

Enviroscape

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.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.

Earth Science: Exploring Weather Patterns

K.E.3: The student will demonstrate an understanding of daily and seasonal weather patterns.

Conceptual Understanding:

K.E.3A. Weather is a combination of sunlight, wind, snow or rain, and temperature in a particular region at a particular time. Scientists measure weather conditions to describe and record the weather and to notice patterns over time. Plants and animals (including humans) respond to different weather conditions in different ways.

New Academic Vocabulary:

Animal	Cloud cover	Fall	Hibernation	Migration
Plant	Precipitation	Rain	Seasons	Snow
Temperature	Weather	Weather symbols	Wind	Autumn
Patterns	Summer	Spring	Winter	

Performance Indicators:

K.E.3A.3 Obtain and communicate information to support claims about how changes in seasons affect plants and animals.

K.E.3A.4 Define problems caused by the effects of weather on human activities and design solutions or devices to solve the problem.

Cross Cutting Concepts:

2. Cause and Effect: Weather patterns and changes are affected by seasons. These patterns and changes in weather affect plants and animals.

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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.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.

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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.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.

2.L.5B.2 Develop and use models to exemplify characteristics of animals that help them survive in distinct environments (such as salt and freshwater, deserts, forests, wetlands, or polar lands).

2.L.5B.4 Construct scientific arguments to explain how animals can change their environments (such as the shape of the land or the flow of water).

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.

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Third Grade

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Earth Science: Earth's Materials and Processes

3.E.4 The student will demonstrate an understanding of the composition of Earth and the processes that shape features of Earth's surface.

Conceptual Understanding:

3.E.4A Earth is made of materials (including rocks, minerals, soil, and water) that have distinct properties. These materials provide resources for human activities.

New Academic Vocabulary:

Classify	Clay	Cleavage	Fossil fuels	Fuels	Glaciers	
Grains	Hardness	Humus	Igneous	Lakes	Loam	
Luster	Metamorphic	Mineral	Nonrenewable resource			
Oceans	Ponds	Property				
Renewable resource		Rivers	Sand	Seas	Silt	Streak
Streams	Texture	Topsoil				

Performance Indicators:

3.E.4A.2 Develop and use models to describe and classify the pattern distribution of land and water features on Earth.

3.E.4A.3 Obtain and communicate information to exemplify how humans obtain, use, and protect renewable and nonrenewable Earth resources.

Cross Cutting Concepts:

2. Cause and effect: Mechanism and explanation: Weathering, erosion, and deposition cause changes to the Earth's surface.

6. Structure and function: Weathering, erosion, and deposition cause changes to the Earth that shape materials found on Earth's surface.

Conceptual Understanding:

3.E.4B Earth's surface has changed over time by natural processes and by human activities. Humans can take steps to reduce the impact of these changes.

New Academic Vocabulary:

Canyons	Deposition	Earthquakes	Erosion	Floods	Human activity
Islands	Landform	Landslides	Mountains	Natural event	Plains
Valleys	Volcanic eruption	Volcanoes	Weathering		

Performance Indicators:

3.E.4B.3 Obtain and communicate information to explain how natural events (such as fires, landslides, earthquakes, volcanic eruptions, or floods) and human activities (such as farming, mining, or building) impact the environment.

3.E.4B.4 Define problems caused by a natural event or human activity and design devices or solutions to reduce the impact on the environment.

Life Science: Environments and Habitats

3.L.5 The student will demonstrate an understanding of how the characteristics and changes in environments and habitats affect the diversity of organisms.

Conceptual Understanding:

3.L.5.B When the environment or habitat changes, some plants and animals survive and reproduce, some move to new locations, and some die. Fossils can be used to infer characteristics of environments from long ago.

New Academic Vocabulary:

Drought	Earthquakes	Energy	Environment	Extinction	Fires	Floods
Fossils	Habitat	Hibernate	Landslides	Migrate	Organism	
Pollution	Photosynthesis	Volcanic Eruptions				

Performance Indicators:

3.L.5B.2 Develop and use models to explain how changes in a habitat cause plants and animals to respond in different ways (such as hibernating, migrating, responding to light, death, or extinction).

Cross Cutting Concepts:

4. Systems and systems models: The National Research Council (2012) states that “Defining the system under study—specifying its boundaries and making explicit a model of that system—provides tools for understanding and testing ideas that are applicable throughout science and engineering” (p. 84). Changes in a habitat cause plants and animals to respond in different ways (such as hibernating, migrating, responding to light, death, or extinction).

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Fourth Grade

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Earth Science: Weather and Climate

4.E.2 The student will demonstrate an understanding of the water cycle and weather and climate patterns.

Conceptual Understanding:

4.E.2A. Earth's atmosphere is a mixture of gases, including water vapor and oxygen. The movement of water, which is found almost everywhere on Earth including the atmosphere, changes form and cycles between Earth's surface and the air and back again. This cycling of water is driven by energy from the Sun. The movement of water in the water cycle is a major pattern that influences weather conditions. Clouds form during this cycle and various types of precipitation result.

New Academic Vocabulary:

Gases	Cycle	Atmosphere	Troposphere	Oxygen	Nitrogen
Carbon dioxide	Water vapor		Water cycle		
Evaporation	Condensation	Precipitation		Run off	

Performance Indicators:

4.E.2A.2 Develop and use models to explain how water changes as it moves between the atmosphere and Earth's surface during each phase of the water cycle (including evaporation, condensation, precipitation, and runoff).

Cross Cutting Concepts:

2. Cause and Effect: Mechanism and explanation: The water cycle will show how one part of the cycle affects how the water gets back to the Earth.
4. Systems and System Models: Models are used to show how the water cycle works to keep renewing our water sources.
7. Stability and change: The water cycle is a natural system which occurs on Earth to keep our ecosystems stable.

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Fifth Grade

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Earth Science: Changes in Landforms and Oceans

5.E.3 The student will demonstrate an understanding of how natural processes and human activities affect the features of Earth's landforms and oceans.

Conceptual Understanding:

5.E.3B. Conceptual Understanding: Earth's oceans and landforms can be affected by natural processes in various ways. Humans cannot eliminate natural hazards caused by these processes but can take steps to reduce their impacts. Human activities can affect the land and oceans in positive and negative ways.

New Academic Vocabulary:

Weathering	Erosion	Deposition	Earthquakes	Tsunamis	Hurricanes	
Landslides	Volcanic Eruptions	Floods	Constructive Forces	Destructive Forces	Waves	
Currents	Beaches	Tides	Shore	Barrier Islands	Inlets	Conservation
Pollution	Acid Rain	Chemical Pollution	Mechanical	Physical		
Estuaries						

Performance Indicators:

5.E.3B.3 Construct scientific arguments to support claims that human activities (such as conservation efforts or pollution) affect the land and oceans of Earth.

5.E.3B.4 Define problems caused by natural processes or human activities and test possible solutions to reduce the impact on landforms and the ocean shore zone.

Cross Cutting Concepts:

7. Stability and Change: The shape and size of Earth's features can be changed by natural processes and human activities. Change caused by processes on the ocean floor can occur quickly.

Life Science: Interdependent Relationships in Ecosystems

5.L.4 The student will demonstrate an understanding of relationships among biotic and abiotic factors within terrestrial and aquatic ecosystems.

Conceptual Understanding:

5.L.4B. All organisms need energy to live and grow. Energy is obtained from food. The role an organism serves in an ecosystem can be described by the way in which it gets its energy. Energy is transferred within an ecosystem as organisms produce, consume, or decompose food. A healthy ecosystem is one in which a diversity of life forms are able to meet their needs in a relatively stable web of life.

New Academic Vocabulary:

Habitat	Competition	Limiting factors	Niche	Predator
Prey	Parasite	Host		

Performance Indicators:

5.L.4B.4 Construct scientific arguments to explain how limiting factors (including food, water, space, and shelter) or a newly introduced organism can affect an ecosystem.

Cross Cutting Concepts:

2. Cause and Effect: Observations of how organisms interact in an ecosystem and the effects from the diverse life forms may or may not meet the needs of the ecosystem's ability to be stable.

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Sixth Grade

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Earth Science: Weather & Climate

6.E.2 The student will demonstrate an understanding of the interactions within Earth's systems (flow of energy) that regulate weather and climate.

Conceptual Understanding:

6.E.2A. Earth's atmosphere, an envelope of gases that surround the planet, makes conditions on Earth suitable for living things and influences weather. Water is always moving between the atmosphere (troposphere) and the surface of Earth as a result of the force of gravity and energy from the Sun. The Sun is the driving energy source for heating Earth and for the circulation of Earth's atmosphere.

New Academic Vocabulary:

Air pressure	Altitude	Troposphere	Stratosphere	Thermosphere	
Exosphere	Atmospheric gases	Nitrogen	Oxygen	Carbon dioxide	
Trace gases	Water vapor	Fossil fuels	Greenhouse gases	Water cycle	
Evaporation	Condensation	Precipitation	Transpiration	Crystallization	
Surface runoff	Groundwater flow	Dew	Frost	Ozone	Greenhouse effect

Performance Indicators:

6.E.2A.2 Critically analyze scientific arguments based on evidence for and against how different phenomena (natural and human induced) may contribute to the composition of Earth's atmosphere.

6.E.2A.3 Construct explanations of the processes involved in the cycling of water through Earth's systems (including transpiration, evaporation, condensation and crystallization, precipitation, and downhill flow of water on land).

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Seventh Grade

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Ecology: Interactions of Living Systems and the Environment

7.EC.5 The student will demonstrate an understanding of how organisms interact with and respond to the biotic and abiotic components of their environments.

Conceptual Understanding:

7.EC.5A In all ecosystems, organisms and populations of organisms depend on their environmental interactions with other living things (biotic factors) and with physical (abiotic) factors (such as light, temperature, water, or soil quality). Disruptions to any component of an ecosystem can lead to shifts in its diversity and abundance of populations.

New Academic Vocabulary:

Abiotic	Biomes	Biotic	Carrying Capacity	Community	Ecosystem	Humus
Lime	Limiting Factor	Loam	Permeability	Population		
Sandy Clay Loam	Silt	Silt Loam	Soil Composition	Soil pH	Soil Profile	
Soil Texture	Species					

Performance Indicators:

7.EC.5A.2 Construct explanations of how soil quality (including composition, texture, particle size, permeability, and pH) affects the characteristics of an ecosystem using evidence from soil profiles.

7.EC.5A.3 Analyze and interpret data to predict changes in the number of organisms within a population when certain changes occur to the physical environment (such as changes due to natural hazards or limiting factors).

Cross Cutting Concepts:

2. Cause and effect: Mechanism and explanation: Changes that occur to the physical environment can cause changes in the number of organisms within a population.

Conceptual Understanding:

7.EC.5B Organisms in all ecosystems interact with and depend upon each other. Organisms with similar needs compete for limited resources. Food webs and energy pyramids are models that demonstrate how energy is transferred within an ecosystem.

New Academic Vocabulary:

Biological Control	Chemical Control	Commensalism	Competition	Emigration	
Food Chain	Food Pyramid	Food Web	Immigration	Invasive Species	Mutualism
Native Species	Niche	Parasite	Parasitism	Physical Control	Predation
Predator	Prey	Symbiosis			

Performance Indicators:

7.EC.5B.3 Analyze and interpret data to predict how changes in the number of organisms of one species affects the balance of an ecosystem.

7.EC.5B.4 Define problems caused by the introduction of a new species in an environment and design devices or solutions to minimize the impact(s) to the balance of an ecosystem.

Cross Cutting Concepts:

2. Cause and effect: Mechanism and explanation. There is a causal relationship that results from the interactions of organisms within an ecosystem.

4. Systems and systems models: System models can explain how varying factors affect the balance within an ecosystem.

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Eighth Grade

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

Earth Science: Earth Systems & Resources

8.E.5 The student will demonstrate an understanding of the processes that alter the structure of Earth and provide resources for life on the planet.

Conceptual Understanding:

8.E.5C Humans depend upon many Earth resources - some renewable over human lifetimes and some nonrenewable or irreplaceable. Resources are distributed unevenly around the planet as a result of past geological processes.

New Academic Vocabulary:

Physical properties	Chemical properties	Minerals	Hardness	Luster	Color	Texture	
Cleavage/ fracture	Flammability	Reactivity	Density	Gypsum	Ores	Bauxite	Fossil fuel

Performance Indicators:

8.E.5C.1 Obtain and communicate information regarding the physical and chemical properties of minerals, ores, and fossil fuels to describe their importance as Earth resources.

Cross Cutting Concepts:

5. Energy and matter: Flows, cycles, and conservation. Fossil fuels are natural fuels that come from the remains of living things. These fuels, like natural gas, give off energy when they are burned.

Earth Science: Earth's History and Diversity of Life

8.E.6: The student will demonstrate an understanding of Earth's geologic history and its diversity of life over time.

Conceptual Understanding:

8.E.6B. Adaptation by natural selection acting over generations is one important process by which species change in response to changes in environmental conditions. The resources of biological communities can be used within sustainable limits; but if the ecosystem becomes unbalanced in ways that prevent the sustainable use of resources, then ecosystem degradation and species extinction can occur.

New Academic Vocabulary:

Adaptations	Traits	Variations	Natural selection	Natural factors	Man-made factors
Extinct					

Performance Indicators:

8.E.6B.2 Obtain and communicate information to support claims that natural and human-made factors can contribute to the extinction of species.

Cross Cutting Concepts:

2. Cause and effect: Mechanism and explanation: Natural and man-made factors cause extinctions.