PSD SCIENCE CURRICULUM OVERVIEW K-5		
Kindergarten	**Grade 1**	**Grade 2**
• Forces and Interactions • Relationships in Ecosystems • Weather and Climate	• Waves- Light and Sound • Structure, Function, and Information Processing • Space Systems-Patterns	• Structures and Properties of Matter • Interdependent Relationships in Ecosystems • Earth's Systems-Processes that Shape the Earth
Grade 3	**Grade 4**	**Grade 5**
• Forces and Interactions • Interdependent Relationships in Ecosystems • Inheritance and Variations of Traits • Weather and Climate	• Energy • Waves and Information • Structure Function, and Information Processing • Earth's Systems-Processes that Shape the Earth	• Structure and Properties of Matter • Matter and Energy in Organisms and Ecosystems • Earth's Systems • Space Systems-Stars and the Solar System

Unit: Forces and Interactions - Pushes and Pulls

The purpose of this unit is to develop an understanding of forces and their interactions.

Standards	Knowledge/Skills
• Plan and conduct an investigation to compare the effects of different strengths or different directions of pushes and pulls on the motion of an object. • Analyze data to determine if a design solution works as intended to change the speed or direction of an object with a push or a pull.	**Students Will Know:** • Push, Pull, Strength, Direction, Motion **Students Will Be Able To:** • Apply an understanding of the effects of different strengths or different directions of pushes and pulls on the motion of an object to analyze a design solution.

Essential Questions/Understandings

Essential Questions:

- What happens if you push or pull an object harder?

Enduring Understandings:

- Pushes and pulls can have different strengths and directions.
- Pushing or pulling on an object can change the speed or direction of its motion and can start or stop it.
- When objects touch or collide, they push on one another and can change motion.
- A bigger push or pull makes things speed up or slow down more quickly.

Unit: Relationships in Ecosystems - Animals, Plants, and Their Environment

The purpose of this unit is to develop an understanding of relationships in ecosystems.

Standards	Knowledge/Skills
• Use observations to describe patterns of what plants and animals (including humans) need to survive. • Construct an argument supported by evidence for how plants and animals (including humans) can change the environment to meet their needs. • Use a model to represent the relationship between the needs of different plants or animals (including humans) and the places they live. • Communicate solutions that will reduce the impact of humans on the land, water, air, and/or other living things in the local environment.	**Students Will Know:** • Plants, Animals, Food, Water, Light, Air, Live, Grow, Environment, Natural resources **Students Will Be Able To:** • Develop understanding of what plants and animals (including humans) need to survive and the relationship between their needs and where they live.

Essential Questions/Understandings

Essential Questions:

- Where do animals live and why do they live there?

Enduring Understandings:

- All animals need food, which they obtain from plants or from other animals, in order to live and grow.
- Plants need water and light to live and grow.
- Plants and animals can change their environment.
- Living things need water, air, and resources from the land, and they live in places that have the things they need.
- Humans use natural resources for everything they do.

Unit: Weather and Climate

The purpose of this unit is to develop an understanding of weather and climate.

Standards	Knowledge/Skills
● Make observations to determine the effect of sunlight on Earth's surface. ● Use tools and materials to design and build a structure that will reduce the warming effect of sunlight on an area. ● Use and share observations of local weather conditions to describe patterns over time. ● Ask questions to obtain information about the purpose of weather forecasting to prepare for, and respond to, severe weather.	**Students Will Know:** ● Observation, Weather, Sunlight, Wind, Snow, Rain, Temperature, Region, Time, Measure, Describe, Record, Pattern **Students Will Be Able To:** ● Students are expected to develop understanding of patterns and variations in local weather and the purpose of weather forecasting to prepare for, and respond to, severe weather.

Essential Questions/Understandings

Essential Questions:

- What is the weather like today and how is it different from yesterday?

Enduring Understandings:

- Sunlight warms Earth's surface.
- Weather is the combination of sunlight, wind, snow or rain, and temperature in a particular region at a particular time.
- People measure these conditions to describe and record the weather and to notice patterns over time.
- Some kinds of severe weather are more likely than others in a given region.
- Weather scientists forecast severe weather so that the communities can prepare for and respond to these events.

Unit: Waves - Light and Sound

The purpose of this unit is to develop an understanding of light and sound waves.

Standards	Knowledge/Skills
• Plan and conduct investigations to provide evidence that vibrating materials can make sound and that sound can make materials vibrate. • Make observations to construct an evidence-based account that objects can be seen only when illuminated. • Plan and conduct an investigation to determine the effect of placing objects made with different materials in the path of a beam of light. • Use tools and materials to design and build a device that uses light or sound to solve the problem of communicating over a distance.	**Students Will Know:** • Sound, Matter, Vibrate, Light, Illuminate **Students Will Be Able To:** • Develop understanding of the relationship between sound and vibrating materials as well as between the availability of light and ability to see objects. • Determine the effect of placing objects made with different materials in the path of a beam of light to understand that light travels from place to place.

Essential Questions/Understandings

Essential Questions:

- What happens when materials vibrate?
- What happens when there is no light?

Enduring Understandings:

- Sound can make matter vibrate, and vibrating matter can make sound.
- Objects can be seen if light is available to illuminate them or if they give off their own light.
- Some materials allow light to pass through them, others allow only some light through and others block all the light and create a dark shadow on any surface beyond them, where the light cannot reach.
- Mirrors can be used to redirect a light beam.
- People also use a variety of devices to communicate (send and receive information) over long distances.

Unit: Structure, Function, and Information Processing

The purpose of this unit is to develop an understanding of the structures and functions of animals and plants.

Standards	Knowledge/Skills
• Use materials to design a solution to a human problem by mimicking how plants and/or animals use their external parts to help them survive, grow, and meet their needs. • Read texts and use media to determine patterns in behavior of parents and offspring that help offspring survive. • Make observations to construct an evidence-based account that young plants and animals are like, but not exactly like, their parents.	**Students Will Know:** • Parent, Offspring, Growth, Survival, Protection, Movement, Roots, Stem, Leaves, Flowers, Fruit **Students Will Be Able To:** • Develop understanding of how plants and animals use their external parts to help them survive, grow, and meet their needs as well as how behaviors of parents and offspring help the offspring survive. • Develop understanding that young plants and animals are like, but not exactly the same as, their parents.

Essential Questions/Understandings

Essential Questions:

- What are some ways plants and animals meet their needs so that they can survive and grow?
- How are parents and their children similar and different?

Enduring Understandings:

- Different animals use their body parts in different ways to see, hear, grasp objects, protect themselves, move from place to place, and seek, find, and take in food, water and air. Plants also have different parts (roots, stems, leaves, flowers, fruits) that help them survive and grow.
- Adult plants and animals can have young.
- Animals have body parts that capture and convey different kinds of information needed for growth and survival. Animals respond to these inputs with behaviors that help them survive. Plants also respond to some external inputs.

- Young animals are very much, but not exactly, like their parents. Plants also are very much, but not exactly, like their parents.
- Individuals of the same kind of plant or animal are recognizable as similar but can also vary in many ways.

Unit: Space Systems - Patterns

The purpose of this unit is to develop an understanding of the patterns in systems in space.

Standards	Knowledge/Skills
• Use observations of the sun, moon, and stars to describe patterns that can be predicted. • Make observations at different times of year to relate the amount of daylight to the time of year.	**Students Will Know:** • Sun, Moon, Stars, Patterns, Observe, Describe, Predict, Sunrise, Sunset, Seasons **Students Will Be Able To:** • Observe, describe, and predict some patterns of the movement of objects in the sky.

Essential Questions/Understandings

Essential Questions:

- What objects are in the sky and how do they seem to move?

Enduring Understandings:

- Patterns of the motion of the sun, moon, and stars in the sky can be observed, described, and predicted.
- Seasonal patterns of sunrise and sunset can be observed, described, and predicted.

Unit: Structures and Properties of Matter

The purpose of this unit is to develop an understanding of the structures and properties of matter.

Standards	Knowledge/Skills
• Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties. • Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose. • 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. • Construct an argument with evidence that some changes caused by heating or cooling can be reversed and some cannot.	**Students Will Know:** • Describe, Classify, Similar, Different, Properties, Solid, Liquid, Temperature **Students Will Be Able To:** • Develop an understanding of observable properties of materials through analysis and classification of different materials.

Essential Questions/Understandings

Essential Questions:

- How are materials similar and different from one another, and how do the properties of the materials relate to their use?

Enduring Understandings:

- 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.
- Different properties are suited to different purposes.
- A great variety of objects can be built up from a small set of pieces
- Heating or cooling a substance may cause changes that can be observed. Sometimes these changes are reversible, and sometimes they are not.

Unit: Interdependent Relationships in Ecosystems

The purpose of this unit is to develop an understanding of the interdependent relationships in ecosystems.

Standards	Knowledge/Skills
• Plan and conduct an investigation to determine if plants need sunlight and water to grow. • Develop a simple model that mimics the function of an animal in dispersing seeds or pollinating plants. • Make observations of plants and animals to compare the diversity of life in different habitats.	**Students Will Know:** • Plants, Animals, Water, Light, Pollination, Seed, Diversity, Habitat **Students Will Be Able To:** • Develop an understanding of what plants need to grow and how plants depend on animals for seed dispersal and pollination. • Compare the diversity of life in different habitats.

Essential Questions/Understandings

Essential Questions:

- What do plants need to grow?
- How many types of living things live in a place?

Enduring Understandings:

- Plants depend on water and light to grow.
- Plants depend on animals for pollination or to move their seeds around.
- There are many different kinds of living things in any area, and they exist in different places on land and in water.

Unit: Earth's Systems - Processes that Shape the Earth

The purpose of this unit is to develop an understanding of the processes which shape the Earth.

Standards

- Use information from several sources to provide evidence that Earth events can occur quickly or slowly.
- Compare multiple solutions designed to slow or prevent wind or water from changing the shape of the land.
- Develop a model to represent the shapes and kinds of land and bodies of water in an area.
- Obtain information to identify where water is found on Earth and that it can be solid or liquid.

Knowledge/Skills

Students Will Know:

- Change, Wind, Water, Solid, Liquid, Land, Map

Students Will Be Able To:

- Apply their understanding of the idea that wind and water can change the shape of the land to compare design solutions to slow or prevent such change.
- Use information and models to identify and represent the shapes and kinds of land and bodies of water in an area and where water is found on Earth.

Essential Questions/Understandings

Essential Questions:

- How does land change and what are some things that cause it to change?
- What are the different kinds of land and bodies of water?

Enduring Understandings:

- Some events happen very quickly; others occur very slowly, over a time period much longer than one can observe.
- Wind and water can change the shape of the land.
- Maps show where things are located. One can map the shapes and kinds of land and water in any area.
- Water is found in the ocean, rivers, lakes, and ponds. Water exists as solid ice and in liquid form.

Unit: Forces and Interactions

The purpose of this unit is to expand upon the knowledge of forces and interactions to include magnetic and electric interactions.

Standards	Knowledge/Skills
• Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object. • Make observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predict future motion. • Ask questions to determine cause and effect relationships of electric or magnetic interactions between two objects not in contact with each other. • Define a simple design problem that can be solved by applying scientific ideas about magnets.	**Students Will Know:** • Balanced forces, Unbalanced forces, Electric interaction, Magnetic interaction **Students Will Be Able To:** • Determine the effects of balanced and unbalanced forces on the motion of an object and the cause and effect relationships of electric or magnetic interactions between two objects not in contact with each other. • Apply their understanding of magnetic interactions to define a simple design problem that can be solved with magnets.

Essential Questions/Understandings

Essential Questions:

- How do equal and unequal forces on an object affect the object?
- How can magnets be used?

Enduring Understandings:

- Each force acts on one particular object and has both strength and a direction. An object at rest typically has multiple forces acting on it, but they add to give zero net force on the object. Forces that do not sum to zero can cause changes in the object's speed or direction of motion.
- The patterns of an object's motion in various situations can be observed and measured; when that past motion exhibits a regular pattern, future motion can be predicted from it.
- Objects in contact exert forces on each other.

- Electric and magnetic forces between a pair of objects do not require that the objects be in contact. The sizes of the forces in each situation depend on the properties of the objects and their distances apart and, for forces between two magnets, on their orientation relative to each other.

Unit: Interdependent Relationships in Ecosystems

The purpose of this unit is to expand upon the knowledge of interdependent relationships in ecosystems to include animal and plant survival.

Standards	Knowledge/Skills
• Construct an argument that some animals form groups that help members survive. • Analyze and interpret data from fossils to provide evidence of the organisms and the environments in which they lived long ago. • Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all. • Make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change.	**Students Will Know:** • Fossils, Habitat, Environmental change, Adaptation **Students Will Be Able To:** • Develop an understanding of types of organisms that lived long ago and also about the nature of their environments. • Develop an understanding of the idea that when the environment changes some organisms survive and reproduce, some move to new locations, some move into the transformed environment, and some die.

Essential Questions/Understandings

Essential Questions:

- How are plants, animals, and environments of the past similar or different from current plants, animals, and environments?
- What happens to organisms when their environment changes?

Enduring Understandings:

- When the environment changes in ways that affect a place's physical characteristics, temperature, or availability of resources, some organisms survive and reproduce, others move to new locations, yet others move into the transformed environment, and some die.
- Being part of a group helps animals obtain food, defend themselves, and cope with changes. Groups may serve different functions and vary dramatically in size.
- Some kinds of plants and animals that once lived on Earth are no longer found anywhere.
- Fossils provide evidence about the types of organisms that lived long ago and also about the nature of their environments

- For any particular environment, some kinds of organisms survive well, some survive less well, and some cannot survive at all.
- Populations live in a variety of habitats, and change in those habitats affects the organisms living there.

Unit: Inheritance and Variation of Traits - Life Cycles and Traits

The purpose of this unit is to develop an understanding of life cycles and the inheritance and variation of traits.

Standards	Knowledge/Skills
• Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death. • Analyze and interpret data to provide evidence that plants and animals have traits inherited from parents and that variation of these traits exists in a group of similar organisms. • Use evidence to support the explanation that traits can be influenced by the environment. • Use evidence to construct an explanation for how the variations in characteristics among individuals of the same species may provide advantages in surviving, finding mates, and reproducing.	**Students Will Know:** • Life cycles, Inherited traits, Variation, Characteristics, Traits **Students Will Be Able To:** • Develop an understanding of the similarities and differences of organisms' life cycles. An understanding that organisms have different inherited traits, and that the environment can also affect the traits that an organism develops, is acquired by students at this level. • Construct an explanation using evidence for how the variations in characteristics among individuals of the same species may provide advantages in surviving, finding mates, and reproducing.

Essential Questions/Understandings

Essential Questions:

- How do organisms vary in their traits?

Enduring Understandings:

- Reproduction is essential to the continued existence of every kind of organism. Plants and animals have unique and diverse life cycles.
- Many characteristics of organisms are inherited from their parents.
- Other characteristics result from individuals' interactions with the environment, which can range from diet to learning. Many characteristics involve both inheritance and environment.
- Different organisms vary in how they look and function because they have different inherited information.

- The environment also affects the traits that an organism develops.
- Sometimes the differences in characteristics between individuals of the same species provide advantages in surviving, finding mates, and reproducing.

Unit: Weather and Climate

The purpose of this unit is to expand upon the knowledge of weather and climate to include more global patterns and weather-related hazards.

Standards	Knowledge/Skills
• Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season • Obtain and combine information to describe climates in different regions of the world. • Make a claim about the merit of a design solution that reduces the impacts of a weather-related hazard.	**Students Will Know:** • Weather, Season, Climate, Region, Weather-related hazard **Students Will Be Able To:** • Organize and use data to describe typical weather conditions expected during a particular season. • Make a claim about the merit of a design solution that reduces the impacts of such hazards by applying their understanding of weather-related hazards.

Essential Questions/Understandings

Essential Questions:

- What is typical weather in different parts of the world and during different times of the year?
- How can the impact of weather-related hazards be reduced?

Enduring Understandings:

- Scientists record patterns of the weather across different times and areas so that they can make predictions about what kind of weather might happen next.
- Climate describes a range of an area's typical weather conditions and the extent to which those conditions vary over years.
- A variety of natural hazards result from natural processes. Humans cannot eliminate natural hazards but can take steps to reduce their impacts.

Unit: Energy

The purpose of this unit is to apply the knowledge of forces and motion to energy.

Standards	Knowledge/Skills
• Use evidence to construct an explanation relating the speed of an object to the energy of that object. • Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents. • Ask questions and predict outcomes about the changes in energy that occur when objects collide. • Apply scientific ideas to design, test, and refine a device that converts energy from one form to another. • Obtain and combine information to describe that energy and fuels are derived from natural resources and that their uses affect the environment.	**Students Will Know:** • Speed, Energy, Transfer, Convert, Fuels, Natural resources **Students Will Be Able To:** • Describe that an object can be seen when light reflected from its surface enters the eye by developing a model. • Use evidence to construct an explanation of the relationship between the speed of an object and the energy of that object. • Develop an understanding that energy can be transferred from place to place by sound, light, heat, and electric currents or from object to object through collisions. • Apply their understanding of energy to design, test, and refine a device that converts energy from one form to another.

Essential Questions/Understandings

Essential Questions:

- What is energy and how is it related to motion?
- How is energy transferred?
- How can energy be used to solve a problem?

Enduring Understandings:

- The faster a given object is moving, the more energy it possesses.
- Energy can be moved from place to place by moving objects or through sound, light, or electric currents.

- Energy is present whenever there are moving objects, sound, light, or heat. When objects collide, energy can be transferred from one object to another, thereby changing their motion. In such collisions, some energy is typically also transferred to the surrounding air; as a result, the air gets heated and sound is produced.
- Light also transfers energy from place to place.
- Energy can also be transferred from place to place by electric currents, which can then be used locally to produce motion, sound, heat, or light. The currents may have been produced to begin with by transforming the energy of motion into electrical energy.
- When objects collide, the contact forces transfer energy so as to change the objects' motions.
- The expression "produce energy" typically refers to the conversion of stored energy into a desired form for practical use.

Unit: Waves - Waves and Information

The purpose of this unit is to expand upon the knowledge of light and sound waves to include waves as a transfer of information.

Standards	Knowledge/Skills
• Develop a model of waves to describe patterns in terms of amplitude and wavelength and that waves can cause objects to move. • Generate and compare multiple solutions that use patterns to transfer information. • Develop a model to describe that light reflecting from objects and entering the eye allows objects to be seen.	**Students Will Know:** • Waves, Amplitude, Wavelength, Movement, Decode **Students Will Be Able To:** • Use a model of waves to describe patterns of waves in terms of amplitude and wavelength, and that waves can cause objects to move.

Essential Questions/Understandings

Essential Questions:

- What are waves and what are some things they can do?

Enduring Understandings:

- Waves, which are regular patterns of motion, can be made in water by disturbing the surface. When waves move across the surface of deep water, the water goes up and down in place; there is no net motion in the direction of the wave except when the water meets a beach.
- Waves of the same type can differ in amplitude (height of the wave) and wavelength (spacing between wave peaks).
- Digitized information can be transmitted over long distances without significant degradation. High-tech devices, such as computers or cell phones, can receive and decode information—convert it from digitized form to voice—and vice versa.

Unit: Structure, Function, and Information Processing

The purpose of this unit is to develop an understanding of the structures and functions of plants and animals that support information processing.

Standards	Knowledge/Skills
• Develop a model to describe that light reflecting from objects and entering the eye allows objects to be seen. • Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction. • Use a model to describe that animals receive different types of information through their senses, process the information in their brain, and respond to the information in different ways.	**Students Will Know:** • Internal structures, External structures, Senses **Students Will Be Able To:** • Develop an understanding that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.

Essential Questions/Understandings

Essential Questions:

- How do internal and external structures support the survival, growth, behavior, and reproduction of plants and animals?

Enduring Understandings:

- An object can be seen when light reflected from its surface enters the eyes.
- Plants and animals have both internal and external structures that serve various functions in growth, survival, behavior, and reproduction.
- Different sense receptors are specialized for particular kinds of information, which may be then processed by the animal's brain. Animals are able to use their perceptions and memories to guide their actions.

Unit: Earth's Systems - Processes that Shape Earth

The purpose of this unit applies the knowledge of weather and climate to processes that shape Earth.

Standards	Knowledge/Skills
• Identify evidence from patterns in rock formations and fossils in rock layers to support an explanation for changes in a landscape over time. • Make observations and/or measurements to provide evidence of the effects of weathering or the rate of erosion by water, ice, wind, or vegetation. • Analyze and interpret data from maps to describe patterns of Earth's features. • Generate and compare multiple solutions to reduce the impacts of natural Earth processes on humans.	**Students Will Know:** • Fossils, Weathering, Erosion, Rock formations, Mountain ranges, Ocean trenches, Ocean floor, Earthquake, Volcano **Students Will Be Able To:** • Develop understanding of the effects of weathering or the rate of erosion by water, ice, wind, or vegetation. • Apply their knowledge of natural Earth processes to generate and compare multiple solutions to reduce the impacts of such processes on humans. • Analyze and interpret data from maps in order to describe patterns of Earth's features.

Essential Questions/Understandings

Essential Questions:

- How can water, ice, wind and vegetation change the land?
- What patterns of Earth's features can be determined with the use of maps?

Enduring Understandings:

- Local, regional, and global patterns of rock formations reveal changes over time due to earth forces, such as earthquakes. The presence and location of certain fossil types indicate the order in which rock layers were formed.
- Rainfall helps to shape the land and affects the types of living things found in a region. Water, ice, wind, living organisms, and gravity break rocks, soils, and sediments into smaller particles and move them around.

- The locations of mountain ranges, deep ocean trenches, ocean floor structures, earthquakes, and volcanoes occur in patterns. Most earthquakes and volcanoes occur in bands that are often along the boundaries between continents and oceans. Major mountain chains form inside continents or near their edges. Maps can help locate the different land and water features areas of Earth.
- Living things affect the physical characteristics of their regions.
- A variety of hazards result from natural processes (e.g., earthquakes, tsunamis, volcanic eruptions). Humans cannot eliminate the hazards but can take steps to reduce their impacts.

Unit: Structure and Properties of Matter

The purpose of this unit is to expand upon the knowledge of structure and properties of matter to include particles too small to be seen.

Standards	Knowledge/Skills
• Develop a model to describe that matter is made of particles too small to be seen. • 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. • Make observations and measurements to identify materials based on their properties. • Conduct an investigation to determine whether the mixing of two or more substances results in new substances.	**Students Will Know:** • Matter, Particles, Atoms, Conservation of Mass, Properties, Mixing **Students Will Be Able To:** • Describe that matter is made of particles too small to be seen through the development of a model. • Develop an understanding of the idea that regardless of the type of change that matter undergoes, the total weight of matter is conserved. • Determine whether the mixing of two or more substances results in new substances.

Essential Questions/Understandings

Essential Questions:

- When matter changes, does its weight change?
- Can new substances be created by combining other substances?

Enduring Understandings:

- 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.
- The amount (weight) of matter is conserved when it changes form, even in transitions in which it seems to vanish.
- Measurements of a variety of properties can be used to identify materials.
- When two or more different substances are mixed, a new substance with different properties may be formed.

- No matter what reaction or change in properties occurs, the total weight of the substances does not change.

Unit: Matter and Energy in Organisms and Ecosystems

The purpose of this unit is to apply the knowledge of ecosystems to the movement of matter and energy through an ecosystem.

Standards	Knowledge/Skills
• 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. • Support an argument that plants get the materials they need for growth chiefly from air and water. • Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.	**Students Will Know:** • Food, Photosynthesis, Plants, Animals, Decomposers, Food Chain, Food Web **Students Will Be Able To:** • Develop an understanding of the idea that plants get the materials they need for growth chiefly from air and water. • Describe, using models, the movement of matter among plants, animals, decomposers, and the environment and that energy in animals' food was once energy from the sun.

Essential Questions/Understandings

Essential Questions:

- How does matter cycle through ecosystems?
- Where does the energy in food come from and what is it used for?

Enduring Understandings:

- The energy released from food was once energy from the sun that was captured by plants in the chemical process that forms plant matter.
- 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.
- Plants acquire their material for growth chiefly from air and water.
- The food of almost any kind of animal can be traced back to plants.
- Matter cycles between the air and soil and among plants, animals, and microbes as these organisms live and die.

Unit: Earth's Systems

The purpose of this unit apply the knowledge of Earth's systems to gain an understanding of how they interact with one another.

Standards	Knowledge/Skills
● Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact. ● Describe and graph the amounts of saltwater and fresh water in various reservoirs to provide evidence about the distribution of water on Earth. ● Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.	**Students Will Know:** ● Geosphere, Biosphere, Hydrosphere, Atmosphere , Salt water, Fresh water, Distribution of water, Conservation, Recycle, Reduce, Reuse **Students Will Be Able To:** ● Describe, through the development of a model, the way the geosphere, biosphere, hydrosphere, and/or atmosphere interact. ● Describe and graph data to provide evidence about the distribution of water on Earth.

Essential Questions/Understandings

Essential Questions:

- How much water can be found in different places on Earth?

Enduring Understandings:

- Earth's major systems (geosphere, hydrosphere, atmosphere, and biosphere) interact in multiple ways to affect Earth's surface materials and processes.
- Nearly all of Earth's available water is in the ocean.
- Human activities in agriculture, industry, and everyday life have had major effects on the land, vegetation, streams, ocean, air, and even outer space, however, individuals and communities are doing things to help protect Earth's resources and environments.

Unit: Space Systems - Stars and the Solar System

The purpose of this unit is to develop an understanding of the stars and the solar system.

Standards	Knowledge/Skills
• Support an argument that the gravitational force exerted by Earth on objects is directed down. • Support an argument that differences in the apparent brightness of the sun compared to other stars is due to their relative distances from Earth. • 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.	**Students Will Know:** • Gravity, Brightness of a star, Shadows, Day, Night, Seasons, Rotation, Revolution, Axis, Poles, Patterns **Students Will Be Able To:** • Students are expected to 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.

Essential Questions/Understandings

Essential Questions:

- How do lengths and directions of shadows or relative lengths of day and night change from day to day?
- How does the appearance of some stars change in different seasons?

Enduring Understandings:

- The gravitational force of Earth acting on an object near Earth's surface pulls that object toward the planet's center.
- 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.
- 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.