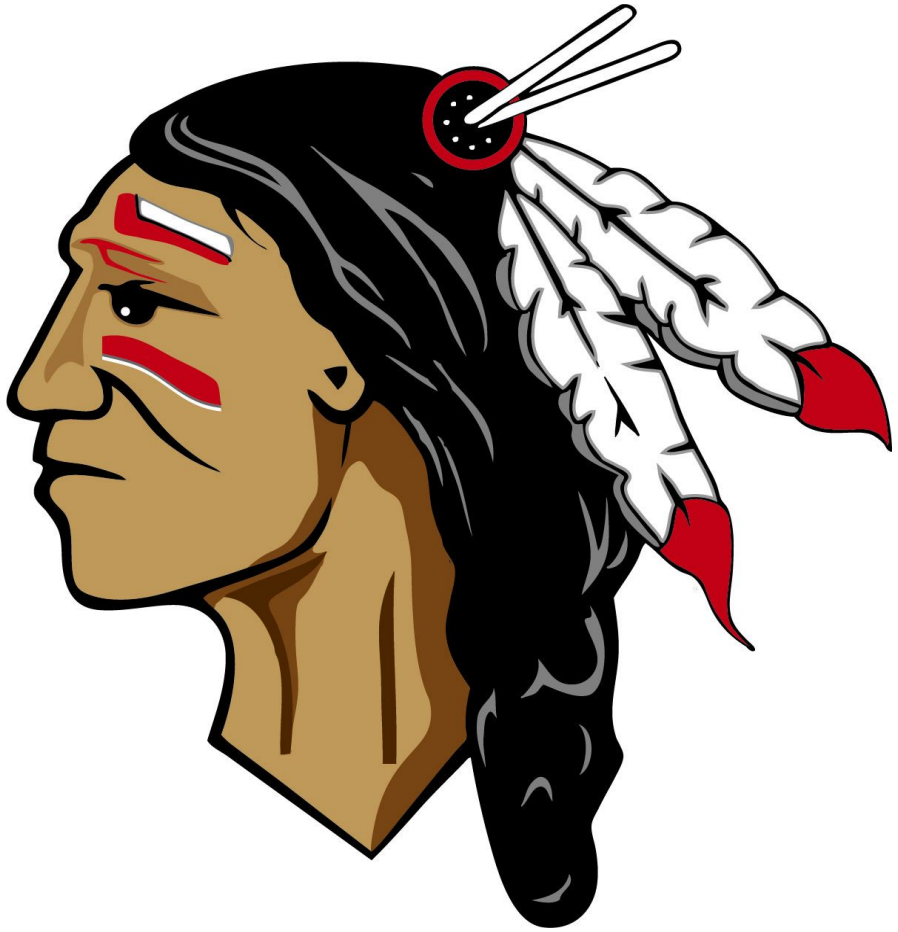
Westside Middle School
5th Grade Science Curriculum Map
2019-2020

Teacher: Loggains & Falls **Revised:** 7.25.19



Map is still under construction and will be revised throughout the year.

WESTSIDE MIDDLE SCHOOL 5TH GRADE SCIENCE CURRICULUM MAP

Teacher: Loggains & Falls

Unit 1

Topic: Get to Know You, Lab Safety, CER, Graphing

Topic: Matter & Energy in Ecosystems

Essential Questions:

Students will consider……

- How do I act during a Science Lab?
- When performing an investigation, what are possible scenarios in the lab that students may encounter?
- What are the components of a CER?
- What is a CER and how is it written?
- What are the components of a graph?
- What is the I Squared strategy to learning to interpret a graph?

- Where do plants get the materials they need for growth?
- How can energy in animals' food be connected to the sun?
- What role do food webs / food pyramids play in an ecosystem?
- How does movement of matter from producers, consumers, and decomposers affect an ecosystem?

Students will…..

- Understand the rules and procedures that are to be followed while conducting a science lab.
- Understand the Engineering Design Process.
- Understand the process of Claim, Evidence, and Reasoning.
- Understand energy is transported into, out of, and within systems.
- Understand plants acquire their material for growth mainly from air, water, and sunlight.
- Understand the role organisms play in a food web.
- Understand that organisms can survive only in environments in which their particular needs are met.

- Understand some organisms, such as fungi and bacteria, break down dead organisms.

- I will develop a model to trace the cycling of energy from the atmosphere into plants and then back into atmosphere when animals (consumer) eat the plants (producer).
- I will describe the relationship of energy between the sun, plants, and animals in various ecosystems. (chemical processes)
- I will describe the ways in which producers (plants) and consumers (animals) utilize energy from the sun in order to:
    - Maintain body warmth
    - Growth
    - Body repair
    - Motion
- I will construct an argument (CER) supporting the chief materials a plant needs for growth, focusing on air and water.
- I will discuss the ways in which a plant takes in and releases energy.
- I will develop a model to describe the movement of matter among plants (producers), animals (consumer), decomposers, and the environment.
- I will obtain and collect information on how human activities affect the Earth's resources and environments.
- I will determine and analyze the positive and negative effects on the environment as a result of human activities.
- I will use empirical evidence to determine science ideas and questions in the natural world and its resources

AR STANDARDS / SKILLS

CONTENT VOCABULARY WITHIN THE STANDARD WILL BE TAUGHT THROUGHOUT DAILY OBJECTIVES / GOALS.

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.]
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.]
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.]
5-ESS3-1 - Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment

Science/Engineering Practices	Disciplinary Core Idea	Crosscutting Concepts:	
Developing and Using Models Use models to describe phenomena. (5-PS3-1) Develop a model to describe phenomena. (5-LS2-1) Engaging in Argument from Evidence Support an argument with evidence, data, or a model. (5-LS1-1) ---------- ----- **Connections to Nature of Science Science Models, Laws, Mechanisms, and Theories Explain Natural Phenomena** Science explanations describe the mechanisms for natural events. (5-LS2-1)	**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) Plants acquire their material for growth chiefly from air and water. (5-LS1-1) **LS2.A: Interdependent Relationships in Ecosystems**	**Systems and System Models** A system can be described in terms of its components and their interactions. (5-LS2-1) Energy and Matter Matter is transported into, out of, and within systems. (5-LS1-1) Energy can be transferred in various ways and between objects. (5-PS3-1)	

	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)		
Activities/Skills	**Assessments**	**Resources**	**Vocabulary/Terms**
• Roller Race Lab/CER • Fortune Teller Fish Lab/CER • I Squared Graphing • Lab Safety • Classroom Procedures • Student Created Rules • All About Me Jar! • Wonder Jar! • Living and Nonliving Scavenger Hunt (Ecologists) • Food Chain Game • Food Web Poster • Bottle Ecosystem • Planting Seeds	• Common Formative Assessments • ACT Aspire-Energy in Ecosystems • CER • Graphing • Gizmo • Lab Assessment, Data Collection, and Interpretation • Studyjams	• Video- Learning about CER • My Dad’s an Alien • Book- Seven Blind Mice • The Bean Plant Experiment, Graph • Video- Why Feed Milk to Plants • “Roller Race”- Lab/CER • Fortune Teller Fish-Lab/CER • CER Practice • “If You Hold a Seed” by Elly Mackay • “Next Time You See A Maple Seed” by Emily Morgan • “Butternut Hollow Pond” by Brian	• Ecosystem • Environment • Food Chain • Food Web • Consumer • Producer • Decomposer • Decomposition • Photosynthesis • Organism • Predator • Prey • Matter • Carbon Dioxide • Oxygen

• Producer, Consumer, Decomposer • Break It Down • Where do fallen leaves go? • Indiana Jones of Fungus Hunters • Food Web CER • Ecosystem CER • Why would a hawk move to NYC? • Food Chain Gizmo		J. Heinz • "Picture-Perfect STEM Lessons, 3-5" by Emily Morgan and Karen Ansberry • "Picture-Perfect Science Lessons" by Emily Morgan and Karen Ansberry • "More Picture Perfect Science" by Emily Morgan and Karen Ansberry • "Teaching Science Through Trade Books" by Christine Anne Royce, Emily Morgan, and Karen Ansberry • "Uncovering Student Ideas in Science" by Page Keeley, Francis Eberle, and Joyce Tugel • Youtube - Bill Nye the Science Guy "Food Webs", "Plants","Biodiversity" • MSB - "Gets Planted", "Gets Eaten" • Study Jams - Photosynthesis, Ecosystem, Food Chain, Food Web • Readworks Article - The Ecosystem of a Forest • Youtube - BBC Fish ,Decomposition, Wrap Up with: The Dirt on Decomposers , Rotting Food & Fruit	

Unit 2

Topic: Properties and Changes of Matter

Essential Questions:

Students will consider……

- How are properties of matter identified and used in the real-world?
- How does matter change?

I will…..

- Understand matter can be divided into particles that are too small to see, but even then the matter still exists and can be detected by means other than seeing.
- Understand observations and measurements of a variety of properties can be used to identify materials.
- Understand when two or more different substances are mixed, a new substance may be formed.
- Understand matter can change and the amount (weight) of matter is conserved when it changes.

- I will observe and model an understanding of a phenomenon that involves bulk (observable) matter and particles of matter that are too small to be seen.
    - Expaning
    - Compress
    - Dissolve
    - Evaporation
    - Molecules
- I will distinguish between observable and measurable properties of materials
- I will make observations and collect measurements to distinguish materials based on their properties
    - Color
    - Hardness
    - Reflectivity
    - Electrical Conductivity
    - Thermal Conductivity
    - Response to Magnetic Forces
    - Solubility
- I will, plan, conduct, and display the measurements from an investigation; describing weight, time, temperature, and volume
    - Grams
    - Liters

- I will describe how the observations and measurements allow an investigator to identify materials based on their properties.
- I will collect and graphically display quantities to provide evidence that when changes in matter occur the weight (mass) of matter is conserved.
- I will observe the chemical and physical changes in an investigation, measuring and graphing the results to use as evidence that matter is conserved.
- I will conduct an investigation to determine whether the mixing of two or more substances results in new substances from a chemical or physical change.
- I will conduct an investigation using given variables in order to determine the qualitative and quantitative evidence of the experiment.
- I will explain the cause and effect of the changes seen in the investigation.
- I will determine and display independent and dependent variables in a controlled situation
- I will plan and carry out fair test investigations using models and prototypes

AR STANDARDS / SKILLS

CONTENT VOCABULARY WITHIN THE STANDARD WILL BE TAUGHT THROUGHOUT DAILY OBJECTIVES / GOALS.

5-PS1-1 Develop a model to describe that matter is made of particles too small to be seen.
5-PS1-3 Make observations and measurements to identify materials based on their properties.
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 conserved.
5-PS1-4 Conduct an investigation to determine whether the mixing of two or more substances results in new substances.
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

Science/Engineering Practices	Disciplinary Core Idea	Crosscutting Concepts:	
Developing and Using Models Modeling in 3–5 builds on K–2 experiences and progresses to building and revising simple models and using	**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	**Cause and Effect** ● Cause and effect relationships are routinely identified, tested, and used to explain change.	

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)	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)	(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) --- **Connections to Nature of Science** **Scientific Knowledge Assumes an Order and Consistency in Natural Systems** ● Science assumes consistent patterns in natural systems. (5-PS1-2)	
Activities/Skills	**Assessments**	**Resources**	**Vocabulary/Terms**
● The Mystery Powder Lab ● Properties of Matter Lab ● Elephant Toothpaste	● Common Formative Assessments ● ACT Aspire-Properties of Minerals ● CER	● “The Wind Blew” by Pat Hutchins ● “I Face the Wind” by Vicki	● Matter ● Mass ● Atoms

• Mentos & Diet Coke Geyser Experiment • Physical Properties of Matter • Slime Lab • Generation Genius • Kahoot- Chemical and Physical Change • CER and Lab- Ivory Soap • Change of Matter Lab • Capturing Chaos • Stretchy Bag Lab • Gizmo Part A and B • Power Up Lesson- Interpretation of Data for Chemical and Physical Changes, Conservation of Matter • Is it Matter? • What's the Matter? • Chemistry Matters •	• Graphing • Gizmo • Lab Assessments and Data Collection and Interpretation • Studyjams	Cobb • "Pancakes, Pancakes! By Eric Carle • "Yet More Everyday Science Mysteries:The Cookie Dilemma (Ch. 18)" by NSTA • "Chemistry Matter" by AIMS • "Picture-Perfect STEM Lessons, 3-5" by Emily Morgan and Karen Ansberry • "Picture-Perfect Science Lessons" by Emily Morgan and Karen Ansberry • "More Picture Perfect Science" by Emily Morgan and Karen Ansberry • "Uncovering Student Ideas in Science" by Page Keeley, Francis Eberle, and Joyce Tugel • Matter is Everywhere from ReadWorks • Youtube-Materials Engineer Video, • Generation Genius-Properties of Matter • Video- Bill Nye Chemical Reactions • Video- Mystery Reaction Why do things Explode? • Generation Genius Particle Nature of Matter	• Physical Change • Particles • Chemical Change • Substance • Phase Change • Properties • Proton • Neutron • Electron

Unit 3

Topic: Space Systems

Essential Questions:

Students will consider……

- How is water distributed throughout the Earth?
- How do the Earth's systems interact with each other?
- How do humans protect Earth's resources?
- What are the effects of pollution on ecosystems and environment?
- How does the Engineering Design Process aide in finding solutions?

I will…..

- Understand 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).
- Understand the Earth's major systems interact in multiple ways to affect Earth's surface materials and processes.
- Understand nearly all of Earth's available water is in the ocean. Most freshwater is in glaciers or underground; only a tiny fraction si in streams, lakes, wetlands, and the atmosphere.
- Understand human activities in agriculture, industry, and everyday life have had major effects on the land, vegetation, streams, ocean, air, and even outer space.
- Understand individuals and communities are doing things to help protect Earth's resources and environments.
- Utilize "Teyha's Pollution Solution" in order to explain the Engineering Design Process.
- Apply the Engineering Design Process to real world situations.
- Understand the effects of pollution on the environment and ecosystem.
- Demonstrate problem solving skills to identify solutions.

- I will collect and display patterns of daily changes in length and direction of shadows.
- I will collect and display patterns of daily changes in length and direction of day and night in relation to the orbits of the Earth and Moon.
- I will collect and display patterns of daily changes in the seasonal appearance of some stars in the night sky.
- I will analyze and interpret the data collected through the use of graphical displays

    - Pie Chart
    - Bar Graph
    - Quantitative and Qualitative Observation
    - Pictograph
- I will describe the similarities and differences in patterns observed in natural phenomena through communication of data
- I will determine the cause and effects of Earth's gravitational force in relation to the Earth's shape (spherical) and the location of Earth's core.
    - Objects seemingly drop straight down
    - Shadows
- I will obtain information in order to support an argument (CER) about the gravitational force on Earth.
- I will investigate the brightness of stars based on their relative distance from the Earth.
- I will develop an argument (CER) describing the differences in the brightness of the sun compared to other stars in the universe..
- I will explain the size of natural objects in relation to the universe and its stars compared to the distance from Earth
    - Scale, Proportion, Quantity
- I will communicate with peers in order to design and compare multiple solutions to a problem using given criteria and constraints.
- I will research and understand the cause and effect of the given situation or problem being investigated.
- I will determine the ways in which changes in technology impact real world problems and their solutions

- I will use materials, resources, and given criteria; following constraints, in order to ask questions, solve problems, and find solutions to a variety of situations

AR STANDARDS / SKILLS

CONTENT VOCABULARY WITHIN THE STANDARD WILL BE TAUGHT THROUGHOUT DAILY OBJECTIVES / GOALS.

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 select stars that are visible only in particular months.] [Assessment Boundary: Assessment does not include causes of seasons.]

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.]

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 rather than sizes of stars. Assessment does not include other factors that affect apparent brightness (such as stellar masses, age, or stage).]
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.
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.

Science/Engineering Practices	Disciplinary Core Idea	Crosscutting Concepts:	
Developing and Using Models ● Develop a model using an example to describe a scientific principle. (5-ESS2-1) **Using Mathematics and Computational Thinking** ● Describe and graph quantities such as area and volume to address scientific questions. (5-ESS2-2) **Obtaining, Evaluating, and Communicating Information** ● Obtain and combine information from books and/or other reliable media to explain phenomena or solutions to a design problem. (5-ESS3-1) **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. (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	**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) **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) LS2.A: Interdependent Relationships in Ecosystems The food of almost any kind of	**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, 5-ESS3-1) --- **Connections to Nature of Science Science Addresses Questions About the Natural and Material World** ● Science findings are limited to questions that can be answered with empirical evidence. (5-ESS3-1) Influence of Science, Engineering, and Technology on Society and the Natural World ● People's needs and wants change over time, as do their demands for new and improved technologies. (5-ETS1-1) ● Engineers improve existing technologies or develop new ones to increase their	

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. (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 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. (5-ETS1-2)	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) Crosscutting Concepts Systems and System Models A system can be described in terms of its components and their interactions. (5-LS2-1) Energy and Matter Matter is transported into, out of, and within systems. (5-LS1-1) Energy can be transferred in various ways and between objects. (5-PS3-1) 19 Grade 5: Matter and Energy in Organisms and Ecosystems Arkansas K-12 Science Standards Arkansas Department of Education 2015 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)	benefits, decrease known risks, and meet societal demands. (5-ETS1-2)	
Activities/Skills	**Assessments**	**Resources**	**Vocabulary/Terms**
● Water Testing Kit ● Litmus Test-Basic & Acidic ● Oil Spill Lab ● Engineering Design Process	● Common Formative Assessments ● Studyjams ● Lab Assessment and Data Collection ● What is engineering?	● "Picture-Perfect STEM Lessons, 3-5" by Emily Morgan and Karen Ansberry ● "Picture-Perfect Science	● Geosphere ● Environment ● Bodies of water ● Interactions

• PH Lab • Greentown • Mystery Bag Demonstration • Technology or Engineer? • Roller Coaster Challenge • Falling Objects	• What is technology? • CER • Graphing • Gizmo	Lessons" by Emily Morgan and Karen Ansberry • "More Picture Perfect Science" by Emily Morgan and Karen Ansberry • "Teaching Science Through Trade Books" by Christine Anne Royce, Emily Morgan, and Karen Ansberry • "Down the Drain: Conserving Water" by Anita Ganeri and Chris Oxlade • "A Cool Drink of Water" by Barbara Kerley • "Prince William" by Gloria Rand • "Oil Spill!" by Melvin Berger • Olivia's Birds and the Oil Spill • "Recycling Crafts" by Annalees Lim • "One Plastic Bag: Isatou Ceesay and the Recycling Woman of the Gambia" by Miranda Paul • End Overfishing UN Video • Sustaining Fishing Investigation Part 1/ Part 2 • Regulating Overfishing NEWSELA • "Tehya's Pollution Solution" by the Engineering is Elementary Team • How much water is in the world?	• Watershed • Hydrosphere • System • Glacier • Communities • Condensation • Atmosphere • Climate • Groundwater • Protection • Evaporation • Biosphere • Precipitation • Reservoir • Climate change • Runoff • Distribution • Saltwater • Freshwater • Resources

Unit 4

Topic: Earth's Systems

Essential Questions:

Students will consider……

- How human activity affects the Earth's resources and environments
- The ways in which a community uses scientific ideas to protect the Earth's environment or a given resource
- Provide evidence concerning the positive and negative effect of human activity
- The use of graphs in displaying data related to the amount of water on Earth
- Where water is located on the Earth's surface (and in the atmosphere)
- How water is stored
- How do the Earth's systems and the individual parts work together to contribute to the functioning of the other systems

I will…..

- I will identify and describe the Earth's major systems that include the geosphere, biosphere, hydrosphere, and/or atmosphere.
- I will identify the characteristics in order to develop a model to representing patterns in how the geosphere, biosphere, hydrosphere, and/or atmosphere interact.
    - Ecosystems
    - Organisms
    - Landforms
    - Climate
    - Wind
    - Clouds
    - Weather
- I will understand the differences and the locations of the various waters (Fresh and Salt) on Earth.
    - Oceans
    - Lakes
    - Rivers

    - Glaciers
    - Groundwater
    - Polar Ice Caps
    - Wetlands
- I will describe and graph the distribution of water on Earth.
    - Fresh Water
    - Salt Water
    - Frozen Fresh Water
- I will model the various amounts of water using weight and/or volume.(Scale, Proportion, and Quantity)
- I will begin to discuss the rotation of Earth's water through the atmosphere

AR STANDARDS / SKILLS

CONTENT VOCABULARY WITHIN THE STANDARD WILL BE TAUGHT THROUGHOUT DAILY OBJECTIVES / GOALS.

5-ESS3-1 Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment

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; or 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.] Geosphere-solid and molten rock, soil and sediments, hydrosphere (water and ice), atmosphere (air), and biosphere (living things, including humans)

5-ESS2-2 Describe and graph the amounts of salt water 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.]

Science/Engineering Practices	Disciplinary Core Idea	Crosscutting Concepts:	
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	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	**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, 5-ESS3-1) --- **Connections to Nature of Science** **Science Addresses Questions About the Natural and Material**	

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) **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)	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) 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)	**World** Science findings are limited to questions that can be answered with empirical evidence. (5-ESS3-1)	
Activities/Skills	**Assessments**	**Resources**	**Vocabulary/Terms**
• Trash to Treasure- Letter Home • Generation Genius Challenge- Water • Water Testing • Generation Genius Challenge- Earth's Spheres • Earth's Spheres Drawing Frame • Earth's Major Systems • Earth's Four Spheres • Biome Activity and Organizer • Oil Spill Teacher Demonstration	• Interactive Article: Plastic (357-359) • Lab- Water Testing and Data • How do plastic objects make our lives more convenient? • Which items can be used more than once or are just one use items? • Biome Project • Oil Spill Cleanup Lab • CER • Graphing • Gizmo	• Video Clip: How much plastic is in the ocean? • Book- One Plastic Bag • Video- Isatou Ceesay • Video- Generation Genius Water Quality and Distribution • Video- Magic School Bus-Wet All Over • Video- Generation Genius Interaction of Earth's Spheres • Video- CCK Four Spheres Part 1 and 2 • Video- Biome • Book- Oil Spill • Video- Exxon Valdez Oil Spill	**Criteria** **Constraints** **Nitrate** **Phosphorous** **Silica** **Sulfide** **Ammonia** **Nitrogen** **pH** **Chloride** **Chromium** **Copper** **Cyanide** **Iron** **Underground Water** **Aquifer** **Geosphere**

			Biosphere **Hydrosphere** **Atmosphere** **Biomes**