12.CSDTP7	Communicating About Computing and Design

8.2 Design Thinking

8.2.2.ED.1: Communicate the function of a product or device. 8.2.2.ED.2: Collaborate to solve a simple problem, or to illustrate how to build a product using the design process. 8.2.2.ED.3: Select and use appropriate tools and materials to build a product using the design process. 8.2.2.ED.4: Identify constraints and their role in the engineering design process.
8.2.2.ITH.1: Identify products that are designed to meet human wants or needs. 8.2.2.ITH.2: Explain the purpose of a product and its value. 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.ITH.5: Design a solution to a problem affecting the community in a collaborative team and explain the intended impact of the solution.
8.2.2.NT.1: Model and explain how a product works after taking it apart, identifying the relationship of each part, and putting it back together. 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.ETW.2: Identify the natural resources needed to create a product. 8.2.2.ETW.3: Describe or model the system used for recycling technology. 8.2.2.ETW.4: Explain how the disposal of or reusing a product affects the local and global environment.
8.2.2.EC.1: Identify and compare technology used in different schools, communities, regions, and parts of the world.

2020 New Jersey Student Learning Standards- Career Readiness, Life Literacies, and Key Skills

Career Readiness, Life Literacies, and Key Skills Practices

CRP.K-12.CRP1	Act as responsible and contributing community members and employee.
CRP.K-12.CRP2	Attend to financial well-being.
CRP.K-12.CRP3	Consider the environmental, social and economic impacts of decisions.
CRP.K-12.CRP4	Demonstrate creativity and innovation.
CRP.K-12.CRP5	Utilize critical thinking to make sense of problems and persevere in solving them.
CRP.K-12.CRP6	Model integrity, ethical leadership and effective management.
CRP.K-12.CRP7	Plan education and career paths aligned to personal goals.
CRP.K-12.CRP8	Use technology to enhance productivity, increase collaboration and communicate effectively.
CRP.K-12.CRP9	Work productively in teams while using cultural/global competence.

9.2 Career Awareness and Planning

9.1.2.CAP.1: Make a list of different types of jobs and describe the skills associated with each job.

9.4 Life Literacies and Key Skills

9.4.2.CI.1: Demonstrate openness to new ideas and perspectives. 9.4.2.CI.2: Demonstrate originality and inventiveness in work.

9.4.2.CT.1: Gather information about an issue, such as climate change, and collaboratively brainstorm ways to solve the problem. 9.4.2.CT.2: Identify possible approaches and resources to execute a plan. 9.4.2.CT.3: Use a variety of types of thinking to solve problems.
9.4.2.DC.1: Explain differences between ownership and sharing of information. 9.4.2.DC.2: Explain the importance of respecting digital content of others. 9.4.2.DC.3: Explain how to be safe online and follow safe practices when using the internet. 9.4.2.DC.4: Compare information that should be kept private to information that might be made public. 9.4.2.DC.5: Explain what a digital footprint is and how it is created. 9.4.2.DC.6: Identify respectful and responsible ways to communicate in digital environments. 9.4.2.DC.7: Describe actions peers can take to positively impact climate change.
9.4.2.IML.1: Identify a simple search term to find information in a search engine or digital resource. 9.4.2.IML.2: Represent data in a visual format to tell a story about the data. 9.4.2.IML.3: Use a variety of sources including multimedia sources to find information about topics such as climate change, with guidance and support from adults. 9.4.2.IML.4: Compare and contrast the way information is shared in a variety of contexts.
9.4.2.TL.1: Identify the basic features of a digital tool and explain the purpose of the tool. 9.4.2.TL.2: Create a document using a word processing application. 9.4.2.TL.3: Enter information into a spreadsheet and sort the information. 9.4.2.TL.4: Navigate a virtual space to build context and describe the visual content. 9.4.2.TL.5: Describe the difference between real and virtual experiences. 9.4.2.TL.6: Illustrate and communicate ideas and stories using multiple digital tools.
9.4.2.TL.7: Describe the benefits of collaborating with others to complete digital tasks or develop digital artifacts.

Vertical Integration- Discipline Mapping

LS1: Grade 1: Plants and Animals

Grade 2: Insects and Plants

Grade 3: Structures of Life

Grade 4: Environments

Grade 5: Living Systems

Grade 6: Diversity of Life

Grade 7: Populations and Ecosystems

Grade 8: Human Systems Interactions

ESS2: Grade 1: Air and Weather

Grade 2: Pebbles, Sand, and Silt

Grade 3: Water and Climate

Grade 4: Soils, Rocks, and Landforms

Grade 5: Earth and Sun; Living Systems

Grade 6: Weather and Water

Grade 7: Planetary Science

Grade 8: Earth's History

Preparation for high school science courses.

Additional Materials

Visit FOSSWEB.com for list of websites and additional readings.