Lavallette Elementary School	Science Pacing Guide
Content Area: Science **Course Title:** Science	**Grade Level:** Fifth Grade
Unit Plan 1 Matter and Its Interactions	September - October
Unit Plan 2 Motion and Stability: Forces and Interactions	November
Unit Plan 3 Energy	December
Unit Plan 4 From Molecules to Organisms: Structures and Processes	January
Unit Plan 5 Ecosystems: Interactions, Energy, and Dynamics	February
Unit Plan 6 Earth's Place in the Universe	March
Unit Plan 7 Earth's Systems	April
Unit Plan 8 Earth and Human Activity	May
Unit Plan 9 Engineering Design	June
Updated: October 2018 by Sharon Carroll Aligned to New Jersey Student Learning Standards	Board Approved: October 16, 2018

Lavallette Elementary School
Curriculum
Unit Overview

Content Area: Science Unit 1 **Grade Level:** Fifth Grade

Domain (Unit Title): 5-PS1 Matter and Its Interactions

Unit Summary: In this unit of study, students describe that matter is made of particles too small to be seen by developing a model. The crosscutting concept of *scale, proportion, and quantity* is called out as an organizing concept for these disciplinary core ideas. Students demonstrate grade-appropriate proficiency in *developing and using models*, *planning and carrying out investigations*, and use these practices to demonstrate understanding of the core ideas.

Primary Interdisciplinary Connections: Mathematics, Language Arts Literacy, Science, Social Studies. All of the NJ State Standards may be found on the New Jersey state website.

21 Century Themes:
All students will develop an understanding of the nature and impact of technology, engineering, technological design, and the designed world, as they relate to the individual, global society and the universe.

21st Century Life & Career Skills	All students will demonstrate the creative, critical thinking, collaboration, and problem-solving skills needed to function successfully as both global citizens and workers in diverse ethnic and organizational cultures.
Personal Financial Literacy	All students will develop skills and strategies that promote personal and financial responsibility related to financial planning, savings, investment, and charitable giving in the global economy.
Career Awareness, Exploration, and Preparation	All students will apply knowledge about and engage in the process of career awareness, exploration, and preparation in order to navigate the globally competitive work environment of the information age.

Career and Technical Education	All students who complete a career and technical education program will acquire academic and technical skills for careers in emerging and established professions that lead to technical skill proficiency, credentials, certificates, licenses, and/or degrees.

UNIT 1:
Standards/Learning Targets
5-PS1-1. Develop a model to describe that matter is made of particles too small to be seen. [Clarification Statement: Examples of evidence supporting a model could include adding air to expand a basketball, compressing air in a syringe, dissolving sugar in water, and evaporating salt water.] [Assessment Boundary: Assessment does not include the atomic-scale mechanism of evaporation and condensation or defining the unseen particles.] **5-PS1-2. Measure and graph quantities to provide evidence that regardless of the type of change that occurs when heating, cooling, or mixing substances, the total weight of matter is conserved.** [Clarification Statement: Examples of reactions or changes could include phase changes, dissolving, and mixing that form new substances.] [Assessment Boundary: Assessment does not include distinguishing mass and weight.] 5-PS1-3. **Make observations and measurements to identify materials based on their properties.** [Clarification Statement: Examples of materials to be identified could include baking soda and other powders, metals, minerals, and liquids. Examples of properties could include color, hardness, reflectivity, electrical conductivity, thermal conductivity, response to magnetic forces, and solubility; density is not intended as an identifiable property.] [Assessment Boundary: Assessment does not include density or distinguishing mass and weight.] **5-PS1-4. Conduct an investigation to determine whether the mixing of two or more substances results in new substances**
Performance Expectation

Science and Engineering Practices	**Disciplinary Core Ideas**

Developing and Using Models
Modeling in 3–5 builds on K–2 experiences and progresses to building and revising simple models and using models to represent events and design solutions.

- Develop a model to describe phenomena. (5-PS1-1)

Planning and Carrying Out Investigations
Planning and carrying out investigations to answer questions or test solutions to problems in 3–5 builds on K–2 experiences and progresses to include investigations that control variables and provide evidence to support explanations or design solutions.

- Conduct an investigation collaboratively to produce data to serve as the basis for evidence, using fair tests in which variables are controlled and the number of trials considered. (5-PS1-4)
- Make observations and measurements to produce data to serve as the basis for evidence for an explanation of a phenomenon. (5-PS1-3)

Using Mathematics and Computational Thinking
Mathematical and computational thinking in 3–5 builds on K–2 experiences and progresses to extending quantitative measurements to a variety of physical properties and using computation and mathematics to analyze data and compare alternative design solutions.

- Measure and graph quantities such as weight to address scientific and engineering questions and problems. (5-PS1-2)

- **PS1.A: Structure and Properties of Matter** Matter of any type can be subdivided into particles that are too small to see, but even then the matter still exists and can be detected by other means. A model showing that gases are made from matter particles that are too small to see and are moving freely around in space can explain many observations, including the inflation and shape of a balloon and the effects of air on larger particles or objects. (5-PS1-1)
- The amount (weight) of matter is conserved when it changes form, even in transitions in which it seems to vanish. (5-PS1-2)
- Measurements of a variety of properties can be used to identify materials. (Boundary: At this grade level, mass and weight are not distinguished, and no attempt is made to define the unseen particles or explain the atomic-scale mechanism of evaporation and condensation.) (5-PS1-3)

PS1.B: Chemical Reactions

- When two or more different substances are mixed, a new substance with different properties may be formed. (5-PS1-4)
- No matter what reaction or change in properties occurs, the total weight of the substances does not change. (Boundary: Mass and weight are not distinguished at this grade level.) (5-PS1-2)

Crosscutting Concepts	**Learning Objectives**

Cause and Effect ● Cause and effect relationships are routinely identified, tested, and used to explain change. (5-PS1-4) **Scale, Proportion, and Quantity** ● Natural objects exist from the very small to the immensely large. (5-PS1-1) ● Standard units are used to measure and describe physical quantities such as weight, time, temperature, and volume. (5-PS1- 2),(5-PS1-3) **Scientific Knowledge Assumes an Order and Consistency in Natural Systems** ● Science assumes consistent patterns in natural systems. (5-PS1-2)	Students will understand that…. ● Matter is a term that applies to all of the stuff around us and it is made of particles that are too small to see. ● When substances are heated, cooled, or mixed the total weight before and after is always the same. ● Substances can be identified based on observable and measureable properties. ● Sometimes when two substances are mixed, each of the substances keeps its original properties and sometimes a new substance is formed. ● Give an examples of matter ● Describe how gases are made from matter particles that are too small to be seen. (Ex: an inflated balloon) ● Measure and graph the weights of matter before and after being heated, cooled, or mixed. ● Identify materials based on various observable properties. ● Determine whether the mixing of two substances always results in the formation of new substances or not and provide examples. ● Identify the differences between soluble and insoluble solutions.

Lavallette Elementary School Curriculum
Unit Overview

Content Area: Science Unit 2 **Grade Level:** Fifth Grade

Domain (Unit Title): 5-PS2 Motion and Stability: Forces and Interactions

Unit Summary: In this unit of study, students develop an understanding of the idea that regardless of the type of change that matter undergoes, the total weight of matter is conserved. Students determine whether the mixing of two or more substances results in new substances. The crosscutting concepts of *cause and effect* and *scale, proportion, and quantity* are called out as organizing concepts for these disciplinary core ideas. Students are expected to demonstrate grade-appropriate proficiency in *planning and carrying out investigations* and *using mathematics and computational thinking*. Students are expected to use these practices to demonstrate understanding of the core ideas

Primary Interdisciplinary Connections: Mathematics, Language Arts Literacy, Science, Social Studies. All of the NJ State Standards may be found on the New Jersey state website.

21 Century Themes:
All students will develop an understanding of the nature and impact of technology, engineering, technological design, and the designed world, as they relate to the individual, global society and the universe.

21st Century Life & Career Skills	All students will demonstrate the creative, critical thinking, collaboration, and problem-solving skills needed to function successfully as both global citizens and workers in diverse ethnic and organizational cultures.
Personal Financial Literacy	All students will develop skills and strategies that promote personal and financial responsibility related to financial planning, savings, investment, and charitable giving in the global economy.
Career Awareness, Exploration, and Preparation	All students will apply knowledge about and engage in the process of career awareness, exploration, and preparation in order to navigate the globally competitive work environment of the information age.
Career and Technical Education	All students who complete a career and technical education program will acquire academic and technical skills for careers in emerging and established professions that lead to technical skill proficiency, credentials, certificates, licenses, and/or

	degrees.

UNIT 2:
Standards/Learning Targets
5-PS2-1. Support an argument that the gravitational force exerted by Earth on objects is directed down. [Clarification Statement: "Down" is a local description of the direction that points toward the center of the spherical Earth.] [Assessment Boundary: Assessment does not include mathematical representation of gravitational force.]
Performance Expectation

Science and Engineering Practices	**Disciplinary Core Ideas**
Engaging in Argument from Evidence Engaging in argument from evidence in 3–5 builds on K–2 experiences and progresses to critiquing the scientific explanations or solutions proposed by peers by citing relevant evidence about the natural and designed world(s). ● Support an argument with evidence, data, or a model. (5- PS2-1)	**PS2.B: Types of Interactions** ● The gravitational force of Earth acting on an object near Earth's surface pulls that object toward the planet's center. (5-PS2-1)

Crosscutting Concepts	**Learning Objectives**
Cause and Effect ● Cause and effect relationships are routinely identified and used to explain change. (5-PS2-1)	Students will understand that… ● Matter is a term that applies to all of the stuff around us and it is made of particles that are too small to see. ● When substances are heated, cooled, or mixed the total weight before and after is always the same.

	• Substances can be identified based on observable and measurable properties. • Sometimes when two substances are mixed, each of the substances keeps its original properties and sometimes a new substance is formed. • Give an examples of matter • Describe how gases are made from matter particles that are too small to be seen. (Ex: an inflated balloon) • Measure and graph the weights of matter before and after being heated, cooled, or mixed. • Identify materials based on various observable properties. • Determine whether the mixing of two substances always results in the formation of new substances or not and provide examples. • Identify the differences between soluble and insoluble solutions.

Lavallette Elementary School Curriculum
Unit Overview

Content Area: Science Unit 3 **Grade Level:** Fifth Grade

Domain (Unit Title): 5-PS3 Energy

Unit Summary: In this unit of study, students develop an understanding of the idea that plants get the materials they need for growth chiefly from air and water. Using models, students can describe the movement of matter among plants, animals, decomposers, and the environment, and they can explain that energy in animals' food was once energy from the sun. The crosscutting concepts of *energy and matter* and *systems and system models* are called out as organizing concepts for these disciplinary core ideas. Students are expected to demonstrate grade-appropriate proficiency in *developing and using models* and *engaging in argument from evidence.* Students are also expected to use these practices to demonstrate understanding of the core ideas.

Primary Interdisciplinary Connections: Mathematics, Language Arts Literacy, Science, Social Studies. All of the NJ State Standards may be found on the New Jersey state website.

21 Century Themes:
All students will develop an understanding of the nature and impact of technology, engineering, technological design, and the designed world, as they relate to the individual, global society and the universe.

21st Century Life & Career Skills	All students will demonstrate the creative, critical thinking, collaboration, and problem-solving skills needed to function successfully as both global citizens and workers in diverse ethnic and organizational cultures.
Personal Financial Literacy	All students will develop skills and strategies that promote personal and financial responsibility related to financial planning, savings, investment, and charitable giving in the global economy.
Career Awareness, Exploration, and Preparation	All students will apply knowledge about and engage in the process of career awareness, exploration, and preparation in order to navigate the globally competitive work environment of the information age.
Career and Technical Education	All students who complete a career and technical education program will acquire academic and technical skills for careers in emerging and established professions that lead to technical skill proficiency, credentials, certificates, licenses, and/or degrees.

UNIT 3:
Standards/Learning Targets

5-PS3-1. Use models to describe that energy in animals' food (used for body repair, growth, motion, and to maintain body warmth) was once energy from the sun.
[Clarification Statement: Examples of models could include diagrams, and flowcharts.]

Performance Expectation

Science and Engineering Practices	**Disciplinary Core Ideas**
Developing and Using Models Modeling in 3–5 builds on K–2 experiences and progresses to building and revising simple models and using models to represent events and design solutions. ● Use models to describe phenomena. (5-PS3-1)	**PS3.D: Energy in Chemical Processes and Everyday Life** ● The energy released [from] food was once energy from the sun that was captured by plants in the chemical process that forms plant matter (from air and water). (5-PS3-1) **LS1.C: Organization for Matter and Energy Flow in Organisms** ● Food provides animals with the materials they need for body repair and growth and the energy they need to maintain body warmth and for motion. (secondary to 5-PS3-1)

Crosscutting Concepts	**Learning Objectives**
Energy and Matter ● Energy can be transferred in various ways and between objects. (5-PS3-1)	Students will understand that…. ● Everything is made of matter. Matter is made of molecules. ● Animals grow by changing food molecules into body molecules that can build their bodies. ● Animals use some food molecules to release energy for movement and growth. ● Food molecules in an ecosystem can always be traced back to plants. ● Plants use water molecules, carbon dioxide molecules from the air, and energy from the sun to make food.

	• Animals and plants grow by changing food molecules into body molecules that can build their bodies. • Animals and plants use some food molecules to release energy for movement and growth. • Energy in an ecosystem can always be traced back to the sun. • Scientists convince others that their claims are correct by using data and ideas as evidence. • Decomposers release nutrients from dead plants and animals into the soil. • Animals, plants, and decomposers grow by changing food molecules into body molecules that can build their bodies. • Animals, plants, and decomposers use some food molecules to release energy for movement and growth. • Plants need nutrients to help make food molecules for energy and body matter.

Lavallette Elementary School Curriculum
Unit Overview

Content Area: Science Unit 4 **Grade Level:** Fifth Grade

Domain (Unit Title): 5-LS1 From Molecules to Organisms: Structures and Processes

Unit Summary: In this unit of study, students develop an understanding of the idea that plants get the materials they need for growth chiefly from air and water. Using models, students can describe the movement of matter among plants, animals, decomposers, and the environment, and they can explain that energy in animals' food was once energy from the sun. The crosscutting concepts of *energy and matter* and *systems and system models* are called out as organizing concepts for these disciplinary core ideas. Students are expected to demonstrate grade-appropriate proficiency in *developing and using models* and *engaging in argument from evidence.* Students are also expected to use these practices to demonstrate understanding of the core ideas.

Primary Interdisciplinary Connections: Mathematics, Language Arts Literacy, Science,

Social Studies. All of the NJ State Standards may be found on the New Jersey state website.

21 Century Themes:
All students will develop an understanding of the nature and impact of technology, engineering, technological design, and the designed world, as they relate to the individual, global society and the universe.

21st Century Life & Career Skills	All students will demonstrate the creative, critical thinking, collaboration, and problem-solving skills needed to function successfully as both global citizens and workers in diverse ethnic and organizational cultures.
Personal Financial Literacy	All students will develop skills and strategies that promote personal and financial responsibility related to financial planning, savings, investment, and charitable giving in the global economy.
Career Awareness, Exploration, and Preparation	All students will apply knowledge about and engage in the process of career awareness, exploration, and preparation in order to navigate the globally competitive work environment of the information age.
Career and Technical Education	All students who complete a career and technical education program will acquire academic and technical skills for careers in emerging and established professions that lead to technical skill proficiency, credentials, certificates, licenses, and/or degrees.

UNIT 4:
Standards/Learning Targets

5-LS1-1. Support an argument that plants get the materials they need for growth chiefly from air and water. [Clarification Statement: Emphasis is on the idea that plant matter comes mostly from air and water, not from the soil.]

Performance Expectation

Science and Engineering Practices	**Disciplinary Core Ideas**
Engaging in Argument from Evidence Engaging in argument from evidence in 3–5 builds on K– 2 experiences and progresses to critiquing the scientific explanations or solutions proposed by peers by citing relevant evidence about the natural and designed world(s). ● Support an argument with evidence, data, or a model. (5-LS1-1)	**LS1.C: Organization for Matter and Energy Flow in Organisms** ● Plants acquire their material for growth chiefly from air and water. (5-LS1-1)

Crosscutting Concepts	**Learning Objectives**
Energy and Matter ● Matter is transported into, out of, and within systems. (5-LS1-1)	Students will understand that …. ● Animals grow by changing food molecules into body molecules that can build their bodies. ● Animals use some food molecules to release energy for movement and growth. ● Food molecules in an ecosystem can always be traced back to plants. ● Plants use water molecules, carbon dioxide molecules from the air, and energy from the sun to make food. ● Animals and plants grow by changing food molecules into body molecules that can build their bodies. ● Animals and plants use some food molecules to release energy for movement and growth.

	● Energy in an ecosystem can always be traced back to the sun. ● Scientists convince others that their claims are correct by using data and ideas as evidence. ● Decomposers release nutrients from dead plants and animals into the soil. ● Animals, plants, and decomposers grow by changing food molecules into body molecules that can build their bodies. ● Animals, plants, and decomposers use some food molecules to release energy for movement and growth. ● Plants need nutrients to help make food molecules for energy and body matter.

Lavallette Elementary School
Curriculum
Unit Overview

Content Area: Science Unit 5 **Grade Level:** Fifth Grade

Domain (Unit Title): 5-LS2 Ecosystems: Interactions, Energy, and Dynamics

Unit Summary: In this unit of study, students develop an understanding of the idea that plants get the materials they need for growth chiefly from air and water. Using models, students can describe the movement of matter among plants, animals, decomposers, and the environment, and they can explain that energy in animals' food was once energy from the sun. The crosscutting concepts of *energy and matter* and *systems and system models* are called out as organizing concepts for these disciplinary core ideas. Students are expected to demonstrate grade-appropriate proficiency in *developing and using models* and *engaging in argument from evidence.* Students are also expected to use these practices to demonstrate understanding of the core ideas.

Primary Interdisciplinary Connections: Mathematics, Language Arts Literacy, Science,

Social Studies. All of the NJ State Standards may be found on the New Jersey state website.

21 Century Themes:
All students will develop an understanding of the nature and impact of technology, engineering, technological design, and the designed world, as they relate to the individual, global society and the universe.

21st Century Life & Career Skills	All students will demonstrate the creative, critical thinking, collaboration, and problem-solving skills needed to function successfully as both global citizens and workers in diverse ethnic and organizational cultures.
Personal Financial Literacy	All students will develop skills and strategies that promote personal and financial responsibility related to financial planning, savings, investment, and charitable giving in the global economy.
Career Awareness, Exploration, and Preparation	All students will apply knowledge about and engage in the process of career awareness, exploration, and preparation in order to navigate the globally competitive work environment of the information age.
Career and Technical Education	All students who complete a career and technical education program will acquire academic and technical skills for careers in emerging and established professions that lead to technical skill proficiency, credentials, certificates, licenses, and/or degrees.

UNIT 5:
Standards/Learning Targets

5-LS2-1. Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment. [Clarification Statement: Emphasis is on the idea that matter that is not food (air, water, decomposed materials in soil) is changed by plants into matter that is food. Examples of systems could include organisms, ecosystems, and the Earth.] [Assessment Boundary: Assessment does not include molecular explanations.]

Performance Expectation

Science and Engineering Practices	**Disciplinary Core Ideas**
Developing and Using Models Modeling in 3–5 builds on K–2 models and progresses to building and revising simple models and using models to represent events and design solutions. ● Develop a model to describe phenomena. (5-LS2-1) **Science Models, Laws, Mechanisms, and Theories Explain Natural Phenomena** ● Science explanations describe the mechanisms for natural events. (5-LS2-1)	**LS2.A: Interdependent Relationships in Ecosystems** ● The food of almost any kind of animal can be traced back to plants. Organisms are related in food webs in which some animals eat plants for food and other animals eat the animals that eat plants. Some organisms, such as fungi and bacteria, break down dead organisms (both plants or plants parts and animals) and therefore operate as “decomposers.” Decomposition eventually restores (recycles) some materials back to the soil. Organisms can survive only in environments in which their particular needs are met. A healthy ecosystem is one in which multiple species of different types are each able to meet their needs in a relatively stable web of life. Newly introduced species can damage the balance of an ecosystem. (5-LS2-1) **LS2.B: Cycles of Matter and Energy Transfer in Ecosystems** ● Matter cycles between the air and soil and among plants, animals, and microbes as these organisms live and die. Organisms obtain gases, and water, from the environment, and release waste matter (gas, liquid, or solid) back into the

	environment. (5-LS2-1)

Crosscutting Concepts	**Learning Objectives**
Systems and System Models ● A system can be described in terms of its components and their interactions. (5-LS2- 1)	Students will understand that. . . ●

Lavallette Elementary School Curriculum
Unit Overview

Content Area: Science Unit 6 **Grade Level:** Fifth Grade

Domain (Unit Title): 5-ESS1 Earth's Place in the Universe

Unit Summary: In this unit of study, students are able to describe ways in which the geosphere, biosphere, hydrosphere, and atmosphere interact. The crosscutting concept of *systems and system models* is called out as an organizing concept for this disciplinary core idea. Students are expected to demonstrate grade-appropriate proficiency in *developing and using models*, *obtaining, evaluating, and communicating information*. Students are also expected to use these practices to demonstrate understanding of the core ideas.

Primary Interdisciplinary Connections: Mathematics, Language Arts Literacy, Science, Social Studies. All of the NJ State Standards may be found on the New Jersey state website.

21 Century Themes:
All students will develop an understanding of the nature and impact of technology, engineering, technological design, and the designed world, as they relate to the individual, global society and the universe.

21st Century Life & Career Skills	All students will demonstrate the creative, critical thinking, collaboration, and problem-solving skills needed to function

	successfully as both global citizens and workers in diverse ethnic and organizational cultures.
Personal Financial Literacy	All students will develop skills and strategies that promote personal and financial responsibility related to financial planning, savings, investment, and charitable giving in the global economy.
Career Awareness, Exploration, and Preparation	All students will apply knowledge about and engage in the process of career awareness, exploration, and preparation in order to navigate the globally competitive work environment of the information age.
Career and Technical Education	All students who complete a career and technical education program will acquire academic and technical skills for careers in emerging and established professions that lead to technical skill proficiency, credentials, certificates, licenses, and/or degrees.

UNIT 6:
Standards/Learning Targets
5-ESS1-1. Support an argument that differences in the apparent brightness of the sun compared to other stars is due to their relative distances from Earth. [Assessment Boundary: Assessment is limited to relative distances, not sizes, of stars. Assessment does not include other factors that affect apparent brightness (such as stellar masses, age, stage).] **5-ESS1-2. Represent data in graphical displays to reveal patterns of daily changes in length and direction of shadows, day and night, and the seasonal appearance of some stars in the night sky.** [Clarification Statement: Examples of patterns could include the position and motion of Earth with respect to the sun and selected stars that are visible only in particular months.] [Assessment Boundary: Assessment does not include causes of seasons.]
Performance Expectation

Science and Engineering Practices	Disciplinary Core Ideas
Analyzing and Interpreting Data Analyzing data in 3–5 builds on K–2 experiences and progresses to introducing quantitative approaches to collecting data and conducting multiple trials of qualitative observations. When possible and feasible, digital tools should be used. ● Represent data in graphical displays (bar graphs, pictographs and/or pie charts) to reveal patterns that indicate relationships. (5-ESS1-2) **Engaging in Argument from Evidence** Engaging in argument from evidence in 3–5 builds on K–2 experiences and progresses to critiquing the scientific explanations or solutions proposed by peers by citing relevant evidence about the natural and designed world(s). ● Support an argument with evidence, data, or a model. (5- ESS1-1)	**ESS1.A: The Universe and its Stars** ● The sun is a star that appears larger and brighter than other stars because it is closer. Stars range greatly in their distance from Earth. (5-ESS1-1) **ESS1.B: Earth and the Solar System** ● The orbits of Earth around the sun and of the moon around Earth, together with the rotation of Earth about an axis between its North and South poles, cause observable patterns. These include day and night; daily changes in the length and direction of shadows; and different positions of the sun, moon, and stars at different times of the day, month, and year. (5-ESS1-2)

Crosscutting Concepts	Learning Objectives
Patterns ● Similarities and differences in patterns can be used to sort, classify, communicate and analyze simple rates of change for natural phenomena. (5- ESS1-2) **Scale, Proportion, and Quantity** ● Natural objects exist from the very small to the immensely large. (5-ESS1- 1)	Students will understand that …. ● Earth is a nonliving object that is made up of four major systems (geosphere, atmosphere, hydrosphere, and biosphere). ● Geosphere (solid/molten rock, soil, sediments. Hydrosphere (water and ice). Biosphere (living things, including humans). Atmosphere (air). ● Earth's systems interact in multiple ways to affect Earth's surface materials and processes. ● Nearly all of Earth's available water is in the ocean - freshwater in

	glaciers or underground; tiny fraction in streams, lakes, wetlands, and atmosphere.

Lavallette Elementary School Curriculum
Unit Overview

Content Area: Science Unit 7 **Grade Level:** Fifth Grade

Domain (Unit Title): 5-ESS2 Earth's Systems

Unit Summary: In this unit of study, students develop an understanding of patterns of daily changes in length and direction of shadows, day and night, and the seasonal appearance of some stars in the night sky. The crosscutting concepts of *patterns, cause and effect*, and *scale, proportion, and quantity* are called out as organizing concepts for these disciplinary core ideas. Students are expected to demonstrate grade-appropriate proficiency in *analyzing and interpreting data* and *engaging in argument from evidence*. Students are also expected to use these practices to demonstrate an understanding of the core ideas.

Primary Interdisciplinary Connections: Mathematics, Language Arts Literacy, Science, Social Studies. All of the NJ State Standards may be found on the New Jersey state website.

21 Century Themes:
All students will develop an understanding of the nature and impact of technology, engineering, technological design, and the designed world, as they relate to the individual, global society and the universe.

21st Century Life & Career Skills	All students will demonstrate the creative, critical thinking, collaboration, and problem-solving skills needed to function successfully as both global citizens and workers in diverse ethnic and organizational cultures.
Personal Financial Literacy	All students will develop skills and strategies that promote personal and financial responsibility related to financial

	planning, savings, investment, and charitable giving in the global economy.
Career Awareness, Exploration, and Preparation	All students will apply knowledge about and engage in the process of career awareness, exploration, and preparation in order to navigate the globally competitive work environment of the information age.
Career and Technical Education	All students who complete a career and technical education program will acquire academic and technical skills for careers in emerging and established professions that lead to technical skill proficiency, credentials, certificates, licenses, and/or degrees.

UNIT 7:
Standards/Learning Targets
5-ESS2-1. Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact. [Clarification Statement: Examples could include the influence of the ocean on ecosystems, landform shape, and climate; the influence of the atmosphere on landforms and ecosystems through weather and climate; and the influence of mountain ranges on winds and clouds in the atmosphere. The geosphere, hydrosphere, atmosphere, and biosphere are each a system.] [Assessment Boundary: Assessment is limited to the interactions of two systems at a time.] **5-ESS2-2. Describe and graph the amounts of saltwater and fresh water in various reservoirs to provide evidence about the distribution of water on Earth.** [Assessment Boundary: Assessment is limited to oceans, lakes, rivers, glaciers, groundwater, and polar ice caps, and does not include the atmosphere.]
Performance Expectation

Science and Engineering Practices	Disciplinary Core Ideas
Developing and Using Models Modeling in 3–5 builds on K–2 experiences and progresses to building and revising simple models and using models to represent events and design solutions. ● Develop a model using an example to describe a scientific principle. (5-ESS2-1) **Using Mathematics and Computational Thinking** Mathematical and computational thinking in 3–5 builds on K–2 experiences and progresses to extending quantitative measurements to a variety of physical properties and using computation and mathematics to analyze data and compare alternative design solutions. ● Describe and graph quantities such as area and volume to address scientific questions. (5-ESS2-2)	**ESS2.A: Earth Materials and Systems** ● Earth's major systems are the geosphere (solid and molten rock, soil, and sediments), the hydrosphere (water and ice), the atmosphere (air), and the biosphere (living things, including humans). These systems interact in multiple ways to affect Earth's surface materials and processes. The ocean supports a variety of ecosystems and organisms, shapes landforms, and influences climate. Winds and clouds in the atmosphere interact with the landforms to determine patterns of weather. (5-ESS2-1) **ESS2.C: The Roles of Water in Earth's Surface Processes** ● Nearly all of Earth's available water is in the ocean. Most freshwater is in glaciers or underground; only a tiny fraction is in streams, lakes, wetlands, and the atmosphere. (5-ESS2-2)

Crosscutting Concepts	Learning Objectives
Scale, Proportion, and Quantity ● Standard units are used to measure and describe physical quantities such as weight and volume. (5-ESS2-2) **Systems and System Models** ● A system can be described in terms of its components and their interactions. (5-ESS2-1)	Students will understand that…. ● the relative brightness of the Sun compared to other stars is a function of the distance to those stars. ● day turns into night. ● the sun casts different sized shadows. ● the location of constellations in the night sky appear in different locations due to the rotation and revolution of Earth. ● the length of shadows decreases during the day until they reach a

	certain point, then the shadows gradually start to get larger. ● Gravity is the pull from Earth that keeps objects from floating into space. ● Gravitational force pulls from each object's center of gravity (center of its mass)

Lavallette Elementary School Curriculum
Unit Overview

Content Area: Science Unit 8 **Grade Level:** Fifth Grade

Domain (Unit Title): 5-ESS3 Earth and Human Activity

Unit Summary: In this unit of study, students develop an understanding of the idea that plants get the materials they need for growth chiefly from air and water. Using models, students can describe the movement of matter among plants, animals, decomposers, and the environment, and they can explain that energy in animals' food was once energy from the sun. The crosscutting concepts of *energy and matter* and *systems and system models* are called out as organizing concepts for these disciplinary core ideas. Students are expected to demonstrate grade-appropriate proficiency in *developing and using models* and *engaging in argument from evidence.* Students are also expected to use these practices to demonstrate understanding of the core ideas.

Primary Interdisciplinary Connections: Mathematics, Language Arts Literacy, Science, Social Studies. All of the NJ State Standards may be found on the New Jersey state website.

21 Century Themes:
All students will develop an understanding of the nature and impact of technology, engineering, technological design, and the designed world, as they relate to the individual, global society and the universe.

21st Century Life & Career Skills	All students will demonstrate the creative, critical thinking,

	collaboration, and problem-solving skills needed to function successfully as both global citizens and workers in diverse ethnic and organizational cultures.
Personal Financial Literacy	All students will develop skills and strategies that promote personal and financial responsibility related to financial planning, savings, investment, and charitable giving in the global economy.
Career Awareness, Exploration, and Preparation	All students will apply knowledge about and engage in the process of career awareness, exploration, and preparation in order to navigate the globally competitive work environment of the information age.
Career and Technical Education	All students who complete a career and technical education program will acquire academic and technical skills for careers in emerging and established professions that lead to technical skill proficiency, credentials, certificates, licenses, and/or degrees.

UNIT 8:	
Standards/Learning Targets	
5-ESS3-1. Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.	
Performance Expectation	
Science and Engineering Practices	**Disciplinary Core Ideas**

Obtaining, Evaluating, and Communicating Information Obtaining, evaluating, and communicating information in 3– 5 builds on K–2 experiences and progresses to evaluating the merit and accuracy of ideas and methods. ● Obtain and combine information from books and/or other reliable media to explain phenomena or solutions to a design problem. (5-ESS3-1)	**ESS3.C: Human Impacts on Earth Systems** ● Human activities in agriculture, industry, and everyday life have had major effects on the land, vegetation, streams, ocean, air, and even outer space. But individuals and communities are doing things to help protect Earth's resources and environments. (5-ESS3-1)

Crosscutting Concepts	**Learning Objectives**
Systems and System Models ● A system can be described in terms of its components and their interactions. (5-ESS3-1) S**cience Addresses Questions About the Natural and Material World**. ● Science findings are limited to questions that can be answered with empirical evidence. (5- ESS3-1)	Students will understand that…. ● Geosphere (solid/molten rock, soil, sediments. Hydrosphere (water and ice). Biosphere (living things, including humans). Atmosphere (air). ● Earth's systems interact in multiple ways to affect Earth's surface materials and processes. ● Nearly all of Earth's available water is in the ocean - freshwater in glaciers or underground; tiny fraction in streams, lakes, wetlands, and atmosphere.

Lavallette Elementary School Curriculum
Unit Overview

Content Area: Science Unit 9 **Grade Level:** Fifth Grade

Domain (Unit Title): 3-5 ETS1 Engineering Design

Primary Interdisciplinary Connections: Mathematics, Language Arts Literacy, Science, Social Studies. All of the NJ State Standards may be found on the New Jersey state website.

21 Century Themes:
All students will develop an understanding of the nature and impact of technology, engineering, technological design, and the designed world, as they relate to the individual, global society and the universe.

21st Century Life & Career Skills	All students will demonstrate the creative, critical thinking, collaboration, and problem-solving skills needed to function successfully as both global citizens and workers in diverse ethnic and organizational cultures.
Personal Financial Literacy	All students will develop skills and strategies that promote personal and financial responsibility related to financial planning, savings, investment, and charitable giving in the global economy.
Career Awareness, Exploration, and Preparation	All students will apply knowledge about and engage in the process of career awareness, exploration, and preparation in order to navigate the globally competitive work environment of the information age.
Career and Technical Education	All students who complete a career and technical education program will acquire academic and technical skills for careers in emerging and established professions that lead to technical skill proficiency, credentials, certificates, licenses, and/or degrees.

UNIT 9:
Standards/Learning Targets
3-5-ETS1-1. Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.

3-5-ETS1-2. Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.

3-5-ETS1-3. Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

Performance Expectation

Science and Engineering Practices

Asking Questions and Defining Problems
Asking questions and defining problems in 3–5 builds on grades K–2 experiences and progresses to specifying qualitative relationships.

- Define a simple design problem that can be solved through the development of an object, tool, process, or system and includes several criteria for success and constraints on materials, time, or cost. (3-5-ETS1-1)

Planning and Carrying Out Investigations
Planning and carrying out investigations to answer questions or test solutions to problems in 3–5 builds on K–2 experiences and progresses to include investigations that control variables and provide evidence to support explanations or design solutions.

- Plan and conduct an investigation collaboratively to produce data to serve as the basis for evidence, using fair tests in which variables are controlled and the number of trials considered. (3-5-ETS1-3)

Constructing Explanations and Designing Solutions
Constructing explanations and designing solutions in 3–5 builds on K–2 experiences and progresses to the use of evidence in

Disciplinary Core Ideas

ETS1.A: Defining and Delimiting Engineering Problems

- Possible solutions to a problem are limited by available materials and resources (constraints). The success of a designed solution is determined by considering the desired features of a solution (criteria). Different proposals for solutions can be compared on the basis of how well each one meets the specified criteria for success or how well each takes the constraints into account. (3-5-ETS1-1)

ETS1.B: Developing Possible Solutions

- Research on a problem should be carried out before beginning to design a solution. Testing a solution involves investigating how well it performs under a range of likely conditions. (3-5-ETS1-2)
- At whatever stage, communicating with peers about proposed solutions is an important part of the design process, and shared ideas can lead to improved designs. (3-5-ETS1-2)
- Tests are often designed to identify failure points or difficulties, which suggest the elements of the design that need to be improved. (3-5-ETS1-3)

ETS1.C: Optimizing the Design Solution

constructing explanations that specify variables that describe and predict phenomena and in designing multiple solutions to design problems. ● Generate and compare multiple solutions to a problem based on how well they meet the criteria and constraints of the design problem. (3-5-ETS1-2)	● Different solutions need to be tested in order to determine which of them best solves the problem, given the criteria and the constraints. (3-5-ETS1-3)

Crosscutting Concepts	**Learning Objectives**
Influence of Engineering, Technology, and Science on Society and the Natural World ● People's needs and wants change over time, as do their demands for new and improved technologies. (3-5-ETS1-1) ● Engineers improve existing technologies or develop new ones to increase their benefits, decrease known risks, and meet societal demands. (3-5-ETS1-2)	Students will understand that…. ● A situation that people want to change or create can be approached as a problem to be solved through engineering. ● Asking questions, making observations, and gathering information are helpful in thinking about problems. ● The shape and stability of structures of natural and designed objects are related to their function(s)

Suggested Accommodations For All Units

Special Education/504 Plans/Students with Disabilities:

- Follow specific IEP/504 accommodations and modifications
- Extended time
- Modified assignments
- Labeled pictures of weather phenomenon
- Pre-teach concepts
- Differentiate assignments

Gifted and Talented:

- Differentiate assignments

- Higher level texts
- Homework questions should be open ended to increase higher level thinking
- Differentiate test questions
- Create alternate projects or assignments that challenge thinking
- Reference and possibly apply assessment boundary skills

Students at Risk of Failure:

- Small group instruction
- Frequent breaks
- Model how assignments should look
- Incorporate social/emotional discussions
- Encourage and monitor positive peer collaboration
- Provide academic resources for both school and home use

Economically Disadvantaged:

- Structure the learning around explaining or solving a social or community-based issue.
- Provide opportunities for students to connect with people of similar backgrounds (e.g. conversations via digital tool such as SKYPE, experts from the community helping with a project, journal articles, and biographies).

Culturally Diverse:

- Provide multiple grouping opportunities for students to share their ideas and to encourage work among various backgrounds and cultures (e.g. multiple representation and multimodal experiences).
- Structure lessons around questions that are authentic, relate to students' interests, social/family background and knowledge of their community.
- Provide opportunities for students to connect with people of similar backgrounds (e.g. conversations via digital tool such as SKYPE, experts from the community helping with a project, journal articles, and biographies).