

Soil Tunnel

SC Dept of Education Corresponding Science standards for 2014:<https://www.ed.sc.gov/instruction/standards-learning/science/support-documents-and-resources/elementary-instructional-units/>

Kindergarten

Standard http://ed.sc.gov/scdoe/assets/file/agency/ccr/Standards-Learning/documents/South_Carolina_Academic_Standards_and_Performance_Indicators_for_Science_2014.pdf

Life Science: Exploring Organisms and the Environment

K.L.2 The student will demonstrate an understanding of organisms found in the environment and how these organisms depend on the environment to meet those needs.

Conceptual Understanding:

K.L.2A The environment consists of many types of organisms including plants, animals, and fungi. Organisms depend on the land, water, and air to live and grow. Plants need water and light to make their own food. Fungi and animals cannot make their own food and get energy from other sources. Animals (including humans) use different body parts to obtain food and other resources needed to grow and survive. Organisms live in areas where their needs for air, water, nutrients, and shelter are met.

New Academic Vocabulary:

Organisms	Environment	Plant	Animal	Fungi
Decaying	Nutrients	Resource	Shelter	Air
Light	Water	Senses	Camouflage	Protection

Performance Indicators:

K.L.2A.1 Obtain information to answer questions about different organisms found in the environment

K.L.2A.2 Conduct structured investigations to determine what plants need to live and grow (including water and light).

K.L.2A.3 Develop and use models to exemplify how animals use their body parts to (1) obtain food and other resources, (2) protect themselves, and (3) move from place to place.

K.L.2A.4 Analyze and interpret data to describe how humans use their senses to learn about the world around them.

K.L.2A.5 Construct explanations from observations of what animals need to survive and grow (including air, water, nutrients, and shelter).

K.L.2A.6 Obtain and communicate information about the needs of organisms to explain why they live in particular areas.

Cross Cutting Concepts:

1. Patterns: Observe and classify organisms by how they meet their needs.
2. Cause and Effect: During investigations determine the needs of organisms by limiting resource. Observe and explain why organisms live in particular areas.
6. Structure and Function: Observe and describe the structure of organisms that help them meet their needs, grow, and survive.

Physical Science: Exploring Properties of Objects and Materials

K.P.4A The student will demonstrate an understanding of the observable properties of matter.

Conceptual Understanding:

K.P.4 Objects can be described and classified by their observable properties, by their uses, and by whether they occur naturally or are manufactured (human-made). Different properties of objects are suited for different purposes.

New Academic Vocabulary:

Attraction	Cloth	Color	Flexibility	Floating	Hard	Heavier
Human-made	Lighter	Magnetic	Metal	Natural	Plastic	
Properties	Qualitative properties		Rough	Scientific observations		Shape
Sinking	Size	Smooth	Soft Texture	Weight	Wood	

Performance Indicators:

K.P.4A.1 Analyze and interpret data compare the qualitative properties of objects (such as size, shape, color, texture, weight, flexibility, attraction to magnets, or ability to sink or float) and classify objects based on similar properties.

K.P.4A.2 Develop and use models to describe and compare the properties of different materials (including wood, plastic, metal, cloth, and paper) and classify materials by their observable properties, by their uses, and by whether they are natural or human-made.

Cross Cutting Concepts:

1. Patterns: There are patterns that develop as materials are sorted by their properties.
2. Cause and effect: Mechanism and explanation: The properties of a material affect the classification criteria. The classification criteria will vary with different contexts and those criteria should be explained for each new context.
4. Systems and systems models: Rules for classification may be applied to all materials.

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First Grade

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Earth Science: Earth's Natural Resources

1.E.4 The student will demonstrate an understanding of the properties and uses of Earth's natural resources.

Conceptual Understanding:

1.E.4A. Earth is made of different materials, including rocks, sand, soil, and water. An Earth material is a resource that comes from Earth. Earth materials can be classified by their observable properties.

New Academic Vocabulary:

Earth materials	Freshwater	Lakes	Ocean	Observe	Ponds
Properties	Rivers	Rocks	Saltwater	Sand	Soil
Topsoil	Water				

Performance Indicators:

1.E.4A.1 Analyze and interpret data from observations and measurements to compare the properties of Earth materials (including rocks, soils, sand, and water).

Cross Cutting Concepts:

2. Cause and effect: Mechanism and explanation: Describe patterns in the distribution of the land and water that is on Earth.

5. Energy and matter: Flows, cycles, and conservation: Water flows downhill and gathers in lakes, ponds, rivers, and oceans.

Conceptual Understanding:

1.E.4B. Natural resources are things that people use that come from Earth (such as land, water, air, and trees). Natural resources can be conserved.

New Academic Vocabulary:

Air	Compost	Conservation	Earth materials	Erosion	Land	Landfill
Natural resources	Recycle	Reduce	Reuse	Trees	Water	

Performance Indicators:

1.E.4B.1 Obtain and communicate information to summarize how natural resources are used in different ways (such as soil and water to grow plants; rocks to make roads, walls, or buildings; or sand to make glass).

1.E.4B.2 Obtain and communicate information to explain ways natural resources can be conserved (such as reducing trash through reuse, recycling, or replanting trees).

Cross cutting concepts:

2. Cause and effect: Mechanism and explanation: The Earth will not exist if its natural resources are not replenished.

6. Structure and function: The movement of water can change the shape of the land over time and can therefore change the earth and the plant and animal life in and around the area.

Life Science: Plants and their Environments

1.L.5 The student will demonstrate an understanding of how the structures of plants help them survive and grow in their environments.

Conceptual Understanding:

1.L.5A Plants have specific structures that help them survive, grow, and produce more plants. Plants have predictable characteristics at different stages of development.

New Academic Vocabulary:

Adaptations	Attract	Development	Environment	Flowering	Flowers	Fruit
Germination	Growth	Leaves	Mature	Measurement	Nutrients	
Observe	Pollen	Produce	Roots	Seedling	Seeds	Soil
Space	Sprout	Stem	Structures	Sunlight	Survive	Water

Performance Indicators:

1.L.5A.1 Obtain and communicate information to construct explanations for how different plant structures (including roots, stems, leaves, flowers, fruits, and seeds) help plants survive, grow, and produce more plants.

1.L.5A.2 Construct explanations of the stages of development of a flowering plant as it grows from a seed using observations and measurements.

Cross Cutting Concepts:

1. Patterns: Students will understand and develop models of the lifecycle of a plant and explain that the life cycle is a repeating pattern.
2. Cause and effect: Mechanism and explanation: Students will explain how the structures of plants affect the survival, growth and reproduction of more plants.
4. Systems and systems models: Students will construct a model of a plant, including roots, stems, leaves, flowers, fruits, and seeds.
6. Structure and function: Students will construct a model of a plant with different parts (including roots, stems, leaves, flowers, fruits, and seeds) and explain their functions.

Conceptual Understanding:

1.L.5B. Plants have basic needs that provide energy in order to grow and be healthy. Each plant has a specific environment where it can thrive. There are distinct environments in the world that support different types of plants. These environments can change slowly or quickly. Plants respond to these changes in different ways.

New Academic Vocabulary:

Adaptation	Air	Bark	Cacti	Changing	Characteristics	Conserve
Decay	Deciduous		Deserts	Different	Energy	Environment
Food	Forests		Grasslands	Grow	Healthy	Leaves
Light	Minerals		Needle	Nutrients	Plant	Rain
Roots	Soil		Space	Stems	Sunlight	
Survive	Thrive		Water	Waxy coating		

Performance Indicators:

- 1.L.5B.1 Conduct structured investigations to answer questions about what plants need to live and grow (including air, water, sunlight, minerals, and space).
- 1.L.5B.2 Develop and use models to compare how the different characteristics of plants help them survive in distinct environments (including deserts, forests, and grasslands).
- 1.L.5B.3 Analyze and interpret data from observations to describe how changes in the environment cause plants to respond in different ways (such as turning leaves toward the sun, leaves changing color, leaves wilting, or trees shedding leaves).

Cross Cutting Concepts:

2. Cause and effect: Mechanism and explanation: Without basic needs, plants will not survive.
4. Systems and systems models: Plants require basic needs in order for the system (cycle) to continue.
6. Structure and function: When removed from their distinct environments plants may not thrive.
7. Stability and change: Plants are an essential component of a stable environment.

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Second Grade

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Life Science: Animals and their Environments

2.L.5 The student will demonstrate an understanding of how the structures of animals help them survive and grow in their environments.

Conceptual Understanding :

2.L.5A. There are many different groups of animals. One way to group animals is by using their physical characteristics. Animals have basic needs that provide for energy, growth, reproduction, and protection. Animals have predictable characteristics at different stages of development.

New Academic Vocabulary:

Adaptation Amphibian Bird Camouflage Fish Gills Grasp Insect
Invertebrate Life Cycle Locomotion Mammal Metamorphosis Migration
Offspring Physical Characteristic Reptile Vertebrate

Performance Indicators :

2.L.5A.1 Obtain and communicate information to classify animals (such as mammals, birds, amphibians, reptiles, fish, or insects) based on their physical characteristics.

2.L.5A.2 Construct explanations for how structures (including structures for seeing, hearing, grasping, protection, locomotion, and obtaining and using resources) of different animals help them survive.

Cross Cutting Concepts:

1. Patterns: Animals are classified and organized based on observed patterns in their physical characteristics.

4. Systems and system models: Animals can be classified and organized based on their specialized parts and the functions of those parts.

6. Structure and function: Animals are classified and organized based on the function of their physical characteristics such as their method of mobility, method of obtaining food, or their production of young.

7. Stability and change: Animals have adaptations that enable them to survive in their environments.

Conceptual Understanding:

2.L.5B. Animals (including humans) require air, water, food, and shelter to survive in environments where these needs can be met. There are distinct environments in the world that support different types of animals. Environments can change slowly or quickly. Animals respond to these changes in different ways.

New Academic Vocabulary:

Adaptation	Blubber	Carbon Dioxide	Desert	Environment	Erosion
Fertilize	Food Chain	Forest	Fresh Water	Habitat	Harmful
Hibernate	Oxygen	Polar Lands	Predator	Prey	Resources
Shelter	Salt Water	Scarcity	Survive	Temperature	Vegetation

Wetlands

Performance Indicators:

2.L.5B.1 Obtain and communicate information to describe and compare how animals interact with other animals and plants in the environment.

Cross Cutting Concepts:

2. Cause and effect: Mechanism and explanation. Animals and their environments are co-dependent. Habitats can change due to a variety of reasons and which can directly impact the animals. In turn, animals can also have an impact on their environments.

7. Stability and change: Animals also interact with and adapt to changes in their environments. They can also impact their environments.