

TASD Grade 3 Science

Unit: Biological Science

Unit summary-

The primary focus of the unit is an understanding as related to:

- Organisms and Cells
- Genetics
- Evolution
- Ecological Behavior and Systems

Students will be able to use their learning independently to:

3.1.3.A1: Describe characteristics of living things that help to identify and classify them.

3.1.3.A2: Describe the basic needs of living things and their dependence on light, food, air, water, and shelter.

3.1.3.A3. Illustrate how plants and animals go through predictable life cycles that include birth, growth, development, reproduction, and death.

3.1.3.A5. Identify the structures in plants that are responsible for food production, support, water transport, reproduction, growth, and protection.

3.1.3.B1. Understand that plants and animals closely resemble their parents.

3.1.3.B5. PATTERNS Identify characteristics that appear in both parents and offspring.

3.1.3.C1. Recognize that plants survive through adaptations, such as stem growth towards light and root growth downward in response to gravity. Recognize that many plants and animals can survive harsh environments because of seasonal behaviors (e.g. hibernation, migration, trees shedding leaves).

3.1.3.C2. Describe animal characteristics that are necessary for survival.

3.1.3.C3. CONSTANCY AND CHANGE Recognize that fossils provide us with information about living things that inhabited the Earth long ago

4.1.3.A: Differentiate between the living and non-living components in an environment.

4.1.3.E: Identify changes in the environment over time.

4.4.3.C: Use scientific inquiry to investigate what animals and plants need to grow.

4.5.3.A: Identify resources humans take from the environment for their survival.

Overarching Understandings:

- Structure and Function of Organisms
- Ecological Behavior and Systems
- Systems, Models, and Patterns

Topical Understandings	Essential Questions
<ul style="list-style-type: none"> • . Individuals of the same kind differ in their characteristics, and sometimes the differences give individuals an advantage in surviving and reproducing. creating a population with survival and reproductive advantages. • Individuals of the same kind differ in their characteristics, and sometimes the differences give individuals an advantage in surviving and reproducing. creating a population with survival and reproductive advantages. • Organisms inherit characteristics from their parents. • Parts of living things work together to carry out life functions. • Each plant or animal has different structures that serve different functions in growth, survival, and reproduction. • Most living things need food, water, light, air, and a way to dispose of wastes. • Energy is needed for all organisms to stay alive and grow. • Living things can be grouped based on their similarities and differences. • Tools make it possible to observe living things or the parts of living things that are too small to be seen with the naked eye. 	<ul style="list-style-type: none"> • What are the basic needs of living things? • How do different parts of organisms work together to meet the needs? • How do plants make their own food using the sun’s energy? • How do the senses of animals guide their movement and assist them in survival? • How do different adaptations help organisms survive in their environments? • What are the unique life cycles of plants and animals? • What are the characteristics that plants and animals inherit from their parents? • What are the nonliving and living things in an ecosystem? • How do living things depend on the nonliving things for survival in an ecosystem? • How are energy and nutrients cycled through an ecosystem? • How do plants trap the sun’s energy? • How do similar organisms compete for resources in an ecosystem? • How do changes in an ecosystem affect organisms in an ecosystem? • How do human activities affect the natural ecosystem?
Knowledge	Skills
<ul style="list-style-type: none"> • System • Deciduous • Pollinate • Coniferous • Seed leaf • Germinate • Seedling • Fossil • Extinct • Trait • Vertebrate • Larva • Pupa 	<ul style="list-style-type: none"> • Measure, describe, or classify organisms, objects and/or materials by basic characteristics, their changes, and their uses. • Describe relationships among parts of a natural or human-made system. • Identify and describe the functions of basic structures of animals and plants (e.g., animals [skeleton, heart, lungs]; plants [roots, stem, leaves]). • Classify living things based on their similarities and differences • Describe the basic needs of plants and animals and their dependence on light, food, air, water, and shelter. • Describe how plants and animals go through life cycles. • Identify adaptations of plants and animals that have helped them to survive. • Identify and describe plant and animal characteristics that are necessary for survival. • Identify characteristics for plant and animal survival in different environments (e.g., desert, forest, ocean).

- Adaptation
- Inherited
- Migrate
- Hibernate
- Producer
- Consumer
- Herbivore
- Carnivore
- Omnivore
- Prey
- Predator
- Competition
- Decomposer
- Decay
- Germs
- Disease

- Identify physical characteristics (e.g., height, hair color, eye color) that could be passed on to offspring.
- Identify similar physical characteristics in parents and their offspring.
- Describe the interactions between living and nonliving components of an ecosystem (e.g., plants [water, sunlight]; animals [air, shelter]).
- Identify the living and nonliving components of an ecosystem (e.g., living [plants, animals]; nonliving [water, soil, air]).
- Describe what happens to an animal when its habitat is changed.
- Describe how changes in the environment (e.g., fire, flood) can affect an ecosystem.
- Describe how human interactions with the environment impact an ecosystem (e.g., road construction, pollution, urban development, dam building)

Unit: Environment and Ecology

Unit summary-

The primary focus of the unit is an understanding as related to:

- Ecology – The Environment, Materials Cycles, Energy Flow, Biodiversity, Succession
- Watersheds and Wetlands – Watersheds, Wetlands, Aquatic Ecosystems
- Natural Resources – Use of Natural Resources, Availability of Natural Resources
- Agriculture and Society – Food and Fiber System, Importance of Agriculture, Applying Science to Agriculture, Technology Influences on Agriculture

Students will be able to use their learning independently to:

4.1.3.A: Differentiate between the living and non-living components in an environment.

4.1.3.C: Identify sources of energy.

4.2.3.A: Define the term watershed. Identify the watersheds in which you reside.

4.2.3.C: Identify plants and animals that live in lakes, ponds, streams, and wetlands.

4.2.3.B: Identify plants and animals found in a wetland.

4.3.3.A: Identify the natural resources used to make various products.

4.3.3.B: Identify local natural resources.

4.4.3.A: Identify Pennsylvania crops that provide food for the table and fiber for textiles.

4.4.3.B: Explain how agriculture meets the basic needs of humans.

4.4.3.C: Use scientific inquiry to investigate what animals and plants need to grow.

4.4.3.D: Identify technology used in agriculture. Identify tools and machinery used in agricultural processes.

4.5.3.A: Identify resources humans take from the environment for their survival.

4.5.3.B: Define the term pest and identify various plants and animals that humans may call pests.

4.5.3.C: Identify different types of pollution and their sources.

4.5.3.D: Describe how waste is generated. Identify and propose a solution for a waste issue in the school setting (e.g., litter in the hallway).

Overarching Understandings:

- Basic Biological Principles
- Describe ecological levels of organization in the biosphere.
- Continuity of Life
- Ecological Behavior and Systems
- Identify local natural resources.
- Humans and the Environment
- Watersheds and Wetlands

Topical Understandings	Essential Questions
<ul style="list-style-type: none"> • Describe relationships between structure and function at biological levels of organization. • Describe ecological levels of organization in the biosphere. • Describe interactions and relationships in an ecosystem. • Identify and describe characteristics of plants and animals that help with their survival. • Identify the natural resources used to make various products. • Identify local natural resources. 	<ul style="list-style-type: none"> • What are ecosystems? • What are water ecosystems? • Why do cells have different structures? • What are the different types of cell structure? • How do cells, tissues organs, organ system work together? • What are the ecological levels of an ecosystem? • What are abiotic and biotic factors in terrestrial and aquatic ecosystems? • How do living things get energy? • How is energy transferred across an ecosystem? • What is recycling? • How do living things interact?
Knowledge	Skills
<ul style="list-style-type: none"> • Abiotic • Agriculture • Biomes • Biofuels • Carrying Capacity • Consumer • Biotic • Decomposer • Ecosystem • Endangered species • Environment • Extinction • Fiber • Food web • Food Fiber System • Habitat • Lentic • Limiting Factor • Matter 	<ul style="list-style-type: none"> • Compare cellular structures and their functions in prokaryotic and eukaryotic cells. • Describe and interpret relationships between structure and function at various levels of biological organization (i.e., organelles, cells, tissues, organs, organ systems, and multicellular organisms). • Describe the levels of ecological organization (i.e., organism, population, community, ecosystem, biome, biosphere). • Describe characteristic biotic and abiotic components of aquatic and terrestrial ecosystems. • Describe how energy flows through an ecosystem (e.g., food chains, food webs, energy pyramids). • Describe biotic interactions in an ecosystem (e.g., competition, predation, symbiosis). • Describe how matter recycles through an ecosystem (i.e., water cycle, carbon cycle, oxygen cycle, nitrogen cycle). • Describe how ecosystems change in response to natural and human disturbances (e.g., climate changes, introduction of nonnative species,

- Natural Resources
- Niche
- Nonrenewable Resource
- Predators
- Prey
- Producers
- Recycling
- Renewable Resource
- Monoculture
- Symbiotic
- Succession
- Sustainability
- Watershed
- Wetlands
- Water cycle
- Topography

pollution, fires).

- Describe the effects of limiting factors on population dynamics and potential species extinction.
- Identify adaptations of plants and animals that have helped them to survive.
- Identify and describe plant and animal characteristics that are necessary for survival.
- Identify characteristics for plant and animal survival in different environments (e.g., desert, forest, ocean).

Unit: Physical Science

Unit summary-

The primary focus of the unit is an understanding as related to:

- Structure, Properties, and Interaction of Matter and Energy
- Forms, Sources, Conversion, and Transfer of Energy
- Principles of Motion and Force

Students will be able to use their learning independently to:

3.2.3.A1: Differentiate between properties of objects such as size, shape, and weight and properties of materials that make up the objects such as color, texture, and hardness.

3.2.3.A2: Recognize that all objects and materials in the world are made of matter.

3.2.3.A3: Demonstrate how heating and cooling may cause changes in the properties of materials including phase changes.

3.2.3.A4: Use basic reactions to demonstrate observable changes in properties of matter (e.g., burning, cooking).

3.2.3.A5: **CONSTANCY AND CHANGE** Recognize that everything is made of matter.

3.2.3.B1: Explain how movement can be described in many ways.

3.2.3.B2: Explore energy's ability to cause motion or create change. Explore how energy can be found in moving objects, light, sound, and heat.

3.2.3.B3: Explore temperature changes that result from the addition or removal of heat.

3.2.3.B4: Identify and classify objects and materials that are conductors or insulators of electricity. Identify and classify objects and materials as magnetic or non-magnetic.

3.2.3.B5: Recognize that light travels in a straight line until it strikes an object or travels from one material to another.

3.2.3.B6: **ENERGY** Recognize that light from the sun is an important source of energy for living and nonliving systems and some source of energy is needed for all organisms to stay alive and grow.

Overarching Understandings:

- Trace the flow of energy through various living and nonliving systems.
- An object's change in position can be observed and measured.
- Changes in speed or direction of motion are caused by forces.
- Describe the observable physical properties of matter.
- Recognize basic energy types and sources and how energy can be changed from one form to another.
- Observe and identify changes in an object's motion.
- Forces can attract or repel other objects.

Topical Understandings	Essential Questions
<ul style="list-style-type: none"> ● Energy can be found in moving objects, light, sound, and heat. ● Light from the sun is an important source of energy for living and nonliving systems, and some source of energy is needed for all organisms to stay alive and grow. ● Vibrating objects make sound, and sound can make things vibrate. The bigger the vibration, the louder the sound. The faster the vibrations, the higher the perceived pitch. ● To have a sound you need to have a source, a medium, and a receiver. ● Moving objects in contact with each other produce heat, and electrical, mechanical, and living things often produce heat. ● When warmer things are put with cooler things, the warmer things get cooler and the cooler things get warmer until all are at the same temperature. ● Electric circuits may produce or use light, heat, sound and magnetic energy. ● Electric circuits require a closed pathway through which an electric current can pass. ● Materials have different properties. Some materials transfer heat more rapidly than others or some materials conduct electricity better than others. ● An object's position can be described in terms of its relationship to another object or a stationary background. ● The greater the force the greater the change in motion. ● Magnets attract or repel other magnets. ● Electric charges flowing through a wire can produce a measurable force on magnets and other objects. ● 	<ul style="list-style-type: none"> ● How can we describe matter? ● How are properties of matter measured? ● What are physical changes in matter? ● What are some ways to combine matter? ● What are some chemical changes in matter? ● What happens when things change position? ● How does force affect motion? ● What is energy? ● How does energy change form? ● What is heat energy? ● What is light energy? ● What is electrical energy? ● What causes sound? ● How does sound travel? ● What is the evidence that magnets and electricity produce forces? ● How can physical properties be used to describe matter?
Knowledge	Skills
<ul style="list-style-type: none"> ● Matter ● Property ● Pressure ● Element 	<ul style="list-style-type: none"> ● Describe matter in terms of its observable properties (e.g., weight, mass, shape, size, color, texture, state). ● Classify matter using observable physical properties (e.g., weight, mass, shape, size, color, texture, state).

- Atom
- Periodic table
- Mass
- Volume
- Density
- Buoyancy
- Physical change
- States of matter
- Mixture
- Solution
- Chemical change
- Position
- Motion
- Relative position
- Speed
- Force
- Friction
- Gravity
- Magnetism
- Work
- Potential energy
- Kinetic energy
- Thermal energy
- Reflect
- Absorb
- Electric change
- Electric current
- Electric circuit
- Vibration
- Pitch
- Compression
- Wave

- Classify a substance as a solid, liquid, or gas.
- Recognize and identify how water goes through phase changes (i.e., evaporation, condensation, freezing, and melting).
- Describe how the properties of matter can be changed (e.g., heating, cooling, physical weathering).
- Identify basic forms and sources of energy (e.g., Sun, heat, light, sound).
- Identify simple transformations of energy (e.g., eating food to get energy, rubbing hands together to create heat).
- Identify characteristics of sound (i.e., pitch, and loudness).
- Identify and describe an object's motion (e.g., start/stop, up/down, left/right, faster/slower, spinning).
- Describe an object's position in terms of its relationship to another object or stationary background (e.g., behind, beside, on top of, above, below).

Unit: Earth and Space Science

Unit summary-

The primary focus of the unit is an understanding as related to:

- Earth Structure, Processes and Cycles

Students will be able to use their learning independently to:

3.3.3.A1: Explain and give examples of the ways in which soil is formed.

3.3.3.A2: Identify the physical properties of minerals and demonstrate how minerals can be tested for these different physical properties.

3.3.3.A4: Connect the various forms of precipitation to the weather in a particular place and time.

3.3.3.A5: Explain how air temperature, moisture, wind speed and direction, and precipitation make up the weather in a particular place and time.

3.2.3.B1: Explain how movement can be described in many ways.

Overarching Understandings:

Earth Features and Processes That Change Earth and Its Resources

Weather, Climate, and Atmospheric Processes

Topical Understandings	Essential Questions
<ul style="list-style-type: none"> • Describe various materials that make up Earth. • Identify and describe the types of Earth’s natural resources. • Identify and describe the ways that cause Earth’s surface to be in a state of constant change. • Identify basic weather conditions and how they are measured. 	<ul style="list-style-type: none"> • Why is water important? • How do forms of water change? • What makes up weather? • How are weather patterns different? • How do rocks form? • What are minerals? • Why is soil important? • What are resources? • How can we protect our resources? • What are ways to use resources again?
Knowledge	Skills
<ul style="list-style-type: none"> • Water vapor • Groundwater 	<ul style="list-style-type: none"> • Recognize that rock is composed of different kinds of minerals. • Describe the composition of soil as weathered rock and decomposed organic

- Wetland
- Evaporation
- Condensation
- Water cycle
- Precipitation
- Weather
- Atmosphere
- Hurricane
- Tornado
- Blizzard
- Rock
- Mineral
- Igneous rock
- Sedimentary rock
- Metamorphic rock
- Soil
- Decay
- Nutrient
- Loam
- Crust
- Mantle
- Core
- Landform
- Lava
- Weathering
- Erosion
- Natural resource
- Renewable resource
- Nonrenewable resource
- Recycle

material.

- Describe why certain resources are renewable and other resources are nonrenewable.
- Identify ways that cause Earth's surface to be constantly changing (e.g., wind and water erosion, contraction and expansion of surfaces).
- Distinguish between ways that tear down the surface of Earth and those that build up the surface (e.g., erosion, weathering, volcanic activity, earthquakes).
- Distinguish between slow and rapid changes to Earth's surface (i.e., rapid [earthquakes, volcanic activity]; slow [weathering, erosion]).
- Recognize that clouds have different characteristics that relate to different weather conditions.
- Describe how weather variables (i.e., temperature, wind speed, wind direction, and precipitation) are observed and measured.
- Identify appropriate instruments to study and measure weather elements (i.e., thermometer [temperature]; wind vane [wind direction]; anemometer [wind speed]; rain gauge [precipitation]).
- Describe why certain resources are renewable and other resources are nonrenewable.
- Identify and describe examples of renewable and nonrenewable resources.
- Describe the ways living things benefit from the uses of water resources.
- Recognize and identify how water goes through phase changes (i.e., evaporation, condensation, freezing, and melting).

Unit: Nature of Science

Unit summary-

The primary focus of the unit is an understanding as related to:

Students will be able to use their learning independently to:

Overarching Understandings:

- Structure and Function of Organisms
- Ecological Behavior and Systems
- Systems, Models, and Patterns

Topical Understandings	Essential Questions
<ul style="list-style-type: none">● . Individuals of the same kind differ in their characteristics, and sometimes the differences give individuals an advantage in surviving and reproducing. creating a population with survival and reproductive advantages.● Individuals of the same kind differ in their characteristics, and sometimes the differences give individuals an advantage in surviving and reproducing. creating a population with survival and reproductive advantages.● Organisms inherit characteristics from their parents.● Parts of living things work together to carry out life functions.● Each plant or animal has different structures that serve different functions in growth, survival, and reproduction.● Most living things need food, water, light, air, and a way to dispose of wastes.● Energy is needed for all organisms to stay alive and grow.	<ul style="list-style-type: none">● What are the basic needs of living things?● How do different parts of organisms work together to meet the needs?● How do plants make their own food using the sun's energy?● How do the senses of animals guide their movement and assist them in survival?● How do different adaptations help organisms survive in their environments?● What are the unique life cycles of plants and animals?● What are the characteristics that plants and animals inherit from their parents?● What are the nonliving and living things in an ecosystem?● How do living things depend on the nonliving things for survival in an ecosystem?● How are energy and nutrients cycled through an ecosystem?● How do plants trap the sun's energy?● How do similar organisms compete for resources in an ecosystem?

<ul style="list-style-type: none"> • Living things can be grouped based on their similarities and differences. • Tools make it possible to observe living things or the parts of living things that are too small to be seen with the naked eye. 	<ul style="list-style-type: none"> • How do changes in an ecosystem affect organisms in an ecosystem? • How do human activities affect the natural ecosystem?
<p>Knowledge</p>	<p>Skills</p>
<ul style="list-style-type: none"> • System • Deciduous • Pollinate • Coniferous • Seed leaf • Germinate • Seedling • Fossil • Extinct • Trait • Vertebrate • Larva • Pupa • Adaptation • Inherited • Migrate • Hibernate • Producer • Consumer • Herbivore • Carnivore • Omnivore • Prey • Predator • Competition • Decomposer • Decay • Germs • Disease 	<ul style="list-style-type: none"> • Measure, describe, or classify organisms, objects and/or materials by basic characteristics, their changes, and their uses. • Describe relationships among parts of a natural or human-made system. • Identify and describe the functions of basic structures of animals and plants (e.g., animals [skeleton, heart, lungs]; plants [roots, stem, leaves]). • Classify living things based on their similarities and differences • Describe the basic needs of plants and animals and their dependence on light, food, air, water, and shelter. • Describe how plants and animals go through life cycles. • Identify adaptations of plants and animals that have helped them to survive. • Identify and describe plant and animal characteristics that are necessary for survival. • Identify characteristics for plant and animal survival in different environments (e.g., desert, forest, ocean). • Identify physical characteristics (e.g., height, hair color, eye color) that could be passed on to offspring. • Identify similar physical characteristics in parents and their offspring. • Describe the interactions between living and nonliving components of an ecosystem (e.g., plants [water, sunlight]; animals [air, shelter]). • Identify the living and nonliving components of an ecosystem (e.g., living [plants, animals]; nonliving [water, soil, air]). • Describe what happens to an animal when its habitat is changed. • Describe how changes in the environment (e.g., fire, flood) can affect an ecosystem. • Describe how human interactions with the environment impact an ecosystem (e.g., road construction, pollution, urban development, dam building).