

Kindergarten - Science Curriculum

Course Title: Unit 1 - Engineering and Technology

Content Area: Science

Grade Level(s): Kindergarten

Date Revised: _____

Date Adopted: _____

Course Description: In this unit, children will...

- Define a simple problem that can be solved by developing a new or improved tool.
- Ask questions, make observations, and gather information helpful in thinking about a problem.
- Create a model based on evidence to represent a tool that solves a problem.
- Compare and test design solutions to a problem.
- Use sketches and models to communicate a solution to a problem.

Total Number of Lessons in Unit 1: Lesson 1-What Does an Engineer Do?, Lesson 2-How Can We Use a Design Process?

Pacing Guide

Faster-Paced Core Path: Approximately 12 days

- [Grade K Unit Materials List](#)
- Lesson One: 5 days - What Does an Engineer Do?
- Lesson Two: 5 days - How Can We Use a Design Process?

Unit 1 Review: 1 day

Unit 1 Test: 1 day

[Pacing Guide](#)

[Detailed Pacing Guide](#)

<u>Unit</u>	<u>Week/Days</u>	<u>Standard NJSL</u>	<u>Skill</u> <i>What We Want Students To “Do”</i>
Unit 1: Engineering and Technology Lesson 1: Engineer It What Does An Engineer Do?	 5 days	 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.
 Lesson 2: Engineer It How Can We Use a Design Process?	 5 days	 K-2-ETS1-2 K-2-ETS1-3	 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. Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.

Unit One Title: Engineering and Technology

Time Frame: 12 days

Essential Questions

Lesson 1:

What does an Engineer do?, What is a problem?, What is a solution?

Lesson 2:

How Can We Use a Design Process?

Standards

Standards/CPIs (Cumulative Progress Indicators) taught and assessed:

Performance Expectations: Engineering Design

- **K-2-ETS1-1 Ask questions, make observations and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.**
- **K-2-ETS1-2 Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.**
- **K-2-ETS1-3 Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.**

Integrating the NGSS (Next Generation Science Standards) *Three Dimensions of Learning:

[NGSS and HMH Science Dimensions](#)

Science and Engineering Practices: SEP

- **Asking questions and Defining Problems**
- **Developing and Using Models**
- **Analyzing and Interpreting Data**
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Disciplinary Core Ideas: DCI

- **ETS1.A - Defining and Delimiting Engineering Problems**

- ETS1.B - Developing Possible Solutions
- ETS1.C - Optimizing the Design Solution
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Crosscutting Concepts: CCC

- Interdependence of Science, Engineering, and Technology
- Structure and Science

CONNECTIONS TO MATH

K.MD.A.2 Directly compare two objects with a measurable attribute in common, to see which objects has “more of”/”less of” the attribute, and describe the difference.

K.G.A.2 Correctly name shapes regardless of their orientations or overall size.

MP.2 Reason abstractly and quantitatively

MP.4 Model with Mathematics

CONNECTIONS TO ELA

W.K.6 With guidance and support from adults, explore a variety of digital tools to produce and publish writing, including in collaboration with peers.

W.K.8 With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question

SL.K.5 Add drawings to descriptions as desired to provide additional detail

HIGHLIGHTED CAREER READY PRACTICES:

CRP1. Act as a responsible and contributing citizen and employee.

CRP2. Apply appropriate academic and technical skills.

CRP4. Communicate clearly and effectively and with reason.

CRP6. Demonstrate creativity and innovation.

CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.

SEL PRACTICES & COMPETENCIES:

- Self-Management
- Social Awareness
- Responsible Decision-Making
- Relationship Skills

Tips for Classroom Discussion:

- **Allow students plenty of time to reflect and formulate their answers.**
- **Call on students if you sense they have something to add but haven't spoken yet.**
- **At the same time, allow reluctant students not to speak unless they choose to.**
- **Encourage students to respond to each other as well as to you.**

Overall Goal (What is the big idea?) In Unit 1: Lessons 1 and 2 - We Are Learning To (WALT) use observations and questions to identify engineers as workers who find solutions to problems. By the End of Lesson 1, students will be able to tell how an engineer defines problems and comes up with solutions. By the End of Lesson 2, students will be able to use a design process to define and solve a problem.

Pre-Assessment: [Beginning Year Test](#) Unit 1 Pretest: [Engineering and Technology](#)

(SLO) Student Learning Objectives (with standards)	Student Learning Strategies	Formative Assessment ***suggested but not limited to the following***	Activities ***suggested but not limited to the following***	Modifications & Reflections ***suggested but not limited to the following***
<p>Engineering and Design K-2-ETS1-1</p> <p>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.</p> <p>Next Generation Science Standards - NGSS</p> <p>Science and Engineering</p>	<p>Unit Vocabulary: problem, solution, engineer, technology, design process, model</p> <p>Vocabulary Strategies p. 3</p> <p>Vocabulary Game, p. 3 -Assemble vocabulary game cards. Assign children to teams. Provide Internet or print images for children to refer to if they don't feel comfortable drawing. Have the person who guesses explain how they knew what word the drawing</p>	<p>Evaluate: Lesson 1, pp. 15-17 Check/Self Check Lesson 1: Lesson Check/Self Check Lesson Quiz</p>	<p>K.MD.A.2, MP.4, W.K.6, W.K.8 Engage: Use observations and questions to identify engineers as workers who find solutions to problems. Lesson Lesson Problem pp. 4-5 Can You Solve It? <i>Solve a Problem</i></p> <p>Explore/Explain:</p> <ul style="list-style-type: none"> • Problems and Solutions • Engineers <p>Hands-On-Activity -</p>	<p>Differentiate Instruction</p> <p>RTI/Extra Support - Pronounce each word as you point to it, and have children repeat after you. Have children say what they think each word means. Then have them find the word in the unit content and use the surrounding imagery and text to revise or confirm their understanding.</p> <p>Extension - Have small groups of children listen as</p>

<p>Practices: SEP</p> <ul style="list-style-type: none"> Asking questions and Defining Problems <p>Disciplinary Core Ideas: DCI</p> <ul style="list-style-type: none"> ETS1.A - Defining and Delimiting Engineering Problems <p>Crosscutting Concepts: CCC</p> <ul style="list-style-type: none"> Interdependence of Science, Engineering, and Technology 	<p>represented.</p> <p>Interactive Glossary</p> <p>Example Strategies:</p> <ul style="list-style-type: none"> -Children work in pairs to share an example of each word and explain why they think it's an example. Pairs compare their examples with those others have thought of. -Children think about how each word relates to engineering and technology. Children work in pairs and share their ideas with a partner <p>Instructional Strategies: Collaboration</p> <p>Opportunities in Unit:</p> <ul style="list-style-type: none"> Build on Prior Knowledge, pp. 4B, 5, 18B, 19 Small Groups, pp. 4, 9, 18, 25 Think, Pair, Share, pp. 13, 20, 27 Think, Apply, 		<p>Engineer It - Problem and Solution pp. 9-10</p> <p>Hands-On-Activity Worksheet</p>	<p>you pronounce the beginning sounds of a word</p> <p>Have children finish the word and take turns explaining what it means.</p>
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<p>Engineering and Design K-2-ETS1-2, K-2-ETS1-3</p> <p>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.</p> <p>Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.</p> <p>Science and Engineering Practices: SEP</p> <ul style="list-style-type: none"> Asking questions and Defining Problems 	<p>Share, pp. 6</p> <ul style="list-style-type: none"> Think, Discuss, Share, pp. 24 Cultivating New Questions, pp. 15, 29 	<p>Evidence Notebook: Have children discuss in small groups their ideas about which tower would work best and why. Encourage children to focus on the shape of each tower.</p> <p>Evaluate: Lesson 2 - pp. 29-31 Lesson 2: Lesson Check/Self Check</p> <p>Lesson Quiz</p> <p>Evaluate: Unit 1 Review</p> <p>Evaluate: Unit 1 Test</p>	<p>K.G.A-2, MP.2, SL.K.5</p> <p>Engage: Use observations and analyze a situation to solve a problem.</p> <p>Lesson Problem Can You Solve It? pp. 18-19 Light Problem</p> <p>Explore/Explain: A Design Process Steps 1 and 2 A Design Process Steps 3 and 4 A Design Process Step 5</p> <p>Hands-On-Activity - Engineer It - A Design Process pp. 25-26 Hands-On-Activity Worksheet</p>	<p>Differentiate Instruction: RTI/Extra Support: Allow children to handle, draw and describe the basic shapes, such as triangles, circles, squares, and rectangles.</p> <p>Extension: Have children draw or build other tower shapes that could solve the problem, such as a square or rectangle.</p> <p>ELL: Review shape vocabulary with children. Then provide supplies for small groups to build and test both towers. Afterward, have children practice using shape names to communicate their designs to classmates.</p>
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<ul style="list-style-type: none"> • Developing and Using Models • Analyzing and Interpreting Data <p>Disciplinary Core Ideas: DCI</p> <ul style="list-style-type: none"> • ETS1.A - Defining and Delimiting Engineering Problems • ETS1.B - Developing Possible Solutions • ETS1.C - Optimizing the Design Solution <p>Crosscutting Concepts: CCC: Structure and Function</p>				
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21st Century Themes Targeted: <i>Global Awareness, Career Awareness, Exploration and Preparation, Technology and Engineering</i>					
<u>21st Century Skills Targeted</u>					
Creativity & Innovation	Information Literacy	Media Literacy	Critical Thinking & Problem Solving	Communication & Collaboration	Life & Careers
<u>You Solve It- Off to the Races! Teacher Edition</u>	<u>Leveled Readers/Blue- How Can We Solve</u>	<u>People in Science & Engineering: Dr. Ayanna Howard</u>	<u>How Do Engineers Solve Problems?, What is the Design Process?</u>		Toy engineers work in much the same way as other

	<p>Problems?</p> <p>Leveled Readers/Green -Make a Better Bird Feeder</p> <p>Leveled Readers/Red-How Can We Solve Problems?</p>				<p>engineers in that they design and collaborate with others. They want to be sure the toy they make is safe and works as intended</p>
<p>Summative Assessments: Unit 1 Test: Engineering and Technology Unit 1 Performance-Based Assessment Task & Rubric Unit 1 Performance-Based Assessment Worksheet Students will define a problem, develop a model, and analyze data about the shape and stability of the solution, and compare and test their designs. This learning experience prepares children for mastery of the following Performance Expectations: Engineering and Design - K-2-ETS1-1, K-2-ETS1-2, and K-2-ETS1-3.</p>					

Kindergarten - Science Curriculum

Course Title: **Unit 2 - Forces and Motion**

Content Area: **Science**

Grade Level(s): **Kindergarten**

Date Revised _____

Date Adopted _____

Course Description: In this unit, children will...

- Plan and conduct an investigation about the speed of objects.
- Gather evidence to support or refute ideas about what causes motion.
- Analyze data from tests to determine if a tool works as intended.
- Explore pushes and pulls of different strengths and their effect on objects.

Total Number of Lessons in Unit 2: Lesson 1-What Is Motion?, Lesson 2-How Can We Change the Way Things Move?

Pacing Guide

Faster-Paced Core Path: Approximately 12 days

- [Grade K Unit Materials List](#)
- Lesson One: 5 days - What is Motion?
- Lesson Two: 5 days - How Can We Change the Way Things Move?

Unit 2 Review: 1 day

Unit 2 Test: 1 day

[Pacing Guide](#), [Detailed Pacing Guide](#)

<u>Unit</u>	<u>Week/Days</u>	<u>Standard NJSLS</u>	<u>Skill</u> <i>What We Want Students To Do...</i>
Unit 2: Forces and Motion Lesson 1: Engineer It- What is Motion?	5 days	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.
Lesson 2: Engineer It- How Can We Change the Way Things Move?	5 days	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.

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Unit Two Title: Forces and Motion
Time Frame: 12 Days

Standards

Standards/CPIs (Cumulative Progress Indicators) taught and assessed:

Performance Expectations: Engineering Design

- K-PS2-1 Plan and conduct an investigation to compare the effects of different strengths or different directions of pushes and pull 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 a pull.

Integrating the NGSS (Next Generation Science Standards) *Three Dimensions of Learning:

NGSS and HMH Science Dimensions

Science and Engineering Practices: SEP

- Planning and Carrying Out Investigations
- Scientific Investigations Use a Variety of Methods
- Analyzing and Interpreting Data

Disciplinary Core Ideas: DCI

- PS2.A Forces and Motion
- ETS1.A - Defining Engineering Problems
- PS2.B Types of Interactions
- PS3.C Relationship Between Energy and Forces

Crosscutting Concepts: CCC

- Cause and Effect

CONNECTIONS TO MATH

- MP.2 Reason abstractly and quantitatively
- K.MD.A.1 Describe measurable attributes of objects, such as length or weight.
- K.MD.A.2 Directly compare two objects with a measurable attribute in common, to see which objects has “more

of”/”less of” the attribute, and describe the difference.

CONNECTIONS TO ELA

- **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 questions in order to clarify something that is not understood.**

HIGHLIGHTED CAREER READY PRACTICES:

CRP1. Act as a responsible and contributing citizen and employee.

CRP2. Apply appropriate academic and technical skills.

CRP4. Communicate clearly and effectively and with reason.

CRP6. Demonstrate creativity and innovation.

CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.

SEL PRACTICES & COMPETENCIES:

- **Self-Management**
- **Social Awareness**
- **Responsible Decision-Making**
- **Relationship Skills**

Tips for Classroom Discussion:

- **Allow students plenty of time to reflect and formulate their answers.**
- **Call on students if you sense they have something to add but haven't spoken yet.**
- **At the same time, allow reluctant students not to speak unless they choose to.**
- **Encourage students to respond to each other as well as to you.**

Overall Goal (What is the big idea?) In Unit 2/Lesson 1: We Are Learning To (WALT) plan and conduct an investigation to determine how changing the speed or direction of an object can affect its motion. By the End of Lesson 1, students will be able to tell about motion, speed, and direction of objects.

In Unit 2/Lesson 2: We Are Learning to (WALT) collect and analyze data to determine if a design solution works as planned to change an object's speed or direction with a push or pull. By the End of Lesson 2, students will be able to tell how to change the speed and direction of objects.

Pre-Assessment: [Unit 2 Pretest: Forces and Motion](#)

(SLO) Student Learning Objectives (with standards)	Student Learning Strategies	Formative Assessment ***suggested but not limited to the following***	Activities ***suggested but not limited to the following***	Modifications & Reflections ***suggested but not limited to the following***
<p>K-PS2-1</p> <p>We are learning to plan and conduct an investigation to compare the effects of different</p>	<p>Lesson Vocabulary: motion, speed, direction</p> <p>Interactive Glossary</p> <p>Vocabulary Strategies,</p>	<p>Evaluate:</p> <p>Lesson 1 Check/Self Check</p> <p>Lesson Quiz</p>	<p>MP.2, K.MD.A.1, K.MD.A.2, W.K.7</p> <p>Engage: Plan and conduct an investigation to determine how changing</p>	<p>English Language Arts Handbook</p> <p>Math Handbook</p> <p>Differentiate Instruction</p>

<p>strengths or different directions of pushes and pull on the motion of an object.</p>	<p>P. 39</p> <p><u>Vocabulary Game-Guess the Word!, p.39</u></p> <p>-Make Cards. Place them in a pile</p> <p>-One player picks a card</p> <p>-That player acts out the word.</p> <p>-The other player guesses the word.</p> <p>RTI/Extra Support - Vocabulary: Pronounce each word as you point to it, and have children repeat after you. Have children work in pairs to share what they think each word means. Then have them find the words in the unit content, and use the associated pictures and text to revise or confirm their ideas.</p> <p>Build on Prior Knowledge: pp. 40B, 41, 54B. 55</p>		<p>the speed or direction of an object can affect its motion.</p> <p><u>Lesson 1, p. 40-41</u> <u>Can You Explain It? - Pushes and Pulls</u></p> <p><u>Explore/Explain:</u></p> <ul style="list-style-type: none"> ● Motion ● Speed ● Direction <p><u>Hands-On-Activity- Engineer It-Make a Ramp</u> <u>Make a Ramp-Worksheet</u></p>	<p><u>Reinforcing Vocabulary:</u> Have children move in place to demonstrate speed, and move to the right or left when asked to demonstrate direction. Use the vocabulary words to describe children’s actions. Remind children to look for these highlighted words as they proceed through the lesson.</p> <p><u>RTI/Extra Support:</u> Children who need extra support may benefit from playing Simon Says by using a small ball in a box top to respond to commands about the motion and direction of the ball. Possibilities include, “Push the ball so it moves fast,” “Change the direction the ball is moving,” and “Make the ball move in a zigzag path.”</p>
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	<p>Small Groups: pp. 40, 54, 59</p> <p>Think, Pair, Share: p. 48</p> <p>Think, Apply, Share: p. 61</p> <p>Cultivating New Questions: pp. 51, 63</p>			<p><u>Extension:</u> Children who are interested can learn more about speed limits and how speed is calibrated. They can use the Internet or other resources to look up information about what <i>miles per hour</i> means and how it is used to identify speed limits on roads and highways. Take children for a walk in the neighborhood of the school to identify and discuss speed limit signs.</p> <p><u>ELL:</u> Be sure to point out any labels, pictures, captions, and headings throughout the lesson to assist children with strategies to summarize chunks of content. Discuss with children real-life connections to content and provide hands-on examples of the motions and other concepts explored in the lesson.</p>
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<p style="text-align: center;">K-PS2-2</p> <p>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.</p>	<p>Lesson 2 Vocabulary: force</p> <p>Interactive Glossary</p>	<p>Evaluate:</p> <p>Lesson 2 Check/Self Check</p> <p>Lesson Quiz</p> <p>Evaluate:</p> <p>Unit 2 Review</p> <p>Evaluate:</p> <p>Unit 2 Test</p>	<p>MP.2, K.MD.A.1, K.MD.A.2, SL.K.3</p> <p>Engage: Collect and analyze data to determine if a design solution works as planned to change an object's speed or direction with a push or a pull.</p> <p>Lesson 2, pp. 54-55 Can You Solve It? <i>Change Direction and Speed</i></p> <p>Explore/Explain:</p> <ul style="list-style-type: none"> • Changing Speed • Bumping <p>Hands-On-Activity Engineer It-Build and Test a Marble Run</p> <p>Pushing Objects-Worksheet</p>	<p>Reinforcing Vocabulary: Ask a volunteer to push a book across a table. Point out that the person used a force to move the book; the book did not move on its own. Have children demonstrate other uses of force. Remind children to look for this highlighted word as they proceed through the lesson.</p> <p>RTI/Extra Support: Children who need extra support might benefit from playing a game of marbles to observe the effect of objects colliding. Have children pause after each turn to describe and analyze how the position of the marbles changed and why. Use this as an opportunity to reinforce key vocabulary, including motion, speed, direction and force.</p> <p>Extension:</p>
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				<p>Children who are interested in exploring more about forces can choose a specific sport to observe, such as baseball or soccer. Suggest they identify the forces players use as they participate in the sport and analyze the effect of the forces. Children can also research how an electronic game simulates the effect of objects changing speed and direction.</p> <p><u>ELL:</u> Use two marbles or blocks to demonstrate force, bump, direction, and speed. Demonstrate or have volunteers demonstrate by moving the objects. Have children use the words to describe actions and their effect.</p>
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21st Century Theme Targeted: *Global Awareness, Career Awareness, Exploration, and Preparation, Technology and Engineering*

[21st Century Skills Targeted](#)

Creativity & Innovation	Information Literacy	Media Literacy	Critical Thinking & Problem Solving	Communication & Collaboration	Life & Careers
<u>Connecting with NGSS</u>	<u>Differentiate Instruction</u>	Unit 2: Earth's Resources/Home Letter	<u>How Do Engineers Solve Problems?, What is the Design Process?</u> <u>Video-Knock Them Down</u> <u>Knock Them Down-Cause & Effect</u>	Build on Prior Knowledge: pp. 40B, 41, 54B, 55 Small Groups: pp. 40, 47, 54, 59 Think, Pair, Share: p. 48 Think, Apply, Share: pp. 61	Connections to Science: Connection to Earth and Space Sciences Lesson 1 p.43 Lesson 2 p. 58
<p>Summative Assessments: <u>Unit 2 Test: Forces and Motion</u> <u>Unit 2 Performance-Based Task & Rubric - Figure 8 in Motion</u> <u>Unit 2 Performance-Based Assessment Worksheet</u></p> <p>Students will plan and conduct an investigation in which they gather evidence to determine the effect of force used to move an object around a figure 8 course.</p> <p>This learning experience prepares children for mastery of the following Performance Expectations: Motion and Stability: Forces and Interactions: K-PS2-1, K-2-PSS2-2.</p>					

Kindergarten - Science Curriculum

Course Title: Unit 3 - Plants and Animals

Content Area: Science

Grade Level: Kindergarten

Date Revised _____

Date Adopted _____

Course Description: In this unit, children will...

- Use observations to describe patterns of what plants and animals need to survive
- Analyze data by collecting, recording, and sharing observations
- Use a model to show the relationship between the needs of different plants or animals and the places they live
- Use patterns as evidence to support claims
- Construct an argument supported by evidence for how plants and animals change the environment to survive

Total Number of Lessons in Unit 3: Lesson 1-What Do Plants Need?, Lesson 2-What Do Animals Need?, Lesson 3-Where Do Plants and Animals Live?, Lesson 4- How Do Plants and Animals Change Their Environment?

Pacing Guide

Faster-Paced Core Path: Approximately 22 days

- [Grade K Unit Materials List](#)
- Lesson 1: 5 days - What Do Plants Need?
- Lesson 2: 5 days - What Do Animals Need?
- Lesson 3: 5 days - Where Do Plants and Animals Live?
- Lesson 4: 5 days - How Do Plants and Animals Change Their Environment?

Unit 1 Review: 1 day

Unit 1 Test: 1 day

[Pacing Guide](#)

[Detailed Pacing Guide](#)

<u>Unit</u>	<u>Week/Days</u>	<u>Standard NJSL</u>	<u>Skill</u> <i>What We Want Students To Do...</i>

Unit 3: Plants and Animals			
Lesson 1: What Do Plants Need?	5 days	<u>K-LS1-1</u>	Use observations to describe patterns of what plants and animals (including humans) need to survive.
Lesson 2: What Do Animals Need?	5 days	<u>K-LS1-1</u>	Use observations to describe patterns of what plants and animals (including humans) need to survive.
Lesson 3: Where Do Plants and Animals Live?	5 days	<u>K-ESS3-1</u>	Use a model to represent the relationship between the needs of different plants or animals (including humans) and the places they live.
Lesson 4: How Do Plants and Animals Change Their Environment?	5 days	<u>K-ESS2-2</u>	Construct an argument supported by evidence for how plants and animals (including humans) can change the environment to meet their needs.

Unit Three Title: Plants and Animals

Time Frame: 22 days

Essential Questions

Lesson 1: What Do Plants Need?

Lesson 2: What Do Animals Need?

Lesson 3: Where Do Plants and Animals Live?

Lesson 4: How Do Plants and Animals Change Their Environment?

Standards

Standards / CPIs (cumulative Progress Indicators) taught and assessed:

Performance Expectations:

- K-LS1-1 Use observations to describe patterns of what plants and animals (including humans) need to survive.
- 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.
- K-ESS2-2 Construct an argument supported by evidence for how plants and animals (including humans) can change the environment to meet their needs.

Integrating the NGSS (Next Generation Science Standards) *Three Dimensions of Learning

NGSS and HMH Science Dimensions

Science and Engineering Practices: SEP

- Analyzing and Interpreting Data
- Scientific Knowledge is Based on empirical Evidence
- Developing and Using Models
- Engaging in Argument from Evidence

Disciplinary Core Ideas: DCI

- LS1.C Organization for Matter and Energy Flow in Organisms
- ESS3.A Natural Resources
- ESS2.E Biogeology

Crosscutting Concepts: CCC

- Patterns
- Systems and System Models

CONNECTIONS TO MATH

K.MD.A.2 Directly compare two objects with a measurable attribute in common, to see which objects has “more of”/”less of” the attribute, and describe the difference.

K.G.A.2 Correctly name shapes regardless of their orientations or overall size.

MP.2 Reason abstractly and quantitatively

MP.4 Model with Mathematics

CONNECTIONS TO ELA

W.K.6 With guidance and support from adults, explore a variety of digital tools to produce and publish writing, including in collaboration with peers.

W.K.8 With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question

SL.K.5 Add drawings to descriptions as desired to provide additional detail

HIGHLIGHTED CAREER READY PRACTICES:

CRP1. Act as a responsible and contributing citizen and employee.

CRP2. Apply appropriate academic and technical skills.

CRP4. Communicate clearly and effectively and with reason.

CRP6. Demonstrate creativity and innovation.

CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.

SEL PRACTICES & COMPETENCIES:

- **Self-Management**
- **Social Awareness**
- **Responsible Decision-Making**
- **Relationship Skills**
- **Tips for Classroom Discussion:**
 - **Allow students plenty of time to reflect and formulate their answers.**
 - **Call on students if you sense they have something to add but haven't spoken yet.**
 - **At the same time, allow reluctant students not to speak unless they choose to.**
 - **Encourage students to respond to each other as well as to you.**

Overall Goal (What is the big idea?) In Unit 3/Lessons 1-4: We Are Learning To (WALT) use observations as evidence to explain what plants need to live and grow, use observations as evidence to explain what animals need to live and grow, use models to explain where plants and animals live, and that they are part of a system with parts that work together in the natural world. use evidence to explain how plants and animals can change where they live to meet their needs. By the end of Lessons 1-4, students will be able to tell what plants need to live and grow, tell what animals need to live and grow, say why plants and animals live in certain places, and know how living things change the environment to meet their needs.

Unit 3 Pretest: [Plants and Animals](#)

(SLO) Student Learning Objectives (with standards)	Student Learning Strategies	Formative Assessment ***suggested but not limited to the following***	Activities ***suggested but not limited to the following***	Modifications & Reflections ***suggested but not limited to the following***
<p>K-LSI-1</p> <p>Use observations to describe patterns of what plants and animals (including humans) need to survive.</p>	<p>Unit Vocabulary: living things, nonliving things, shelter, desert, forest, pond, ocean and environment Interactive Glossary</p> <p>Vocabulary Strategies, P. 73</p> <p>Instructional Strategies: Collaboration Opportunities in Unit:</p> <ul style="list-style-type: none"> ● Build on Prior 	<p>Evaluate: Unit 3 Review</p> <p>Evaluate: Unit 3 Test</p>	<p>K.MD.A.2, SL.K.5 Engage: Use observations as evidence to explain what plants need to live and grow. Lesson 1 - What Do Plants Need? Lesson Problem pp. 74-5 Can You Solve It? <i>What can help the plant live and grow?</i> Evaluate: Lesson 1: Lesson Check/Self Check</p> <p>Explore/Explain:</p>	<p>English Language Arts handbook</p> <p>Math Handbook</p> <p>Differentiate Instruction</p> <p>RTI/Extra Support: Vocabulary Strategy - Pronounce each word as you point to it, and have children repeat after you. Help children locate each word on the page indicated. Have children work in pairs to review</p>

	<p>Knowledge, pp. 74B, 75, 90B, 106B, 107, 116, 122B, 123</p> <ul style="list-style-type: none"> ● Small Groups, pp. 74, 79, 90, 95, 111, 131 ● Think, Pair, Share, pp. 78, 82, 85, 101, 109, 124, 127, 130 ● Think, Apply, Share, pp. 77, 93, 94 ● Think, Pair, Apply, Share, pp. 117 ● Think, Draw, Pair, Share, p.100 ● Cultivating New Questions, pp. 87, 103, 119, 135 		<ul style="list-style-type: none"> ● Living and Nonliving Things ● Sunlight, Water, and Soil ● Air and Space to Grow <p>Hands-On-Activity - Plant Needs, pp. 79-80</p> <p>Hands-On-Activity Worksheet</p> <p>Evaluate: Lesson Check p. 87 Self Check pp. 88-9 Lesson Quiz</p>	<p>the photographs and text on that page, and talk about what they think the word means.</p>
<p>K-ESS3-1</p> <p>Use a model to represent the relationship between the needs of different plants or animals (including humans) and the places they live.</p>	<p>Unit Vocabulary: living things, nonliving things, shelter, desert, forest, pond, ocean and environment</p> <p>Interactive Glossary</p> <p>Instructional Strategies:</p>		<p>K.MD.A.2, MP.4, W.K.7</p> <p>Engage: Use observations as evidence to explain what animals need to live and grow.</p> <p>Lesson 2 - What Do Animals Need?</p> <p>Lesson Phenomenon, pp. 90-1</p>	<p>Extension: Some children may enjoy researching a specific animal. The animal may be one they know or one they have seen at a zoo, in a pet store, or on television. They can talk with a pet owner, the owner of a pet</p>

	<p>Collaboration Opportunities in Unit:</p> <ul style="list-style-type: none"> ● Build on Prior Knowledge, pp. 74B, 75, 90B, 106B, 107, 116, 122B, 123 ● Small Groups, pp. 74, 79, 90, 95, 111, 131 ● Think, Pair, Share, pp. 78, 82, 85, 101, 109, 124, 127, 130 ● Think, Apply, Share, pp. 77, 93, 94 ● Think, Pair, Apply, Share, pp. 117 ● Think, Draw, Pair, Share, p.100 ● Cultivating New Questions, pp. 87, 103, 119, 135 		<p>Can You Explain It? <i>Animal Needs</i></p> <p>Explore/Explain:</p> <ul style="list-style-type: none"> ● What People Need ● What Animals Need ● Water for Animals ● Air for Animals ● Food for Animals <p>Hands-On-Activity - Pill Bug Home - pp. 95-6 Hands-On-Activity Worksheet</p> <p>Evaluate: Lesson 2 Lesson 2: Lesson Check/Self Check</p> <p>Evaluate: Lesson Check p. 103 Self Check pp. 104-5 Lesson Quiz</p>	<p>store, or a zookeeper. Or they may use books, the internet, or other resources to find more information.</p>
<p>K-ESS2-2</p> <p>Construct an argument supported by evidence</p>	<p>Unit Vocabulary: living things, nonliving things, shelter, desert, forest, pond, ocean and</p>		<p>MP.2, MP.4, K.CC.A.1, SL.K.5</p> <p>Engage: Use models to explain where plants and</p>	<p>ELL: The vocabulary words in this lesson appear in their singular and plural form . To help</p>

<p>for how plants and animals (including humans) can change the environment to meet their needs.</p>	<p>environment Interactive Glossary Instructional Strategies: Collaboration Opportunities in Unit:</p> <ul style="list-style-type: none"> ● Build on Prior Knowledge, pp. 74B, 75, 90B, 106B, 107, 116, 122B, 123 ● Small Groups, pp. 74, 79, 90, 95, 111, 131 ● Think, Pair, Share, pp. 78, 82, 85, 101, 109, 124, 127, 130 ● Think, Apply, Share, pp. 77, 93, 94 ● Think, Pair, Apply, Share, pp. 117 ● Think, Draw, Pair, Share, p.100 ● Cultivating New Questions, pp. 87, 103, 119, 135 		<p>animals live, and that they are part of a system with parts that work together in the natural world. Lesson 3 - Where Do Plants and Animals Live? Lesson Phenomenon, pp. 106-7 Can You Explain It? <i>Living Things All Around</i></p> <p>Explore/Explain:</p> <ul style="list-style-type: none"> ● Deserts ● Forests ● Pond ● Oceans <p>Hands-On-Activity - Where Plants Live, pp. 111-112 Hands-On-Activity Worksheet</p> <p>Evaluate: Lesson 3 Lesson 1: Lesson Check/Self Check</p> <p>Evaluate: Lesson Check p. 119 Self Check pp. 120-121 Lesson Quiz</p>	<p>children associate the forms, write the word <i>desert</i> and read it aloud. Tell children the word refers to only one <i>desert</i>. Then write the word <i>deserts</i>. Underline the <i>second s</i> and tell the children that the word <i>deserts</i> refers to more than one <i>desert</i>. So, <i>deserts</i> can refer to <i>two deserts</i> or to <i>many deserts</i>. Follow a similar procedure for the words <i>forest, pond, and ocean</i>.</p>
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			<p>K.CC.6, W.K.7, RI.K.1 Engage: Use evidence to explain how plants and animals can change where they live to meet their needs. Lesson 4 - How Do Plants and Animals Change Their Environment? Lesson Phenomenon, pp. 122-123 Can You Explain It? <i>Change Animals and Plants Make</i> Explore/Explain:</p> <ul style="list-style-type: none"> ● Plant Changes ● Animal Changes ● Changes that Harm the Environment ● Changes that Help the Environment <p>Hands-On-Activity - Plan a Park, pp. 131-132 Hands-On-Activity Worksheet Evaluate: Lesson 4</p>	<p>Reinforcing Vocabulary: Have children identify things in the classroom. Point out that everything they mentioned is part of their environment. Explain that the word <i>environment</i> refers to everything in a place. Natural environments are places in the natural world. Remind children to look for this highlighted word as they proceed through the lesson.</p>

			Lesson 1: Lesson Check/Self Check Evaluate: Lesson Check p. 135 Self Check pp. 136-137 Lesson Quiz	
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21 st Century Theme Targeted – Global Awareness, Financial, Economic, Business and Entrepreneurial Literacy, Civic Literacy Health Literacy)					
21st Century Skills Targeted					
Creativity & Innovation	Information Literacy	Media Literacy	Critical Thinking & Problem Solving	Communication & Collaboration	Life & Careers
Connections to Community	Differentiate Instruction	Connections to Community	Unit Project-Animal Changes	Build on Prior Knowledge: pp. 74B, 75, 90B, 91, 106B, 107, 116, 122B, 123 Small Groups: pp. 74, 79, 90, 95, 111, 131 Think, Pair, Share: p. 78, 82, 85, 101, 109, 124, 127, 130 Think, Apply, Share: pp. 117	People in Science & Engineering Veterinarian A Trip to the Zoo! Take it Further
				Think, Draw,	

				Pair, Share p.100	
Summative Assessments: Unit 3 Test: Plants and Animals Unit 3 Performance Task and Rubric: Do Plants Need Air? Unit 3 Performance-Based Assessment Worksheet Students will use observations to determine patterns that can be used as evidence that plants need air to live and grow. This learning experience prepares children for mastery of the following Performance Expectations: K-LS1-1, K-ESS3-1, and K-ESS2-2.					

Kindergarten - Science Curriculum

Course Title: Unit 4 - Sun Warms Earth

Content Area: Science

Grade Level: Kindergarten

Date Revised _____

Date Adopted _____

Course Description: In this unit, children will...

- Make observations to construct an evidence-based account of the effect of sunlight on Earth's surface.
- Make observations to collect data that can be used to make comparisons.
- Use tools and materials provided to design and build a device that protects people from the sun.
- Describe the causes that create observable patterns associated with the effect of sunlight on Earth's surface.

Total Number of Lessons in Unit 4: Lesson 1-How Does the Sun Warm Earth?, Lesson 2-How Can I Protect Myself from the Sun?

Pacing Guide

Faster-Paced Core Path: Approximately 12 days

- [Grade K Unit Materials List](#)
- Lesson One: 5 days - How Does the Sun Warm Earth?
- Lesson Two: 5 days - How Can I Protect Myself From the Sun?

Unit 1 Review: 1 day

Unit 1 Test: 1 day

[Pacing Guide](#)

[Detailed Pacing Guide](#)

<u>Unit</u>	<u>Week/Days</u>	<u>Standard NJSL</u>	<u>Skill</u> <i>What We Want Students To Do...</i>
Unit 4: Sun Warms Earth			
Lesson 1: How Does Sun Warm Earth?	5 days	PS3-1	Make observations to determine the effect of sunlight on Earth's surface.
Lesson 2: How Can I Protect Myself from the Sun?	5 days	PS3-2	Use tools and materials to design and build a structure that will reduce the warming effect of

			sunlight on an area.
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Unit Four Title: Sun Warms Earth			
Time Frame: 12 days			
Essential Questions			
Lesson 1:			
How does the Sun warm Earth?			
Lesson 2:			
How can I protect myself from the Sun?			
Standards			
Standards / CPIs (cumulative Progress Indicators) taught and assessed:			
<u>Performance Expectations:</u>			
<ul style="list-style-type: none"> ● PS3-1 Make observations to determine the effect of sunlight on Earth’s surface. ● PS3-2 Use tools and materials to design and build a structure that will reduce the warming effect of sunlight on an area. 			
Integrating the NGSS (Next Generation Science Standards) *Three Dimensions of Learning			
<u>NGSS and HMH Science Dimensions</u>			
Science and Engineering Practices: SEP			
<ul style="list-style-type: none"> ● Planning and Carrying Out Investigations ● Scientific Investigations Use a Variety of Methods ● Constructing Explanations and Designing Solutions 			
Disciplinary Core Ideas: DCI			
<ul style="list-style-type: none"> ● PS3-B - Conservation of Energy and Energy Transfer 			
Crosscutting Concepts: CCC			
<ul style="list-style-type: none"> ● Cause and Effect 			
<u>CONNECTIONS TO MATH</u>			
K.MD.A.2 Directly compare two objects with a measurable attribute in common, to see which objects has “more of”/”less			

of” the attribute, and describe the difference.

CONNECTIONS TO ELA

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).

HIGHLIGHTED CAREER READY PRACTICES:

CRP1. Act as a responsible and contributing citizen and employee.

CRP2. Apply appropriate academic and technical skills.

CRP4. Communicate clearly and effectively and with reason.

CRP6. Demonstrate creativity and innovation.

CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.

SEL PRACTICES & COMPETENCIES:

- **Self-Management**
- **Social Awareness**
- **Responsible Decision-Making**
- **Relationship Skills**

Tips for Classroom Discussion:

- **Allow students plenty of time to reflect and formulate their answers.**
- **Call on students if you sense they have something to add but haven’t spoken yet.**
- **At the same time, allow reluctant students not to speak unless they choose to.**
- **Encourage students to respond to each other as well as to you.**

Overall Goal (What is the big idea?) In Unit 4/Lessons 1 and 2: We Are Learning To (WALT) observe how sunlight affects land and water on Earth’s surface and how to design and build a structure to reduce the effect of sunlight on an area of Earth’s surface. By the End of Lesson 1, students will be able to tell what the sun warms on Earth. By the End of Lesson 2, students will be able to tell some ways people can protect themselves from the sun.

Pre-Assessment: [Unit 4 Pretest: Sun Warms Earth](#)

(SLO) Student Learning Objectives (with standards)	Student Learning Strategies	Formative Assessment ***suggested but not limited to the following***	Activities ***suggested but not limited to the following***	Modifications & Reflections ***suggested but not limited to the following***
<p>PS3-1</p> <p>Make observations to determine the effect of sunlight on Earth’s surface.</p>	<p>Unit Vocabulary: light, heat and shade Interactive Glossary</p> <p>Instructional Strategies: Collaboration Opportunities in Unit:</p> <ul style="list-style-type: none"> ● Build on Prior Knowledge, pp. 146B, 147, 158B, 159 ● Small Groups, pp. 146, 151, 158, 163 	<p>Evaluate: Unit 4 Review</p> <p>Evaluate: Unit 4 Test</p>	<p>K.MD.A.2, W.K.7 Engage: Observe how sunlight affects land and water on Earth’s surface. Lesson 1: How Does the Sun Warm Earth? Lesson Phenomenon pp. 146-7 Can You Explain It? <i>The Sun’s Heat and Light</i> Explore/Explain:</p> <ul style="list-style-type: none"> ● The Sun’s Light ● The Sun’s Heat <p>Hands-On-Activity -The Sun’s Heat pp. 151-152</p>	<p>English Language Arts Handbook</p> <p>Math Handbook</p> <p>Differentiate Instruction</p> <p>RTI/Extra Support: Have children describe the sky during the daytime and at night. Have children explain the differences. Guide them to understand that the presence of light from</p>

	<ul style="list-style-type: none"> ● Think, Pair, Share, pp. 165 ● Think, Pair, Share, Draw pp. 161 ● Cultivating New Questions, pp. 155, 167 <p>Alternative Engage Strategy: Sun Walk, P. 146 - Allow 5 minutes for children to brainstorm. Use children’s responses to form a web with the word sun in the middle. Take children on a sun walk and have them suggest additional words to add to the web.</p> <p>Read, Write, Share! P. 150 - Have children work in small groups. Give a volunteer a small stone or other object. Have that child tell about a sunny-day activity and then pass the stone to a neighbor. Have children write about or draw a</p>		<p><u>Hands-On-Activity Worksheet</u></p> <p>Evaluate: <u>Lesson 1: Lesson Check/Self Check</u></p> <p>Evaluate: Lesson Check p. 155 Self Check pp. 156-157 Lesson Quiz</p>	<p>the sun makes the sky light during the day. The absence of sunlight is why the sky is dark at night.</p> <p>Extension: Children who want to find out more can do research on the sun. Supply children with reference books, images, and a secure Internet site. Suggest that pairs work together to make a poster of what they have learned about the sun’s light.</p> <p>Extension: p. 148 Have children keep track of sunrise and sunset times for a week and discuss any patterns. Invite children to make predictions about future sunrises and sunsets.</p>
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	<p>favorite sunny-day activity. Remind children that they can write about a topic to tell what they learned.</p>			
<p>PS3-2</p> <p>Use tools and materials to design and build a structure that will reduce the warming effect of sunlight on an area.</p>	<p>Unit Vocabulary: light, heat and shade Interactive Glossary</p> <p>Instructional Strategies: Collaboration Opportunities in Unit:</p> <ul style="list-style-type: none"> ● Build on Prior Knowledge, pp. 146B, 147, 158B, 159 ● Small Groups, pp. 146, 151, 158, 163 ● Think, Pair, Share, pp. 165 ● Think, Pair, Share, Draw pp. 161 ● Cultivating New Questions, pp. 155, 167 		<p>K.MD.A.2, W.K.7 Engage: Design and build a structure to reduce the effect of sunlight on an area of Earth’s surface. Lesson 2: How Can I Protect Myself From the Sun? Lesson Problem pp. 158-159 Can You Explain It Solve It? Sandbox Problem Explore/Explain:</p> <ul style="list-style-type: none"> ● Heat, Light, and Shade ● Engineers at Work <p>Hands-On-Activity - Engineer It-Design Shade pp. 163-164 Hands-On-Activity Worksheet</p> <p>Evaluate: Lesson 2: Lesson Check/Self Check</p>	<p>English Language Arts Handbook</p> <p>Math Handbook</p> <p>Differentiate Instruction</p> <p>Differentiate Instruction: p. 158B</p> <ul style="list-style-type: none"> ● Lesson Vocabulary ● Reinforcing Vocabulary ● RTI/Extra Support ● Extension <p>ELL: Help children understand how the word <i>protect</i> is used in this lesson. Write the following sentence on the board, “<i>A hat protects your head from the sun.</i>” Underline the word <i>protects</i> and have</p>

			Evaluate: Lesson Check p. 167 Self Check pp. 168-169 Lesson Quiz	children brainstorm what they think it means. Guide children to understand that <i>protect means save from harm</i> . Have them talk about ways they stay protected from the sun.
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21st Century Theme Targeted – Global Awareness, Financial, Economic, Business and Entrepreneurial Literacy, Civic Literacy Health Literacy)					
<u>21st Century Skills Targeted</u>					
Creativity & Innovation	Information Literacy	Media Literacy	Critical Thinking & Problem Solving	Communication & Collaboration	Life & Careers
Connecting with NGSS	Differentiate Instruction	Connections to Science: <ul style="list-style-type: none"> Life Science, Lesson 1, P. 149 Life Science, Lesson 2, P. 163 	Unit Project: The Sun Heats Up Land and Water	You Solve It - Interactive Opportunity Cause and Effect: Going Outside to Play	People in Science and Engineering Careers in Science & Engineering
Summative Assessments: Unit 4 Test: Sun Warms Earth Unit 4 Performance Task Assessment & Rubric: Build A Model Shelter Unit 4 Performance-Based Assessment Worksheet Students will design a model shelter from the sun and analyze test results to determine its effect on the pattern of sunlight on Earth’s surface. This learning experience prepares children for mastery of the following Performance Expectations: PS3-1 and PS3-2					

Kindergarten - Science Curriculum

Course Title: Unit 5 - Weather

Content Area: Science

Grade Level: Kindergarten

Date Revised _____

Date Adopted _____

Course Description: In this unit, children will...

- Use observations to describe different kinds of weather.
- Explore observable weather patterns.
- Use patterns as evidence to describe weather conditions.
- Ask questions to find out about different kinds of weather.
- Explore technologies meteorologists use to predict weather and severe weather conditions.

Total Number of Lessons in Unit 5: Lesson 1-How Can We Observe Weather Patterns?, Lesson 2-How Can We Measure Weather?, Lesson 3-What Are the Kinds of Severe Weather?, Lesson 4-How Can Forecasts Help Us?

Pacing Guide

Faster-Paced Core Path: Approximately 22 days

- [Grade K Unit Materials List](#)
- Lesson One: 5 days - How Can We Observe Weather Patterns?
- Lesson Two: 5 days - How Can We Measure Weather?
- Lesson Three: 5 days - What Are the Kinds of Severe Weather?
- Lesson Four: 5 days - How Can Forecasts Help Us?

Unit 5 Review: 1 day

Unit 5 Test: 1 day

[Pacing Guide](#)

[Detailed Pacing Guide](#)

<u>Unit</u>	<u>Week/Days</u>	<u>Standard NJSL</u>	<u>Skill</u>
Unit 5: Weather			<i>What We Want Students To Do...</i>
Lesson 1: How Can We Observe Weather Patterns?	5 days	K-ESS2-1	Use and share observations of local weather conditions to describe patterns over time.
Lesson 2: How Can We Measure Weather?	5 days	K-ESS2-1	Use and share observations of local weather conditions to describe patterns over time.
Lesson 3: What Are Kinds of Severe Weather?	5 days	K-ESS3-2	Ask questions to obtain information about the purpose

<p>Lesson 4: How Can Forecasts Help Us?</p>	<p>5 days</p>	<p>K-ESS3-2</p>	<p>of weather forecasting to prepare for, and respond to, severe weather.</p> <p>Ask questions to obtain information about the purpose of weather forecasting to prepare for, and respond to, severe weather.</p>
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<p>Unit Five Title: Weather Time Frame: 22 days</p>			
<p>Essential Questions</p>			
<p>Lesson 1: How Can We Observe Weather Patterns?</p>			
<p>Lesson 2: How Can We Measure Weather?</p>			
<p>Lesson 3: What Are the Kinds of Severe Weather?</p>			
<p>Lesson 4: How Can Forecasts Help Us?</p>			
<p>Standards</p>			
<p>Standards / CPIs (cumulative Progress Indicators) taught and assessed:</p>			
<p>Performance Expectations:</p>			

- **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.**

**Integrating the NGSS (Next Generation Science Standards) *Three Dimensions of Learning
[NGSS and HMH Science Dimensions](#)**

Science and Engineering Practices: SEP

- **Asking questions and Defining Problems**
- **Analyzing and Interpreting Data**
- **Science Knowledge is Based on Empirical Evidence**
- **Obtaining, Evaluating, and Communicating Information**

Disciplinary Core Ideas: DCI

- **ETS1.A Defining and Delimiting Engineering Problems**
- **ESS2.D Weather and Climate**
- **ESS3.B Natural Hazards**

Crosscutting Concepts: CCC

- **Interdependence of Science, Engineering, and Technology**
- **Patterns**
- **Cause and Effect**
- **Influence of Engineering, Technology and Science on Society and the Natural World**

CONNECTIONS TO MATH

K.CC.C.6 Compare numbers.

K.CC.A.1 Know number names and the count sequence. Count to 100 by ones and tens.

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 measurable attribute in common, to see which object has “more of”/”less of” the attribute, and describe the difference.

K.MD.B.3 Classify objects and count the number of objects in each category.

K.CC.B.5 Count to answer “how many?” questions about as many as 20 things arranged in a line, a rectangular array, or a circle, or as many as 10 things in a scattered configuration; given a number from 1-20, count out that many objects.

K.G.A.2 Correctly name shapes regardless of their orientations or overall size.

MP.2 Reason abstractly and quantitatively.

MP.4 Model with Mathematics.

CONNECTIONS TO ELA

RI.K.1 With prompting and support, ask and answer questions about key details in a text.

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.

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.

HIGHLIGHTED CAREER READY PRACTICES:

CRP1. Act as a responsible and contributing citizen and employee.

CRP2. Apply appropriate academic and technical skills.

CRP4. Communicate clearly and effectively and with reason.

CRP6. Demonstrate creativity and innovation.

CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.

SEL PRACTICES & COMPETENCIES:

- **Self-Management**
- **Social Awareness**
- **Responsible Decision-Making**
- **Relationship Skills**

Tips for Classroom Discussion:

- Allow students plenty of time to reflect and formulate their answers.
- Call on students if you sense they have something to add but haven't spoken yet.
- At the same time, allow reluctant students not to speak unless they choose to.
- Encourage students to respond to each other as well as to you.

Overall Goal (What is the big idea?) In Unit 5/Lessons 1-4: We Are Learning To (WALT) observe and describe patterns in weather over time, observe and measure weather in order to identify patterns in local weather, identify patterns in different types of severe local weather, use information from text and images to think about ways to prepare for local severe weather . By the End of Lesson 1, students will be able to describe kinds of weather and weather patterns. By the End of Lesson 2, students will be able to explain how to measure weather. By the End of Lesson 3, students will be able to describe patterns for different kinds of severe weather. By the End of Lesson 4, students will be able to explain how to get ready for severe weather.

Pre-Assessment: [Unit 5 Pretest: Weather](#)

(SLO) Student Learning Objectives (with standards)	Student Learning Strategies	Formative Assessment ***suggested but not limited to the following***	Activities ***suggested but not limited to the following***	Modifications & Reflections ***suggested but not limited to the following***
<p>K-ESS2-1</p> <p>Use and share observations of local weather conditions to describe patterns over time.</p>	<p>Unit Vocabulary: weather pattern, season, temperature, severe weather and weather forecast</p> <p>Interactive Glossary</p> <ul style="list-style-type: none"> Weather Stories, p. 178 Evidence Notebook, p. 180 <p>-How do we dress in hot weather?</p> <p>Evidence Notebook, p.</p>	<p>Evaluate: Unit 5 Review</p> <p>Evaluate: Unit 5 Test</p>	<p>MP.2, MP.4, K.CC.C.6, K.MD.B.3, W.K.7, W.K.2</p> <p>Engage: Observe and describe patterns in weather over time.</p> <p>Lesson 1: How Can We Observe Weather Patterns?</p> <p>Lesson Phenomenon pp. 178-9</p> <p>Can You Explain It? <i>Kinds of Weather</i></p> <p>Explore/Explain:</p> <ul style="list-style-type: none"> Different Kinds of Weather Weather Patterns During the Day 	<p>Differentiate Instruction</p> <p>Differentiated Instruction:</p> <p>Lesson 1: p. 178B</p>

	<p>197 - What pattern do you see with the thermometer? Instructional Strategies: Collaboration Opportunities in Unit:</p> <ul style="list-style-type: none"> ● Build on Prior Knowledge, pp. 178B, 179, 194B, 195, 208B, 209,224B 225 ● Small Groups, pp. 183, 194, 201, 208, 211, 224, 231 ● Think, Pair, Share, pp. 203, 229, 233 ● Thing, Draw, Share, p. 183 ● Think, Apply, Share, pp. 181, 189, 196, 198 ● Think, Pair, Draw, Share, Share, pp. 214 ● Think, Apply, Share, pp. 181, 189, 196, 198 ● Think, Apply, 		<ul style="list-style-type: none"> ● Weather Patterns During the Week ● The Seasons <p>Hands-On-Activity - pp. 183-4 Observing Patterns in Weather Hands-On-Activity Worksheet</p> <p>Evaluate: Lesson 1 Lesson Self Check Lesson Check/Video Lesson 1: Quiz</p> <p>MP.2, MP.4, K.CC.A.1, K.MD.A.1, K.MD.A.2, W.K.7, W.K.2 Engage: Observe and measure weather in order to identify patterns in local weather. Lesson 2: How Can We Measure Weather? Lesson Problem, pp. 194-5 Can You Solve It? <i>Measuring Weather</i> Explore/Explain:</p> <ul style="list-style-type: none"> ● Weather Tools 	<p>Differentiated Instruction:</p> <p>Lesson 2: p. 194B</p>
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<p style="text-align: center;">K-ESS3-2</p> <p>Ask questions to obtain information about the purpose of weather forecasting to prepare for, and respond to, severe weather.</p>	<p>Draw, Share, p. 230</p> <ul style="list-style-type: none"> • Think, Build, Share, p. 219 • Cultivating New Questions, pp. 191, 205, 221, 235 <p>Unit Vocabulary: weather pattern, season, temperature, severe weather and weather forecast</p> <p>Interactive Glossary</p> <p>Instructional Strategies: Collaboration Opportunities in Unit:</p> <ul style="list-style-type: none"> • Build on Prior 		<ul style="list-style-type: none"> • Using Weather Tools <p>Hands-On-Activity, pp. 201-2</p> <p>Measuring Weather with Tools Hands-On-Activity Worksheet</p> <p>Evaluate: Lesson 2</p> <p>Lesson Self Check Lesson Check/Video Lesson 2: Quiz</p> <p>MP.4, K.CC.A.1, RI.K.1, W.K.2. SL.K.3</p> <p>Engage: Identify patterns in different types of severe local weather.</p> <p>Lesson 3: What are Kinds of Severe Weather?</p> <p>Lesson Phenomenon pp. 208-9</p> <p>Can You Explain It? <i>Severe Weather</i></p>	<p>Differentiated Instruction: Lesson 3: p. 208B</p> <p>ELL: Bring in a funnel for children to investigate. Explain that</p>
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	<p>Knowledge, pp. 178B, 179, 194B, 195, 208B, 209, 224B 225</p> <ul style="list-style-type: none"> ● Small Groups, pp. 183, 194, 201, 208, 211, 224, 231 ● Think, Pair, Share, pp. 203, 229, 233 ● Thing, Draw, Share, p. 183 ● Think, Apply, Share, pp. 181, 189, 196, 198 ● Think, Pair, Draw, Share, Share, pp. 214 ● Think, Apply, Share, pp. 181, 189, 196, 198 ● Think, Apply, Draw, Share, p. 230 ● Think, Build, Share, p. 219 ● Cultivating New Questions, pp. 191, 205, 221, 235 		<p>Explore/Explain:</p> <ul style="list-style-type: none"> ● Thunderstorms ● Blizzards ● Tornadoes ● Hurricanes <p>Hands-On-Activity, pp. 211-12</p> <p>Engineer It - Model Thunder Hands-On-Activity Worksheet</p> <p>Evaluate: Lesson 3 Lesson Self Check Lesson Check/Video Lesson 3: Quiz</p> <p>MP.4, K.CC.B.5, R.I.K.1, SL.K.3</p> <p>Engage: Use information from text and images to think about ways to prepare for local severe weather.</p> <p>Lesson 4: How Can Forecasts Help Us?</p> <p>Lesson Phenomenon pp. 224-5</p>	<p>the funnel has the same shape as many tornadoes.</p> <p>Extension: Have children research recent hurricanes, including the date, place, and severity of the hurricane. Work with children to locate each hurricane on a map.</p> <p>Differentiated Instruction:</p> <p>Lesson 4: p. 224B</p>
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			<p>Can You Explain It? <i>Plan for Severe Weather</i></p> <p>Explore/Explain:</p> <ul style="list-style-type: none"> • Weather Forecast • Prepare for Weather <p>Hands-On-Activity, pp. 231-2</p> <p>Engineer It -</p> <p>Lesson 4: Plan a Severe Weather Safety Kit Hands-On-Activity</p> <p>Evaluate: Lesson 4</p> <p>Lesson Self Check</p> <p>Lesson Check/Video</p> <p>Lesson 4: Quiz</p>	
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21 st Century Theme Targeted – Global Awareness, Financial, Economic, Business and Entrepreneurial Literacy, Civic Literacy Health Literacy)					
21st Century Skills Targeted					
Creativity & Innovation	Information Literacy	Media Literacy	Critical Thinking & Problem Solving	Communication & Collaboration	Life & Careers
Connections to Community	Differentiate Instruction	Unit 5: Weather/Home Letter	Unit 5: Weather, p. 175 Unit Project: Local Weather Forecasts	Build on Prior Knowledge: pp. 178B, 179,	Connections to Science: Connections to

			<p><u>Technology and Engineering</u></p>	<p>194B, 195, 208B, 209, 224B, 225</p> <p>Small Groups: pp. 183, 194, 201, 208, 211, 224, 231</p> <p>Think, Pair, Share: p. 203, 229, 233</p> <p>Think, Apply, Share: pp. 181, 189, 196, 198</p> <p>Think, Draw, Share: pp. 183</p> <p>Think, Pair, Draw, Share: p. 214</p> <p>Think, Apply, Draw, Share: p. 230</p> <p>Think, Build, Share: p. 219</p>	<p>Life Science: Lesson 1, p. 182,188</p> <p>Connection to Engineering Design: Lesson 2, p. 200, Lesson 3, p. 220, Lesson 4, p. 228</p> <p>Connections to Physical Science: Lesson 3, p. 213</p> <p><u>Plan a Trip! You Solve It!</u></p> <p><u>Plan a Trip! Interactive Activity</u></p> <p><u>Careers in Science & Engineering/M eteorologist</u></p>
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Summative Assessments:

[Unit 5 Test: Weather](#)

[Unit 5 Performance Task Assessment & Rubric: Changing Temperatures](#)

[Unit 5 Performance Task Worksheet](#)

Students will record and analyze data to determine a pattern in temperature changes during the day. This learning experience prepares children for mastery of the following Performance Expectations:

K-ESS2-1 and K-ESS3-2.

Kindergarten - Science Curriculum

Course Title: Unit 6 - Earth's Resources

Content Area: Science

Grade Level: Kindergarten

Date Revised _____

Date Adopted _____

Course Description: In this unit, children will...

- Identify air, water, rocks, and soil as natural resources.
- Use evidence to explain that living things need water, air, and resources from the land.
- Describe how natural resources work as part of a system in the natural world.
- Explain ways people use natural resources and the impact they have on the environment.
- Design and communicate solutions to overcome negative impacts on the environment.

Total Number of Lessons in Unit 6: Lesson 1-What Are Natural Resources?, Lesson 2-How Can We Save Natural Resources?

Pacing Guide

Faster-Paced Core Path: Approximately 12 days

- [Grade K Unit Materials List](#)
- Lesson One: 5 days - What Are Natural Resources?
- Lesson Two: 5 days - How Can We Save Natural Resources?

Unit 6 Review: 1 day

Unit 6 Test: 1 day

[Pacing Guide](#)

[Detailed Pacing Guide](#)

<u>Unit</u>	<u>Week/Days</u>	<u>Standard</u> <u>NJSLS</u>	<u>Skill</u>
Unit 6: Earth's Resources			<i>What We Want Students To Do...</i>

<p>Lesson 1: What Are Natural Resources?</p>	<p>5 days</p>	<p>K-ESS3-1</p>	<p>Use a model to represent the relationship between the needs of different plants and animals (including humans) and the places they live.</p>
<p>Lesson 2: Engineer It How Can We Save Natural Resources?</p>	<p>5 days</p>	<p>K-ESS3-3</p>	<p>Communicate solutions that will reduce the impact of humans on the land, water, air, and/or other living things in the local environment.</p>

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<p>Unit Six Title: Earth's Resources Time Frame: 12 days</p>
<p style="text-align: center;">Essential Questions</p> <p>Lesson 1: What are Natural Resources?</p> <p>Lesson 2: How can we save Natural Resources?</p>
<p style="text-align: center;">Standards</p>
<p>Standards / CPIs (Cumulative Progress Indicators) taught and assessed: Performance Expectations:</p> <ul style="list-style-type: none"> ESS3-1 Use a model to represent the relationship between the needs of different plants and animals (including humans) and the

places they live.

- 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.

Integrating the NGSS (Next Generation Science Standards) *Three Dimensions of Learning [NGSS and HMH Science Dimensions](#)

Science and Engineering Practices: SEP

- Developing and Using Models
- Obtaining, Evaluating, and Communicating Information

Disciplinary Core Ideas: DCI

- ESS3.A Natural Resources
- ESS3.C Human Impacts on Earth's Systems
- ETS1.B Developing Possible Solutions
- ESSE.C 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.

Crosscutting Concepts: CCC

- Systems and System Models
- Cause and Effect

CONNECTIONS TO MATH

MP.2 Reason abstractly and quantitatively.

MP.4 Model with mathematics.

K.CC.1 Count to 100 by ones and tens.

K.CC.B.5 Count to answer “how many?” questions about as many as 20 things arranged in a line, rectangular array, or a circle, or as many as 10 things in a scattered configuration; given a number from 1-20, count out that many objects.

CONNECTIONS TO ELA

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.

SL.K.5 Add drawings or other visual displays to descriptions as desired to provide additional detail.

HIGHLIGHTED CAREER READY PRACTICES:

CRP1. Act as a responsible and contributing citizen and employee.

CRP2. Apply appropriate academic and technical skills.

CRP4. Communicate clearly and effectively and with reason.

CRP6. Demonstrate creativity and innovation.

CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.

SEL PRACTICES & COMPETENCIES:

- **Self-Management**
- **Social Awareness**
- **Responsible Decision-Making**
- **Relationship Skills**

Tips for Classroom Discussion:

- **Allow students plenty of time to reflect and formulate their answers.**
- **Call on students if you sense they have something to add but haven't spoken yet.**
- **At the same time, allow reluctant students not to speak unless they choose to.**
- **Encourage students to respond to each other as well as to you.**

Overall Goal (What is the big idea?) In Unit 6/Lessons 1 and 2: We Are Learning To (WALT) model the relationship between natural resources and how people use them to meet their needs and to identify ways people use natural resources, and design and communicate solutions to overcome the negative impact on the environment. By the End of Lesson 1, students will be able to tell how people use natural resources. By the End of Lesson 2, students will be able to tell how people can help save natural resources.

Pre-Assessment: [Unit 6 Pretest: Earth's Resources](#)

(SLO) Student Learning Objectives (with standards)	Student Learning Strategies	Formative Assessment ***suggested but not limited to the following***	Activities ***suggested but not limited to the following***	Modifications & Reflections ***suggested but not limited to the following***
<p>K-ESS3-1</p> <p>Use a model to represent the relationship between the needs of different plants and animals (including humans) and the places they live.</p>	<p>Unit Vocabulary: natural resource, reduce, reuse and recycle Interactive Glossary</p> <p>Natural Resource Walk: P. 246 Take children on a natural resource walk and have them draw a way they see people using something in nature Ask: How does your drawing show a way people use something in nature?</p> <p>Instructional Strategies:</p>	<p>Evaluate: Unit 6 Review</p> <p>Evaluate: Unit 6 Test</p> <p>Evidence Notebook (Formative Assessment, P. 251)</p>	<p>MP.2, MP.4, K.CC.1, SL.K.5</p> <p>Engage: Model the relationship between natural resources and how people use them to meet their needs. Lesson 1 Lesson Phenomenon pp. 246-247 Can You Explain It? <i>Natural Resources</i></p> <p>Explore/Explain: Air, Water Rock, Soil</p> <p>Hands-On-Activity - Clay Bricks pp. 255-256 Hands-On Activity - Clay</p>	<p>Differentiate Instruction</p> <p>English Language Arts Handbook</p> <p>Math Handbook</p> <p>Lesson 1 - Differentiate Instruction: p. 245, 246B</p>

<p style="text-align: center;"><u>K-ESS3-3</u></p> <p style="text-align: center;">Communicate solutions that will reduce the impact of humans on the land, water, air, and/or</p>	<p>Collaboration Opportunities in Unit:</p> <ul style="list-style-type: none"> ● Build on Prior Knowledge, pp. 246B, 247, 262B, 263 ● Small Groups, pp. 246, 255, 262, 269 ● Think, Pair, Share, pp. 271 ● Think, Apply, Share, pp. 249, 252 ● Think, Act, Share, pp. 257 ● Cultivating New Questions, pp. 259, 273 <p>Unit Vocabulary: natural resource, reduce, reuse and recycle <u>Interactive Glossary</u></p> <p>Instructional</p>		<p><u>Bricks</u> <u>Hands-On-Activity Worksheet</u> Evaluate: Lesson 1 <u>Lesson 1: Lesson Check/Self Check</u></p> <p><u>Unit 6: Lesson 1 Quiz</u></p> <p>Evaluate: Lesson Check p. 259 Self Check pp. 260-261 Lesson Quiz</p> <p>MP.2, MP.4, K.CC.B.5, W.K.2 Engage: Identify ways people use natural resources</p>	
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<p>other living things in the local environment.</p>	<p>Strategies: Collaboration Opportunities in Unit:</p> <ul style="list-style-type: none"> ● Build on Prior Knowledge, pp. 246B, 247, 262B, 263 ● Small Groups, pp. 246, 255, 262, 269 ● Think, Pair, Share, pp. 271 ● Think, Apply, Share, pp. 249, 252 ● Think, Act, Share, pp. 257 ● Cultivating New Questions, pp. 259, 273 		<p>and design and communicate solutions to overcome the negative impact on the environment.</p> <p>Lesson 2 Lesson Problem pp. 262-263 Can You Solve It? <i>Saving Natural Resources</i></p> <p>Explore/Explain: Harming Natural Resources Reduce Reuse and Recycle</p> <p>Hands-On-Activity - Engineer It <i>Where Does Our Trash Go?</i> pp. 269-270 Hands-On-Activity Worksheet</p> <p>Evaluate: Lesson 2 Lesson 2: Lesson Check/Self Check</p> <p>Unit 6: Lesson 2 Quiz</p> <p>Evaluate: Lesson Check p. 273 Self Check pp. 274-275</p>	<p>Lesson 2 - Differentiate Instruction: p. 245, 262B</p>
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			Lesson Quiz	
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21 st Century Themes Targeted: <i>Global Awareness, Career Awareness, Exploration and Preparation, Technology and Engineering</i>					
<u>21st Century Skills Targeted</u>					
Creativity & Innovation	Information Literacy	Media Literacy	Critical Thinking & Problem Solving	Communication & Collaboration	Life & Careers
Connections to Community	Differentiate Instruction	Unit 6: Earth's Resources/Home Letter	Technology and Engineering	Grocery Shopping to Help the Environment Build on Prior Knowledge: pp. 246B, 247, 262B, 263 Small Groups: pp. 246, 255, 262, 269 Think, Pair, Share: p. 271 Think, Apply, Share: pp. 249, 252 Think, Act, Share: pp. 257, 264	Connections to Science: Connections to Earth and Space Sciences Lesson 1, p. 250 Connection to Life Science Lesson 2, p. 266 People in Science & Engineering Careers in Science & Engineering
Summative Assessments:					

[Unit 6 Test: Earth's Resources](#)

[Unit 6 Performance Task Assessment & Rubric: Natural Resources as a System](#)

[Unit 6 Performance Task Worksheet](#)

Students will use a model to represent a system in the natural world and analyze data concerning a plant's need for resources from the land..

This learning experience prepares children for mastery of the following Performance Expectations:
K-ESS3-1 and K-ESS3-3.