Course: Science

Unit #1: Solids and Liquids

Grade Level(s): 2	**<u>Length of Unit</u>: 4-5 weeks** **Investigation 1: Solids-5-8 days** **Investigation 2: Liquids-5-6 days** **Investigation 3: Bits and Pieces- 5-6 days** **Investigation 4: Solids and Liquids in Water-5-10 days**

Unit Rationale:
This module provides grade two students with physical sciences core ideas dealing with matter and its interactions and engineering design. Students will develop an understanding of materials by comparing and contrasting one another and how properties of those materials relate to their use. Students engage in activities to collect data to answer questions, and to define problems in order to develop solutions. They build on the science concepts of matter and its interactions developed in kindergarten using new tools to enrich observations

Stage 1 - Desired Results

Enduring Understandings:	**Essential Questions:**
Students will understand that… ● Solids and liquids can be observed, described, and sorted according to their properties ● How solids behave when the pieces are small. ● Interactions between solids and water and liquids and water	● How can solid and liquid objects be described? ● Can two or more objects have the same property? ● How can mixtures of particles be separated? ● How do particles move? ● How do properties of materials change when they are heated or cooled?
Content:	**Skills:**
Students will know… ● Solid is one state or phase of matter. ● Objects are described and identified by their properties. ● Objects are made of one or more materials. ● Natural and human-made objects occur outdoors. ● Liquid is one common state of matter. ● Liquids move freely in containers. ● Liquids have many properties that help identify them.	*Students will be able to…* ● explore solid objects, such as pieces of wood, plastic, and metal ● construct towers (and other structures), using the properties inherent in the materials to accomplish the task ● discover solid objects in the schoolyard environment ● sort the found objects into natural and human-made ● investigate liquids in a variety of settings

● Liquids take the shape of their containers. ● The surfaces of liquids are flat and level. ● Liquids pour and flow. ● Solid materials can occur as masses of small particles. ● A mass of particulate matter can form piles and support a more dense object on its surface. ● Particulate solids can be separated by size (with screens). ● Masses of particulate matter can pour. ● The surface of a mass of particles is not flat and level. ● Particulate matter occurs naturally in the outdoors. ● Some solids change when mixed with water. ● Some solids dissolve in water. ● Water can be separated from a mixture through evaporation; evaporation leaves the solid behind. ● Some liquids mix with water; others form layers. ● Some materials have properties of both solids and liquids. ● Melting is the change from solid to liquid. ● Freezing is the change from liquid to solid. ● Heat causes materials to melt; cold causes them to freeze; changes can be reversible or irreversible.	● investigate liquids in a variety of settings ● explore the properties of water puddles in the schoolyard ● work with beans, rice, and cornmeal to find out how solids behave when the pieces are small ● shake, rattle, and roll the materials in bottles, pour them from container to container, and separate them by using screens ● find particulate solid materials ● observe the particles when poured on a flat surface and compare the particles to water on the same surface ● investigate interactions between solids and water and liquids and water ● observe, describe, record, and organize the results of their observations ● test toothpaste to determine if it is a solid or a liquid ● investigate melting and freezing of familiar liquids ● collect solid materials outdoors and mix them with water ● look for changes in the color and clarity of the water as evidence that something mixed with the water

NJ Student Learning Standards - Science
Performance Expectations ("the Standards"):

2-PS1: Matter and Its Interactions
Students who demonstrate understanding can:
• 2-PS1-1 Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties. *[Clarification Statement: Observations could include color, texture, hardness, and flexibility. Patterns could include the similar properties that different materials share.]*
• 2-PS1-2 Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose. *[Clarification Statement: Examples of properties could include, strength, flexibility, hardness, texture, and absorbency.] [Assessment Boundary: Assessment of quantitative measurements is limited to length.]*
• 2-PS1-3 Make observations to construct an evidence-based account of how an object made of a small set of pieces can be disassembled and made into a new object. *[Clarification Statement: Examples of pieces could include blocks, building bricks, or other assorted small objects.]*

• 2-PS1-4 Construct an argument with evidence that some changes caused by heating or cooling can be reversed and some cannot. *[Clarification Statement: Examples of reversible changes could include materials such as water and butter at different temperatures. Examples of irreversible changes could include cooking an egg, freezing a plant leaf, and heating paper.]*

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

Connected components:
Science and Engineering Practices:

Planning and Carrying Out Investigations
Planning and carrying out investigations to answer questions or test solutions to problems in K–2 builds on prior experiences and progresses to simple investigations, based on fair tests, which provide data to support explanations or design solutions.

- Plan and conduct an investigation collaboratively to produce data to serve as the basis for evidence to answer a question. (2-PS1-1)

Analyzing and Interpreting Data
Analyzing data in K–2 builds on prior experiences and progresses to collecting, recording, and sharing observations.

- Analyze data from tests of an object or tool to determine if it works as intended. (2-PS1-2)

Constructing Explanations and Designing Solutions
Constructing explanations and designing solutions in K–2 builds on prior experiences and progresses to the use of evidence and ideas in constructing evidence-based accounts of natural phenomena and designing solutions.

- Make observations (firsthand or from media) to construct an evidence-based account for natural phenomena. (2-PS1-3)

Engaging in Argument from Evidence
Engaging in argument from evidence in K–2 builds on prior experiences and progresses to comparing ideas and representations about the natural and designed world(s).

- Construct an argument with evidence to support a claim. (2- PS1-4)

Asking Questions and Defining Problems
Asking questions and defining problems in K–2 builds on prior experiences and progresses to simple descriptive questions.

- Ask questions based on observations to find more information about the natural and/or designed world(s). (K-2- ETS1-1)
- Define a simple problem that can be solved through the development of a new or improved object or tool. (K-2-ETS1-1)

Developing and Using Models
Modeling in K–2 builds on prior experiences and progresses to include using and developing models (i.e., diagram, drawing, physical replica, diorama, dramatization, or storyboard) that represent concrete events or design solutions

- Develop a simple model based on evidence to represent a proposed object or tool. (K-2-ETS1-2)

Analyzing and Interpreting Data

Analyzing data in K–2 builds on prior experiences and progresses to collecting, recording, and sharing observations.

- Analyze data from tests of an object or tool to determine if it works as intended. (K-2-ETS1-3)

Disciplinary Core Ideas:

PS1.A: Structure and Properties of Matter

- Different kinds of matter exist and many of them can be either solid or liquid, depending on temperature. Matter can be described and classified by its observable properties. (2-PS1-1)
- Different properties are suited to different purposes. (2-PS1-2), (2- PS1-3)
- A great variety of objects can be built up from a small set of pieces. (2-PS1-3)

PS1.B: Chemical Reactions

- Heating or cooling a substance may cause changes that can be observed. Sometimes these changes are reversible, and sometimes they are not. (2-PS1-4)

ETS1.A: Defining and Delimiting Engineering Problems

- A situation that people want to change or create can be approached as a problem to be solved through engineering. (K-2- ETS1-1)
- Ask questions, make observations, and gather information about a situation people want to change (e.g., climate change) to define a simple problem that can be solved through the development of a new or improved object or tool. (K-2- ETS1-1)
- Before beginning to design a solution, it is important to clearly understand the problem. (K-2- ETS1-1)

ETS1.B: Developing Possible Solutions

- Designs can be conveyed through sketches, drawings, or physical models. These representations are useful in communicating ideas for a problem's solutions to other people. (K-2-ETS1-2)

ETS1.C: Optimizing the Design Solution

- Because there is always more than one possible solution to a problem, it is useful to compare and test designs. (K-2-ETS1-3)

Crosscutting Concepts:

1. Patterns
2. Cause and Effect: Mechanism and Explanation
3. Energy and Matter
4. Structure and Function

Patterns

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

Cause and Effect

Events have causes that generate observable patterns. (2-PS1-4)

Simple tests can be designed to gather evidence to support or refute student ideas about causes. (2-PS1-2)

Energy and Matter

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

Structure and Function

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

Career Education (Career Readiness, Life Literacies, and Key Skills Practices and 9.2 Standards)

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

CLKS Practices:

1. Demonstrate creativity and innovation
2. Work productively in teams while using cultural/global competence

Connected Careers:

Careers connected to the study of solids and liquids include:

- Science teacher
- Chemical Engineer.

Explanation of how 9.2 standards connect to the unit:
The standard "Make a list of different types of jobs and describe the skills associated with each job" can help students understand real-world applications of their learning. By discussing how certain jobs apply knowledge of solids and liquids like we learn in our hands-on experiments in Investigations 1, 2, 3, and 4 is essential for solving real-world problems in each career. This would be done by creating a list of jobs and the skills needed to perform those jobs such as the job of science teacher, chemist or pharmacist.

Explanation of how CLKSs connect to the unit:
The practice of demonstrating creativity and innovation connects to our unit on Solids and Liquids in Investigation 1 when children need to construct towers using a given set of solid materials, often thinking in new and creative ways on how to use the material. It also connects to "work productively in teams while using cultural/global competence" because students are working in small groups and partnerships when working on the hands-on experiments along with the challenges to create towers or other structures. Children need to learn to work together and communicate effectively while working to create their structure.

Explanation of how Connected Careers connect to the unit:

Being a science teacher involves connecting real-world concepts to make learning meaningful and applicable to students. Science teachers need to have knowledge of an experience with working with solids and liquids through hands-on experiments as well as provide real world everyday examples which students will get through their work in this unit.

Chemical Engineers work with substances in solid, liquid, and gas states to design processes and equipment for production. Through the hands-on lessons involving the exploration of the properties of solid materials in Investigation 1 along with the hands-on lessons involving the exploration of properties of liquids in Investigation 2, students would learn skills necessary to work with these materials as a chemical engineer.

Interdisciplinary Standards
NJSLS:ELA

RI.CR.2.1. Ask and answer questions to demonstrate understanding of key details in an informational text, referring explicitly to the text as the basis for the answers.

NJSLS:Math

2.M.A.1 1. Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.

Explanation of how interdisciplinary standards connect to the unit:
The standard "Ask and answer questions to demonstrate understanding of key details in an informational text, referring explicitly to the text as the basis for the answers" is connected to the solids and liquids unit when children are reading their textbook, they are asking questions about what they are reading and answering those questions with information they are finding in their book.

The standard "Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes" is connected to the solids and liquids unit because children need to use various measuring tools to measure the length, height or width of a structure along with the amount of water used or collected in their experiments.

Technology Integration (9.4 Standards):

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.TL.7: Describe the benefits of collaborating with others to complete digital tasks or develop digital artifacts (e.g., W.2.6., 8.2.2.ED.2).

Explanation of how 9.4 standards connect to the unit:

The standard "Demonstrate openness to new ideas and perspectives" connects to the solids and liquids unit when students encounter different properties of solids and liquids such as viscosity, transparency, density, and physical changes. Demonstrating openness to new ideas involves exploring how these properties can vary and how different substances and materials exhibit these properties.

The standard "Demonstrate originality and inventiveness in work" connects to the solids and liquids unit when studying the properties of solids and liquids. Students encounter various challenges and puzzles which will make them look at things in new and different ways. Demonstrating originality involves approaching these problems in new and unusual ways and coming up with unique solutions. For example, developing different strategies for separating mixtures based on the properties of solids.

Collaboration can simplify the work an individual has to do and sometimes produce a better product. In this unit students encounter various challenges which will make them look at things together, in new and different ways.

Stage 2- Assessment Evidence:	
Assessment:	
Formative	**Lab experiments:** Use science journals to check student understanding of entries. **Focus Questions:** Students summarize their learning at the end of each lab experiment. **Response Sheet:** Students provide content to answer a provided question. Evidence for answer is required. **Science Journal Check:** Students record data in their science journals that describes the results during each lab. Journals are collected and assessed. **Science Notes:** Throughout the unit, student full in content provided in the notes to act as the student textbook. Students may use prepared *notebook sheets* or may generate *free-form notebook entries* that could both be collected and assessed for student progress. **Performance Assessments:** As students make observations and record their findings, teachers conduct 30-second interviews to see how students ask questions, and analyze and interpret data.
Summative	**I-Check Performance Assessments:** These are teacher prepared formal assessments that are appropriate for the students. They are up to one period in length and are taken individually. They are given at the end of the Investigation. This a performance based assessment. **Survey/Posttest:** A full-period assessment which consists of content questions, multiple choice, fill in the blank, and open-response questions
Alternative	**Tutorials/Virtual Investigations:** Virtual simulations are provided for each investigation to enrich lab experiences.
Benchmark	**I-Checks:** At the end of each investigation, students take an I-Check benchmark assessment. The I-Check provides students with an opportunity to demonstrate what they know through a variety of question types. ● Investigation 1 I-Check ● Investigation 2 I-Check ● Investigation 3 I-Check ● Investigation 4 I-Check

Stage 3 - Learning Plan	
Learning Activities: **Investigation 1: Solids** ● **Part One: Solid Objects** ● **Part Two: Solid Materials** ● **Part Three: Group Solid Objects** ● **Part Four: Construct with Solids**	**Differentiation:** **ELL:** ● Point out key ideas and vocabulary ● Offer students alternatives for communicating what they know

- **Part Five: Outdoor Solids**

Investigation 2: Liquids
- **Part One: Liquids in Bottles**
- **Part Two: Properties of Liquids**
- **Part Three: Liquid Level**
- **Part Four: Puddles**

Investigation 3: Bits and Pieces
- **Part One: Solids in Containers**
- **Part Two: Separating Soup Mix**
- **Part Three: Solids in Bottles**
- **Part Four: Beads and Screens**
- **Part Five: Spills**
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Investigation 4: Solids, Liquids, and Water
- **Part One: Solids and Water**
- **Part Two: Liquids and Water**
- **Part Three: Toothpaste Investigation**
- **Part Four: Changing Properties**
- **Part Five: Tea Time**

- Model abstract concepts
- Provide visuals illustrating scientific concepts
- Create a word wall that includes definitions and examples
- Draw pictures to illustrate terms
- Provide information sheets in different language

G&T:
- Foster independence in acquiring new scientific knowledge
- Provide additional opportunities for students to extend their scientific knowledge
- *FOSS Teacher Module* extension files
- Provide research opportunities tailored for each unit of study

Special Ed:
- Provide multiple means of representation.
- Provide multiple means of action and expression.
- Provide multiple means of engagement.
- Give verbal as well as written directions
- Provide visuals illustrating scientific concepts
- Review key concepts from each investigation
- Summarize investigation goals in clear and concise language
- Provide additional time to complete independent activities

504:
- Give verbal as well as written directions
- Provide Graphic Organizers per unit of study
- Reduction of questions and types on assessments
- Extended time to complete tasks
- Provide additional time to complete independent activities
- Provide visuals illustrating scientific concepts
- Review key concepts from each investigation
- Summarize investigation goals in clear and concise language

Students at Risk:
- Give learners various ways to acquire

	information and demonstrate knowledge ● Foster collaboration and community ● Increase mastery-oriented feedback ● Use models to show related facts ● Facilitate personal coping skills and strategies **Link to Science Differentiation Chart and Accommodations Chart**

Core and Supplementary Instructional Materials

Teacher Pedagogical Resources:

FOSS Solids and Liquids teacher manual
FOSS Solids and Liquids teacher toolkit and equipment kit
FOSS student textbook
FOSS Science Resource books
FOSS technology website: www.FOSSweb.com
Bedwell Garden

Student Materials:

FOSS student textbook
FOSS Interactive Student e-Book
Student materials from Solids and Liquids kit

Notes:
Inclusion of Climate Change Opportunities
• 2-PS1-4 Construct an argument with evidence that some changes caused by heating or cooling can be reversed and some cannot.

In the study of Solids and Liquids, children can be made aware of climate change through the study of solid becoming liquid.This connection could be made to warming temperatures and the effects it has on melting ice and rising water levels. This could be seen/explained when doing experiments with a solid turning into a liquid or a liquid turning into a solid.

Course: Science

Unit # 2 : Pebbles, Sand and Silt

Grade Level(s): 2	**Length of Unit: 5-6 weeks** **Investigation 1: First Rocks-5-8 days** **Investigation 2: River Rocks-5-8 days** **Investigation 3: Using Rocks-5-9 days** **Investigation 4: Soil and Water-7-12 days**

Unit Rationale:

Grade 2 students will explore earth science core ideas dealing with the observable structures and properties of earth materials (rocks, soil and water), weathering and erosion of Earth surface, natural sources of water, and how to represent the shapes and kinds of land and bodies of water on Earth. Students will engage in science and engineering practices to collect and interpret data to answer science questions, develop models to communicate interactions and processes, and define problems in order to compare solutions.

Stage 1 - Desired Results

Enduring Understandings:	**Essential Questions:**
Students will understand that… ● There are several kinds of volcanic rocks and will begin to understand the properties of rocks ● Properties of rocks and the colorful minerals they contain. ● Sand is formed in a slow process and compare slow changes of weathering and erosion to rapid changes due to volcanic eruptions ● There are effects of wind and water erosion and learn about different ways to represent landforms and bodies of water. ● Climate change will affect landforms depending on properties and weathering	● What are the properties of rocks? ● How many ways can rocks be sorted? ● Is there an earth material smaller than sand? What earth material is smaller than silt? ● How do people use earth materials? ● What is soil and how do soils differ? ● How can erosion be reduced? ● How will climate change affect these objects?
Content:	**Skills:**
Students will know… ● Rocks can be described by their properties. ● Smaller rocks (sand) result from the breaking (weathering) of larger rocks.	*Students will be able to…* ● Learn about mineral portion of the planet on which they live. ● investigate several kinds of volcanic rocks and begin to understand the properties of rocks

● Rocks are the solid material of Earth. ● Rocks are composed of minerals. ● Volcanoes are mountains built up by melted rocks that flow out of weak areas in Earth's crust. ● Rocks are earth materials. ● Rocks can be described by the property of size. ● Rock sizes include clay, silt, sand, gravel, pebbles, cobbles, and boulders. ● Weathering, caused by wind or water, causes larger rocks to break into small rocks. ● Some Earth events happen rapidly; others occur slowly over a very long period of time. ● Earth materials are natural resources. ● The properties of different earth materials make each suitable for specific uses. ● Different sizes of sand are used on sandpaper to change the surface of wood from rough to smooth. ● Earth materials are commonly used in the construction of buildings and streets. ● Earth materials are natural resources. ● Soils can be described by their properties (color, texture, ability to support plant growth). ● Soil is made partly from weathered rock and partly from organic material. Soils vary by location. ● Natural sources of water include streams, rivers, ponds, lakes, marshes, and the ocean. Sources of water can be fresh or saltwater. ● Water can be a solid, liquid, or gas. ● Wind and water can change the shape of land. ● The shapes and kinds of land and water can be represented by various models. ● Climate change has an impact on natural resources and materials	observe rocks (using hand lenses), rub rocks, wash rocks, sort rocks, and describe rocks. ● organize a class rock collection. ● investigate a mixture of different-sized river rocks. ● separate the rocks using a series of three screens to identify five sizes of rocks: large pebbles, small pebbles, large gravel, small gravel, and sand. ● add water to a vial of sand to discover silt and clay ● learn how sand is formed and compare slow changes of weathering and erosion to rapid changes due to volcanic eruptions. ● Students learn how people use earth materials to construct objects. ● make rubbings from sandpaper, sculptures from sand, decorative jewelry from clay, and bricks from clay soil. ● Go on a schoolyard field trip to look for places where earth materials occur naturally and where people have incorporated earth materials into building materials. ● Put together and take apart soils. ● Compare homemade and local soils ● Understand about sources of natural water, sort images of water sources, both fresh and salt, and discuss where water is found in their community. ● compare different solutions presented in readings to slow the effects of wind and water erosion. ● Use representations to show landforms and bodies of water. ● Investigate how climate change has made an impact on the Earth

NJ Student Learning Standards - Science

Performance Expectations ("the Standards"):

<u>2-ESS1: Earth's Place in the Universe</u>

Students who demonstrate understanding can:
• 2-ESS1-1 Use information from several sources to provide evidence that Earth events can occur quickly or slowly. [Clarification Statement: Examples of events and timescales could include volcanic explosions and earthquakes, which happen quickly and erosion of rocks, which occurs slowly.] [Assessment Boundary: Assessment does not include quantitative measurements of timescales.]

2-ESS2: Earth's Systems
Students who demonstrate understanding can:
• 2-ESS2-1 Compare multiple solutions designed to slow or prevent wind or water from changing the shape of the land. [Clarification Statement: Examples of solutions could include different designs of dikes and windbreaks to hold back wind and water, and different designs for using shrubs, grass, and trees to hold back the land.]
• 2-ESS2-2 Develop a model to represent the shapes and kinds of land and bodies of water in an area. [Assessment Boundary: Assessment does not include quantitative scaling in models.]
• 2-ESS2-3 Obtain information to identify where water is found on Earth and that it can be solid or liquid

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

Connected components:
Science and Engineering Practices:

Constructing Explanations and Designing Solutions
Constructing explanations and designing solutions in K–2 builds on prior experiences and progresses to the use of evidence and ideas in constructing evidence-based accounts of natural phenomena and designing solutions.

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

Developing and Using Models
Modeling in K–2 builds on prior experiences and progresses to include using and developing models (i.e., diagram, drawing, physical replica, diorama, dramatization, or storyboard) that represent concrete events or design solutions.

- Develop a model to represent patterns in the natural world. (2- ESS2-2)

Constructing Explanations and Designing Solutions
Constructing explanations and designing solutions in K–2 builds on prior experiences and progresses to the use of evidence and ideas in constructing evidence-based accounts of natural phenomena and designing solutions.

- Compare multiple solutions to a problem. (2-ESS2-1)

Obtaining, Evaluating, and Communicating Information
Obtaining, evaluating, and communicating information in K–2 builds on prior experiences and uses observations and texts to communicate new information.

- Obtain information using various texts, text features (e.g., headings, tables of contents, glossaries, electronic menus, icons), and other media that will be useful in answering a scientific question. (2- ESS2-3)

Asking Questions and Defining Problems
Asking questions and defining problems in K–2 builds on prior experiences and progresses to simple descriptive

questions.

- Ask questions based on observations to find more information about the natural and/or designed world(s). (K-2- ETS1-1)
- Define a simple problem that can be solved through the development of a new or improved object or tool. (K-2-ETS1-1)

Developing and Using Models

Modeling in K–2 builds on prior experiences and progresses to include using and developing models (i.e., diagram, drawing, physical replica, diorama, dramatization, or storyboard) that represent concrete events or design solutions

- Develop a simple model based on evidence to represent a proposed object or tool. (K-2-ETS1-2)

Analyzing and Interpreting Data

Analyzing data in K–2 builds on prior experiences and progresses to collecting, recording, and sharing observations.

- Analyze data from tests of an object or tool to determine if it works as intended. (K-2-ETS1-3)

Disciplinary Core Ideas:

ESS1.C: The History of Planet Earth

- Some events happen very quickly; others occur very slowly, over a time period much longer than one can observe. (2-ESS1-1)

ESS2.A: Earth Materials and Systems

- Wind and water can change the shape of the land. (2-ESS2-1)

ESS2.B: Plate Tectonics and LargeScale System Interactions

- Maps show where things are located. One can map the shapes and kinds of land and water in any area. (2-ESS2-2)

ESS2.C: The Roles of Water in Earth's Surface Processes

- Water is found in the ocean, rivers, lakes, and ponds. Water exists as solid ice and in liquid form. (2- ESS2-3)

ETS1.C: Optimizing the Design Solution

- Because there is always more than one possible solution to a problem, it is useful to compare and test designs. (secondary to 2-ESS2-1)

ETS1.A: Defining and Delimiting Engineering Problems

- A situation that people want to change or create can be approached as a problem to be solved through engineering. (K-2- ETS1-1)
- Ask questions, make observations, and gather information about a situation people want to change (e.g., climate change) to define a simple problem that can be solved through the development of a new or improved object or tool. (K-2- ETS1-1)
- Before beginning to design a solution, it is important to clearly understand the problem. (K-2- ETS1-1)

ETS1.B: Developing Possible Solutions

- Designs can be conveyed through sketches, drawings, or physical models. These representations are useful in communicating ideas for a problem's solutions to other people. (K-2-ETS1-2)

ETS1.C: Optimizing the Design Solution

- Because there is always more than one possible solution to a problem, it is useful to compare and test designs. (K-2-ETS1-3)

Crosscutting Concepts:

Stability and Change

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

Patterns

- Patterns in the natural world can be observed. (2-ESS2-2), (2-ESS2-3)

Structure and Function

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

Career Education (Career Readiness, Life Literacies, and Key Skills Practices and 9.2 Standards)

- 9.2.2.CR.1: Recognize ways to volunteer in the classroom, school and community.
- 9.2.2.CAP.1: Make a list of different types of jobs and describe the skills associated with each job.

CLKS Practices:

- Act as a responsible and contributing community members and employee
- Consider the environmental, social and economic impacts of decisions
- Demonstrate creativity and innovation
- Utilize critical thinking to make sense of problems and persevere in solving them

Connected Careers:

Careers connected to this science unit on "Pebbles, Sand, and Silt" include:

- science teacher
- geologist

Explanation of how 9.2 standards connect to the unit:

The standard "Recognize ways to volunteer in the classroom, school and community" connects to the unit of pebbles, sand and silt by gaining an understanding of protecting land and helping in the community. Students can be made aware of the importance of volunteering in town wide clean ups to remove litter which would end up in our water systems and effect erosion along with how litter affects the soil and the environment. This can be addressed in Investigation 4: Soil and Water, when children read about sources of natural water and discuss where water is found in their community.

The standard "make a list of different types of jobs and describe the skills associated with each job" connects to this unit of pebbles, sand and silt because children will be taught that different types of jobs require different knowledge and skills. This can be addressed in Investigation 3: Using Rocks when students learn how people use earth materials to construct objects.

Explanation of how CLKSs connect to the unit:

The science unit "Pebbles, Sand and Silt" will help students act as responsible and contributing community members as well as consider the environmental, social and economic impacts of decisions by gaining an understanding of how the impact of their choices will affect the environment. This unit will also help them gain an understanding of how earth materials occur naturally and how people have included earth materials into building materials. Students demonstrate creativity and innovation and utilize critical thinking to make sense of problems and persevere in solving them when they work in this unit to compare design solutions engineered to slow the effects of wind and water erosion.

Explanation of how Connected Careers connect to the unit:

Careers connected to this unit include:

- The career of science teacher connects to this unit because science teachers need a vast knowledge of science topics which students obtain through various hands-on lessons in this unit studying and investigating pebbles, sand and silt..
- Geologists study the Earth's materials and students investigate how pebbles, sand, and silt are formed, as well as discuss their properties through lessons in this unit. Geologists study how rocky areas form and change over time and with the study of pebbles, sand and silt, students will begin to gain an understanding of where rocks come from and how they slowly change.

Interdisciplinary Standards

Connections to NJSLS - English Language Arts

- RI.CR.2.1. Ask and answer questions to demonstrate understanding of key details in an informational text, referring explicitly to the text as the basis for the answers. (2-ESS1-1)

Connections to NJSLS - Mathematics

- MP.2 Reason abstractly and quantitatively. (2-ESS1-1)

Connections to NJSLS - Technology

- 8.1.2.DA.3: Identify and describe patterns in data visualizations.

Explanation of how interdisciplinary standards connect to the unit:

The standard “Ask and answer questions to demonstrate understanding of key details in an informational text, referring explicitly to the text as the basis for the answers” is connected to this unit of pebbles, sand and silt when children are reading their textbook, they are asking questions about what they are reading and answering those questions with information they are finding in their book. They also apply this skill to other information texts and articles they are presented with that are on the topics of pebbles, sand and silt.

The standard “Reason abstractly and quantitatively” connects to the unit of pebbles, sand and silt through the investigation of a mixture of different sized river rocks along with volcanic rocks where children need to sort and classify rocks in different ways. They also need to organize a class rock collection to learn about the properties of rocks and the colorful minerals they contain.

Data can be used to make predictions about the world. Children will use visualizations / representations to

show landforms and bodies of water. Students will identify patterns (soils can be described by their properties - color, texture, ability to support plant growth).

Technology Integration (9.4 Standards):

- 9.4.2.CI.2: Demonstrate originality and inventiveness in work
- 9.4.2.CT.3: Use a variety of types of thinking to solve problems (e.g., inductive, deductive).

Explanation of how 9.4 standards connect to the unit:

The standard "Demonstrate originality and inventiveness in work" is connected to this unit on pebbles, sand and silt because students can demonstrate originality by developing various methods to analyze and interpret the properties and characteristics of pebbles, sand, and silt. For example, students could come up with different ways to classify samples based on size, shape, or other characteristics or properties. The various hands-on lessons throughout the unit will support this.

The standard "Use a variety of types of thinking to solve problems" connects to this unit on pebbles, sand and silt because students can apply critical thinking to analyze the properties and characteristics of pebbles, sand, and silt. Children will apply this when they are working with several kinds of volcanic rocks along with a mixture of river rocks that need to be sorted and classified.

Stage 2- Assessment Evidence:	
Assessment:	
Formative	**Lab experiments:** Use science journals to check student understanding of entries. **Focus Questions:** Students summarize their learning at the end of each lab experiment. **Response Sheet:** Students provide content to answer a provided question. Evidence for answer is required. **Science Journal Check:** Students record data in their science journals that describes the results during each lab. Journals are collected and assessed. **Science Notes:** Throughout the unit, student full in content provided in the notes to act as the student textbook. Students may use prepared *notebook sheets* or may generate *free-form notebook entries* that could both be collected and assessed for student progress. **Performance Assessments:** As students make observations and record their findings, teachers conduct 30-second interviews to see how students ask questions, and analyze and interpret data.
Summative	**I-Check Performance Assessments:** These are teacher prepared formal assessments that are appropriate for the students. They are up to one period in length and are taken individually. They are given at the end of the Investigation. This a performance based

	assessment. **Survey/Posttest:** A full-period assessment which consists of content questions, multiple choice, fill in the blank, and open-response questions.
Alternative	**Response Sheet:** Students provide content to answer a provided question. Evidence for answer is required.
Benchmark	**I-Checks:** At the end of each investigation, students take an I-Check benchmark assessment. The I-Check provides students with an opportunity to demonstrate what they know through a variety of question types. ● Investigation 1 I-Check ● Investigation 2 I-Check ● Investigation 3 I-Check ● Investigation 4 I-Check

Stage 3 - Learning Plan

Learning Activities:

Investigation 1: First Rocks
- **Part One: Three Rocks**
- **Part Two: Washing the Rocks**
- **Part Three: First Sorting**
- **Part Four: Start a Rock Collection**
- **Part Five: Sorting Activities**

Investigation 2: River Rocks
- **Part One: Screening River Rocks**
- **Part Two: River Rocks by Size**
- **Part Three: Sand and Silt**
- **Part Four: Exploring Clay and Landforms**

Investigation 3: Using Rocks
- **Part One: Rocks in Use**
- **Part Two: Observing Sandpaper**
- **Part Three: Sand Sculptures**
- **Part Four: Clay Beads**
- **Part Five: Making Bricks**

Investigation 4: Soil and Water
- **Part One: Homemade Soil**
- **Part Two: Local Soil**
- **Part Three: Natural Sources of Water**
- **Part Four: Land and Water**

Differentiation:

ELL:
- Point out key ideas and vocabulary
- Offer students alternatives for communicating what they know
- Model abstract concepts
- Provide visuals illustrating scientific concepts
- Create a word wall that includes definitions and examples
- Draw pictures to illustrate terms
- Provide information sheets in different language

G&T:
- Foster independence in acquiring new scientific knowledge
- Provide additional opportunities for students to extend their scientific knowledge
- *FOSS Teacher Module* extension files
- Provide research opportunities tailored for each unit of study

Special Ed:
- Provide multiple means of representation.
- Provide multiple means of action and

expression.
- Provide multiple means of engagement.
- Give verbal as well as written directions
- Provide visuals illustrating scientific concepts
- Review key concepts from each investigation
- Summarize investigation goals in clear and concise language
- Provide additional time to complete independent activities

504:
- Give verbal as well as written directions
- Provide Graphic Organizers per unit of study
- Reduction of questions and types on assessments
- Extended time to complete tasks
- Provide additional time to complete independent activities
- Provide visuals illustrating scientific concepts
- Review key concepts from each investigation
- Summarize investigation goals in clear and concise language

Students at Risk:
- Give learners various ways to acquire information and demonstrate knowledge
- Foster collaboration and community
- Increase mastery-oriented feedback
- Use models to show related facts
- Facilitate personal coping skills and strategies

Link to Science Differentiation Chart and Accommodations Chart

Core and Supplementary Instructional Materials

Teacher Pedagogical Resources:

FOSS Pebbles, Sand, and Silt teacher manual
FOSS Pebbles, Sand, and Silt teacher toolkit and equipment kit
FOSS student textbook

FOSS Science Resource books
FOSS technology website: www.FOSSweb.com
Bedwell Garden

Student Materials:

Student Textbook
FOSS Interactive Student e-Book
Student materials from Pebbles, Sand and Silt kit

Notes:
Inclusion of Climate Change Opportunities

In this unit of pebbles, sand and silt, we can investigate climate change by comparing before and after photos, using primary resources, and hands-on investigations. Pebbles, sand, and silt are products of erosion and weathering processes. Teaching students about these processes can lead to discussions on how climate change affects erosion rates. For example, increased precipitation and more frequent extreme weather events due to climate change can accelerate erosion. Discussing how pebbles, sand, and silt are transported and deposited by water, wind, and glaciers links directly to climate change.

Course: Science

Unit # 3 : Insects and Plants

Grade Level(s): 2	**Length of Unit: 6+ weeks** Investigation One: Mealworms-5-10 days Investigation Two: Brassica Seeds-5-10 days Investigation Three: Milkweed Bugs-5-10 days Investigation Four: Silkworms-5-10 days Investigation Five: Butterflies-5-10 days Final Project-5 days *Note: These five investigations may not be done in consecutive order, nor need to be done on consecutive days.

Unit Rationale:

This unit provides students with life science core ideas dealing with structure and function of living things, growth and development of plants and animals, interaction of organisms with their environment, and biodiversity of organisms on land and in water. Students engage in science and engineering practices to collect and interpret data to answer science questions, develop models to communicate interaction and processes, and define problems in order to develop solutions. They will gain experiences that will contribute to understanding of crosscutting concepts of patterns, cause and effect, and structure and function.

Stage 1 - Desired Results

Enduring Understandings: *Students will understand that…* ● Living things need food, water and a habitat to survive ● Living things grow and change with different stages ● Plants grow through pollination and have their own life cycle. ● Different organisms have different life cycles ● Living things are affected by climate change	**Essential Questions:** ● What do insects need to live? ● How do insects grow and change? ● What are the stages of an insect's life cycle? ● What do insects need in their habitat? ● How are life cycles of different insects the same? Different? ● How does a young plant change as it grows? ● What will happen to the flowers on plants? ● Where is a good outdoor place for growing young plants? ● How does climate change affect living things?
Content: *Students will know…* ● Insects need air, food, water, and space.	**Skills:** *Students will be able to…* ● observe larvae grow, molt, pupate, and turn into beetles (adults), which mate, lay eggs, and die.

• The life cycle of the beetle is egg, larva, pupa, and adult, which produces eggs. • Insects have characteristic structures and behaviors. • Adult insects have a head, thorax, and abdomen. • Insects have predictable characteristics at different stages of development. • Plants need water, air, nutrients, light, and space. • As plants grow, they develop roots, stems, leaves, buds, flowers, and seeds in a sequence called a life cycle. Seeds develop into new plants that look like the parent plant. • Animals disperse seeds, moving them from one location to another where they grow. • Bees and other insects help some plants by moving pollen from flower to flower. • Insects need air, food, water, and appropriate space including shelter; different insects meet these needs in different ways. • The life cycle of some insects is egg, nymph stages, and adult, which produces eggs. • Variations exist within a group of related organisms. • As insects grow, they molt their exoskeleton • Insects need air, food, water, and space including shelter; different insects meet these needs in different ways. • The life cycle of some insects involves complete metamorphosis—egg, larva, pupa, and adult, which produces eggs. • The life cycle of the butterfly involves complete metamorphosis. Butterflies construct chrysalises when they pupate. • Insects pollinate plants. • Life cycles are different for different animals. • How climate change affects living things at different stages	• read an article about insects in the environment. • plant tiny rapid-cycling brassica seeds in a planter cup. • study pollination through video and by cross-pollinating their brassica plants. • observe and record the complete life cycle from seed to seed. • search for seeds outdoors and learn about ways that animals disperse seeds to new locations. • prepare a habitat for the bugs, providing air, food, water, and space, including shelter. • observe structure, pattern, and behavior as the insects advance through simple metamorphosis. • go outdoors to search for insects living naturally on the ground and on plants and design an insect habitat. • observe the life history of one of the most commercially successful insects, silkworms. • search the schoolyard for evidence of plants being eaten by insects. • observe painted lady larvae grow, pupate, and emerge as adult butterflies. • observe the stages of complete metamorphosis and compare the behaviors of moths and butterflies. • study pollination through video and outdoor plant observations. • Study how climate change impacts living things

NJ Student Learning Standards - Science

Performance Expectations ("the Standards"):

2-LS2: Ecosystems: Interactions, Energy, and Dynamics
Students who demonstrate understanding can:

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

2-LS2: Ecosystems: Interactions, Energy, and Dynamics

Students who demonstrate understanding can:
• 2-LS4-1 Make observations of plants and animals to compare the diversity of life in different habitats. [Clarification Statement: Emphasis is on the diversity of living things in each of a variety of different habitats.] [Assessment Boundary: Assessment does not include specific animal and plant names in specific habitats.]

Connected components:

Science and Engineering Practices:

Developing and Using Models

Modeling in K–2 builds on prior experiences and progresses to include using and developing models (i.e., diagram, drawing, physical replica, diorama, dramatization, or storyboard) that represent concrete events or design solutions.

- Develop a simple model based on evidence to represent a proposed object or tool. (2-LS2-2)

Planning and Carrying Out Investigations

Planning and carrying out investigations to answer questions or test solutions to problems in K–2 builds on prior experiences and progresses to simple investigations, based on fair tests, which provide data to support explanations or design solutions.

- Plan and conduct an investigation collaboratively to produce data to serve as the basis for evidence to answer a question. (2-LS2-1)

Planning and Carrying Out Investigations

Planning and carrying out investigations to answer questions or test solutions to problems in K–2 builds on prior experiences and progresses to simple investigations, based on fair tests, which provide data to support explanations or design solutions.

- Make observations (firsthand or from media) to collect data that can be used to make comparisons. (2-LS4-1)

Disciplinary Core Ideas:

LS2.A: Interdependent Relationships in Ecosystems

- Plants depend on water and light to grow. (2-LS2-1)
- Plants depend on animals for pollination or to move their seeds around. (2-LS2-2)

ETS1.B: Developing Possible Solutions

- Designs can be conveyed through sketches, drawings, or physical models. These representations are useful in communicating ideas for a problem's solutions to other people. (secondary to 2-LS2-2)

LS4.D: Biodiversity and Humans

- There are many different kinds of living things in any area, and they exist in different places on land and in water. (2-LS4-1)

Crosscutting Concepts:

1. Cause and Effect: Mechanism and Explanation
2. Structure and Function

Cause and Effect

- Events have causes that generate observable patterns. (2-LS2-1)

Structure and Function

- The shape and stability of structures of natural and designed objects are related to their function(s). (2-LS2-2)

Career Education (Career Readiness, Life Literacies, and Key Skills Practices and 9.2 Standards)

List standards here.
9.2.2.CAP.1: Make a list of different types of jobs and describe the skills associated with each job.

CLKS Practices:

1. Act as a responsible and contributing community members and employee
2. Consider the environmental, social and economic impacts of decisions
3. Use technology to enhance productivity increase collaboration and communicate effectively

Connected Careers:
Careers connected to the study of insects and plants include:

- Entomologist
- Science teacher
- Horticulturist

Explanation of how 9.2 standards connect to the unit:

The standard "Make a list of different types of jobs and describe the skills associated with each job" connects with the science unit of insects and plants because this unit will introduce students to various careers that involve the study of insects and plants. By exploring different professions, students gain insight into how scientific knowledge about insects and plants is applied in real-world settings.

Explanation of how CLKSs connect to the unit:

Ths science unit "Insects and Plants" will help students build knowledge about insects and plants which helps them understand the importance of biodiversity and ecosystem health. It will help them develop an understanding and recognize the role of pollinators in plant reproduction which can lead to help in protecting habitats and reduce the use of pesticides, helping students to consider the impacts of decisions. The use of technology to enhance productivity, increase collaboration and communicate effectively connects to the study of insects and plants because children can watch videos online to study pollination and use online resources to help enhance their knowledge and study of insects and plants. This knowledge will then be used to write insect research reports which will be shared with the class.

Explanation of how Connected Careers connect to the unit:

Careers connected to this unit include:

- The career of entomologist connects to this unit because this career requires skills in insect identification, classification, and behavior analysis
- The career of science teacher connects to this unit because science teachers require a vast knowledge of

science topics which students obtain through various hands-on lessons in this unit along with the study and observation of insects in the classroom.

- The career of horticulturist connects to this unit because this career needs knowledge of plant care, pest management, and soil science which children start to develop while working on activities and lessons studying mealworms, milkweed bugs, silkworms, butterflies as well as working with brassica seeds in this unit.

Interdisciplinary Standards

W.WR.2.5 Generate questions about a topic and locate related information from a reference source to obtain information on that topic through shared and independent research
2.DL.B.4 Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put together, take-apart, and compare problems using information presented in a bar graph.

Explanation of how interdisciplinary standards connect to the unit:

The standard "Generate questions about a topic and locate related information from a reference source to obtain information on that topic through shared and independent research" connects to the unit on insects and plants because students generate questions while observing the insects in the classroom (mealworms, milkweed bugs, silkworms, and butterflies). They can then use texts and online resources to research and read about the insects to find the answers to their questions and to gather more information.

The standard "Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put together, take-apart, and compare problems using information presented in a bar graph" connects to this unit because children can graph the number of insects in the different stages of metamorphosis and make comparisons. They can also talk to partners and other groups to compare the number of insects in certain stages of metamorphosis.

Technology Integration (9.4 Standards):

- 9.4.2.IML.1: Identify a simple search term to find information in a search engine or digital resource.
- 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 (e.g., 6.3.2.GeoGI.2, 6.1.2.HistorySE.3, W.2.6, 1-LSI-2).
- 9.4.2.TL.2: Create a document using a word processing application.

Explanation of how 9.4 standards connect to the unit:

The standard "Identify a simple search term to find information in a search engine or digital resource" connects to our unit on insects and plants because students do research both online and in texts to find more

information on the insects we are learning about in our unit. They also begin independent research on an insect of their choice which will be used to create a report on that insect.

The standard "Use a variety of sources including multimedia sources to find information about topics such as climate change, with guidance and support from adults" connects to this unit because students search online to learn more about insects being studied, as well as the stages of complete and incomplete metamorphosis through websites and videos.

The standard "Create a document using a word processing application" connects to this unit when children create a report on an insect or various insects. They use facts and information found in books, articles, and websites or other online resources to create a word document or a slide show to present and share their information.

Stage 2- Assessment Evidence:	
Assessment:	
Formative	**Lab experiments:** Use science journals to check student understanding of entries. **Focus Questions:** Students summarize their learning at the end of each lab experiment. **Response Sheet:** Students provide content to answer a provided question. Evidence for answer is required. **Science Journal Check:** Students record data in their science journals that describes the results during each lab. Journals are collected and assessed. **Science Notes:** Throughout the unit, student full in content provided in the notes to act as the student textbook. Students may use prepared *notebook sheets* or may generate *free-form notebook entries* that could both be collected and assessed for student progress. **Performance Assessments:** As students make observations and record their findings, teachers conduct 30-second interviews to see how students ask questions, and analyze and interpret data.
Summative	**I-Check Performance Assessments:** These are teacher prepared formal assessments that are appropriate for the students. They are up to one period in length and are taken individually. They are given at the end of the Investigation. This a performance based assessment. **Survey/Posttest:** A full-period assessment which consists of content questions, multiple choice, fill in the blank, and open-response questions.
Alternative	**Tutorials/Virtual Investigations:** Virtual simulations are provided for each investigation to enrich lab experiences.
Benchmark	**I-Checks:** At the end of each investigation, students take an I-Check benchmark

	assessment. The I-Check provides students with an opportunity to demonstrate what they know through a variety of question types. ● Investigation 1 I-Check ● Investigation 2 I-Check ● Investigation 3 I-Check ● Investigation 4 I-Check ● Investigation 5 I-Check

Stage 3 - Learning Plan

Learning Activities:

- **Investigation 1: Mealworms**
  - **Part One: mealworms**
  - **Part Two: larva, pupa, adult**
  - **Part Three: life cycle**
- **Investigation 2: Brassica Seeds**
  - **Part One: planting brassica**
  - **Part Two: observing brassica growth**
  - **Part Three: plant life cycle**
  - **Part Four: planting outdoors**
- **Investigation 3: Milkweed Bugs**
  - **Part One: eggs**
  - **Part Two: habitats**
  - **Part Three: growing milkweed bugs**
  - **Part Four: insect search**
- **Investigation 4: SIlkworms**
  - **Part One: eggs and larva**
  - **Part Two: silkworm structures**
  - **Part Three: pupae and adults**
  - **Part Four: plant eaters**
- **Investigation 5: Butterflies**
  - **Part One: caterpillars**
  - **Part Two: chrysalises**
  - **Part Three: adult butterflies**
  - **Part Four: flower powder**

Investate Climate Change: using primary resources and online tools, find ways that climate change has impacted insects.

Final Project: Students pick one insect to create a digital project of including all the important aspects

Differentiation:

ELL:

- Point out key ideas and vocabulary
- Offer students alternatives for communicating what they know
- Model abstract concepts
- Provide visuals illustrating scientific concepts
- Create a word wall that includes definitions and examples
- Draw pictures to illustrate terms
- Provide information sheets in different language

G&T:

- Foster independence in acquiring new scientific knowledge
- Provide additional opportunities for students to extend their scientific knowledge
- *FOSS Teacher Module* extension files
- Provide research opportunities tailored for each unit of study

Special Ed:

- Provide multiple means of representation.
- Provide multiple means of action and expression.
- Provide multiple means of engagement.
- Give verbal as well as written directions
- Provide visuals illustrating scientific concepts
- Review key concepts from each investigation
- Summarize investigation goals in clear and concise language

learned, including but not limited to: life cycle, habitat, food, etc.	• Provide additional time to complete independent activities **504:** • Give verbal as well as written directions • Provide Graphic Organizers per unit of study • Reduction of questions and types on assessments • Extended time to complete tasks • Provide additional time to complete independent activities • Provide visuals illustrating scientific concepts • Review key concepts from each investigation • Summarize investigation goals in clear and concise language **Students at Risk:** • Give learners various ways to acquire information and demonstrate knowledge • Foster collaboration and community • Increase mastery-oriented feedback • Use models to show related facts • Facilitate personal coping skills and strategies **Link to Science Differentiation Chart and Accommodations Chart**

Core and Supplementary Instructional Materials

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FOSS Science Resource books
FOSS technology website: www.FOSSweb.com
Bedwell Garden

Student Materials:

Student Textbook

FOSS Interactive Student e-Book
Student materials from Insects and Plants kit

Notes:
Inclusion of Climate Change Opportunities

Through this unit on insects and plants, students will have opportunities to investigate climate change by using primary resources and online tools, to find ways that climate change has impacted insects and plants. They will learn through this study of insects and plants that plants and animals can change their environment and the changes in the environment can have lasting effects on the insects and plants.