

Grade Level Pre-K/K

Introduction:

The competency and proficiency expectations for this grade level have been organized into a suggested unit structure. Using “Backwards Design”, sample units have been drafted and are available at each school. The only portions of these units that are required for implementation are Stages I and II. Teachers are encouraged to design Stage III learning experiences that have the best integrated fit for a year-long learning experience in science. Teachers are further encouraged to use curriculum mapping strategies that create learning experiences in science that have thematic or topical connections to learning intentions in other content areas.

Suggested Themes:

Thematic Focus 1: Sort and Move

Thematic Focus 2: Is It Alive?

Thematic Focus 3: Scratch and Sniff

Thematic Focus 4: Weather Watchers

Grade Level Pre-K/K, Thematic Focus 1: Sort and Move

Science Domains: Inquiry; Physical Science; Universe, Earth, and Environment

Science Content: Properties of Matter; Earth Materials and the Rock Cycle; Motion; Energy

Overarching Enduring Knowledge:

All living things and non-living things are composed of matter having characteristic properties that distinguish one substance from another.

The universe, earth and all earth systems have undergone change in the past, continue to change in the present and predicted to continue changing in the future.

Everything is constantly moving; motion is relative, but the motion of an object can be described and predicted by tracing and measuring its position over time.

Energy is necessary for change to occur. Energy is the ability to bring about change in matter.

- There are many forms of energy.
- The total energy in the universe is constant.
- Energy can be transformed and transferred, but not destroyed (conservation of energy).
- Energy transfers and transformation exhibit characteristics of systems with inputs, processes, and outputs as well as connections to other systems.

Concepts to Emphasize: properties of matter, motion

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Concepts to Emphasize: properties of matter, motion

CCSU Power Standards

Power Standard #1 – Scientific Inquiry: Students demonstrate the ability to apply inquiry skills to explore and understand the world around them. (Aligns with Vermont Standard 7.1)

Power Standard #2 - Physical Science: Students describe the relationship between energy and matter. (Aligns with Vermont Standard 7.12)

Power Standard #3 - Physical Science: Students describe motion and demonstrate how forces affect motion. (Aligns with Vermont Standard 7.12)

Aligns with Vermont Standards	Vermont Grade Cluster Expectations Competency Focus	Essential Questions and Science Concepts	CCSU Power Indicators Proficiency Focus
7.1, 7.2, 7.12	<p>SPK-K:9 – <i>Properties of Matter</i> Students demonstrate their understanding of the Properties of Matter by...</p> <ul style="list-style-type: none"> Observing and sorting substances that are solids and liquids and identifying their differences. 	<ul style="list-style-type: none"> How can we sort objects by the way they are the alike or different? How can we sort objects according to their properties (i.e.: size, weight, shape, color, temperature, texture, smell)? <p>a) The physical properties of objects can be sorted by how they are alike or different.</p> <p>b) Objects can be sorted according to their properties.</p>	Distinguish between solids and liquids by sorting a variety of substances into categories. (2a)

7.1, 7.2, 7.15	<p>SPK-K:46 – <i>Earth Materials and the Rock Cycle</i> Students demonstrate their understanding of Processes and Change over Time within Earth Systems by...</p> <ul style="list-style-type: none"> • Sorting and recognizing similarities and differences in a variety of rocks (from boulders to grains of sand). 	c) Chunks of rocks come in many sizes and shapes, from boulders to grains of sand and even smaller.	
7.1, 7.2, 7.12	<p>SPK-K:19 – <i>Motion</i> Students demonstrate their understanding of Motion by...</p> <ul style="list-style-type: none"> • Manipulating objects and observing and describing the motion. 	<ul style="list-style-type: none"> • How do objects move (i.e.: position, direction)? <p>a) The position of an object can be described (e.g., in front of or behind).</p> <p>b) The motion of an object can be described as a direction (e.g., straight, zig-zag, round and round back and forth, up, down).</p>	Move an object and describe its motion. (3a)
7.1, 7.2, 7.12	<p>SPK-K:25 – <i>Energy</i> Students demonstrate their understanding of Magnetism by...</p> <ul style="list-style-type: none"> • Investigating, observing and describing how magnets can make some things move without touching (e.g., determining the distance needed for a magnet to attract an object). 	<ul style="list-style-type: none"> • What are sources of energy? • What are the different forms of energy? <p>a) Magnets can move some objects without touching them.</p>	

Grade Level Pre-K/K, Thematic Focus 2: Is It Alive?

Science Domains: Inquiry; Life Science

Science Content: Survival of Organisms; Interdependence within Ecosystems; Classification of Living Things

Overarching Enduring Knowledge:

All living organisms and their component cells have identifiable characteristics that allow for survival.

Energy enters an ecosystem in the form of sunlight and flows through the system to each cell. Matter interacts, changes, and recycles in an ecosystem. Populations of organisms survive by maintaining interdependent relationships with one another, and by utilizing biotic and abiotic resources from the environment.

Concepts to Emphasize: characteristics of living and non-living things, survival of plants and animals

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Concepts to Emphasize: characteristics of living and non-living things, survival of plants and animals

CCSU Power Standards

Power Standard #1 – Scientific Inquiry: Students demonstrate the ability to apply inquiry skills to explore and understand the world around them. (Aligns with Vermont Standard 7.1)

Power Standard #4 - Life Science and Human Body: Students observe and describe structures, characteristics, systems, life cycles, patterns of development, and interdependent relationships that allow organisms to survive and species to evolve. (Aligns with Vermont Standards 7.13, 7.14)

Aligns with Vermont Standards	Vermont Grade Cluster Expectations Competency Focus	Essential Questions and Science Concepts	CCSU Power Indicators Proficiency Focus
7.1, 7.2, 7.13	<p>SPK-K:30 – <i>Survival of Organisms</i> Students demonstrate their understanding of Structure and Function–Survival Requirements by...</p> <ul style="list-style-type: none"> Observing and recording what happens when food and water are given to living and non-living things. 	<ul style="list-style-type: none"> How are living and non-living things alike and different? What does it mean to survive? How can the characteristics of plants help them to survive? How can the characteristics of animals help them to survive? <p>a) There are differences between living and non-living things.</p>	Distinguish between living and non-living by sorting objects or pictures into categories. (4a)

7.1, 7.2, 7.13	<p>SPK-K:34 – <i>Interdependence within Ecosystems</i> Students demonstrate their understanding of Energy Flow in an Ecosystem by...</p> <ul style="list-style-type: none"> • Caring for plants and animals by identifying and providing for their needs. 	<ul style="list-style-type: none"> • What do plants and animals need to survive? <p>a) Plants and animals both need water, food and air.</p>	
7.1, 7.2, 7.13	<p>SPK-K:38 – <i>Classification of Living Things</i> Students demonstrate their understanding of Classification of Organisms by...</p> <ul style="list-style-type: none"> • Sorting and identifying examples of plants and animals. 	<ul style="list-style-type: none"> • How can you tell an animal from a plant? <p>a) Some living things (organisms) are identified as plants or animals.</p>	Distinguish between plants and animals by sorting into categories. (4b)

Grade Level Pre-K/K, Thematic Focus 3: Scratch and Sniff

Science Domains: Inquiry; Human Body

Science Content: Body Systems

Overarching Enduring Knowledge:

The human body is unique in its heredity, body systems, and development and can be affected by the environment.

Concepts to Emphasize: senses

Grade Level Pre-K/K, Thematic Focus 3: Scratch and Sniff

Science Domains: Inquiry; Human Body
Science Content: Body Systems

Concepts to Emphasize: senses

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Power Standard #4 - Life Science and Human Body: Students observe and describe structures, characteristics, systems, life cycles, patterns of development, and interdependent relationships that allow organisms to survive and species to evolve. (Aligns with Vermont Standards 7.13, 7.14)

Vermont Standards	Vermont Grade Cluster Expectations Competency Focus	Enduring Understandings and Essential Questions	CCSU Power Indicators Proficiency Focus
7.1, 7.2, 7.14	<p>SPK-K:41 – Body Systems Students demonstrate their understanding of Human Body Systems by...</p> <ul style="list-style-type: none"> Identifying the five senses and using the senses to identify objects in their environment. 	<ul style="list-style-type: none"> In what ways do we use our senses to find out about our environment and ourselves? a) People use their senses to find out about their surroundings and themselves. Different senses give different information 	<p>Name the five senses and use them to identify objects in their environment. (4c)</p>

Grade Level Pre-K/K, Thematic Focus 4: Weather Watchers

Science Domains: Inquiry; Physical Science; Universe, Earth, and Environment

Science Content: Solar System; Energy; Atmosphere, Water Cycle, Weather, Seasons; Natural Resources

Overarching Enduring Knowledge:

The universe, earth and all earth systems have undergone change in the past, continue to change in the present and predicted to continue changing in the future.

Energy is necessary for change to occur. Energy is the ability to bring about change in matter.

- There are many forms of energy.
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Concepts to Emphasize: n/a

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Science Content: Solar System; Energy; Atmosphere, Water Cycle, Weather, Seasons; Natural Resources

Concepts to Emphasize: n/a

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Vermont Standards	Vermont Grade Cluster Expectations Competency Focus	Enduring Understandings and Essential Questions	CCSU Power Indicators Proficiency Focus
7.1, 7.2, 7.15	<p>SPK-K:44 – Solar System Students demonstrate their understanding of Characteristics of the Solar System by...</p> <ul style="list-style-type: none"> Observing and recording the day and night sky. 	<ul style="list-style-type: none"> How does the sky look at different times? <p>a) The sun and moon are in the sky.</p> <p>b) The sun can be seen only at day time.</p>	
7.1, 7.2, 7.12	<p>SPK-K :23 – Energy Students demonstrate their understanding of Heat Energy by...</p> <ul style="list-style-type: none"> Identifying the sun as a source of heat energy. 	<ul style="list-style-type: none"> Where does heat come from? <p>a) The sun warms the land, air and water.</p>	Identify the sun as a source of heat energy. (2b)

<p>7.1, 7.2, 7.15</p>	<p>SPK-K:48 – Atmosphere, Water Cycle, Weather, Seasons Students demonstrate their understanding of Processes and Change over Time within Earth Systems by...</p> <ul style="list-style-type: none"> Observing and describing weather daily throughout a school year. 	<ul style="list-style-type: none"> How can we describe Weather? To what extent does weather change from day to day? <p>a) Weather changes from day to day.</p>	
<p>7.1, 7.2, 7.16</p>	<p>SPK-K:49 – Natural Resources Students demonstrate their understanding of Processes and Change within Natural Resources by...</p> <ul style="list-style-type: none"> Identifying items that students consume on a daily basis (e.g., food, fiber, paper, wool or wood). 	<ul style="list-style-type: none"> What are natural resources? What characteristics make some earth materials useful as a natural resource? <p>a) Natural Resources are materials that we obtain from the living and non-living environment.</p>	