

## Grade Level 1

### 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 Units:

**Unit 1:** What’s the Matter?

**Unit 2:** How Does Your Garden Grow?

**Unit 3:** Creatures and Features

## Grade Level 1, Unit 1: What's the Matter?

**Science Domains:** Inquiry; Physical Science

**Science Content:** Properties of Matter, Physical Change

### **Overarching Enduring Understandings:**

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

A transfer of energy can result in the physical change of state of a substance.

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:** physical properties of matter (solids, liquids), energy sources, heating and cooling

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### 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)

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><b>S1-2:9 – <i>Properties of Matter</i></b>            Students demonstrate their understanding of Properties of Matter by...</p> <ul style="list-style-type: none"> <li>Identifying, recording and comparing characteristics of objects made of similar and different properties.</li> </ul>	<ul style="list-style-type: none"> <li><b>What is matter?</b></li> <li><b>How do we use properties to identify matter?</b></li> <li><b>What are physical properties of matter (solids and liquids)?</b></li> </ul> <p>a) Objects are made of one or more materials such as paper, wood, metal, or cloth.</p> <p>b) Similarities and differences in physical properties can be identified.</p>	

<p>7.1, 7.2, 7.12</p>	<p><b>S1-2:12 – Properties of Matter</b> Students demonstrate their understanding of the States of Matter by...</p> <ul style="list-style-type: none"> <li>Identifying, describing and comparing the state of matter of solids and liquids.</li> </ul>	<p>c) Solids and liquids are states of matter and have properties that can be described.</p> <p>d) Solids have the properties of hardness, color, and ability to maintain shape.</p> <p>e) Liquids have properties of color, tendency to flow, ability to mix with other liquids, taking up the shape of the container.</p>	<p>Identify two similarities and two differences between solids and liquids. (2b)</p> <p>Name four physical properties of an object. (2a)</p>
<p>7.1, 7.2, 7.12</p>	<p><b>S1-2:14 – Physical Change</b> Students demonstrate their understanding of Physical Change by...</p> <ul style="list-style-type: none"> <li>Describing and reporting the change in properties when heat is applied to a solid or when heat leaves a liquid (e.g., water and ice).</li> </ul>	<ul style="list-style-type: none"> <li><b>How does heating and cooling change matter?</b></li> </ul> <p>a) Heating and cooling (changes in temperature) can change states of matter. Water can be a liquid or a solid through the processes of melting and freezing.</p>	<p>Describe what happens when heat is added to a solid. (2c)</p> <p>Describe what happens when heat leaves a liquid. (2d)</p>
<p>7.1, 7.2, 7.12</p>	<p><b>S1-2:23 - Energy</b> Students demonstrate their understanding of Heat Energy by...</p> <ul style="list-style-type: none"> <li>Experimenting, observing, and describing how heat moving from one object to another can cause temperature changes.</li> </ul>	<ul style="list-style-type: none"> <li><b>What are sources of energy?</b></li> <li><b>Where does heat come from?</b></li> <li><b>In what ways can energy be transferred?</b></li> </ul> <p>a) The temperature of substances can change.</p> <p>b) Heat can move from one object to another.</p>	

## Grade Level 1, Unit 2: How Does Your Garden Grow?

**Science Domains:** Inquiry; Life Science

**Science Content:** Survival of Organisms; Life Cycles and Reproduction; Interdependence within Ecosystems

### **Overarching Enduring Understandings:**

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:** living and non-living things, life cycle of a plant, survival of plants

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**Concepts to Emphasize:** living and non-living things, life cycle of a plant, survival of plants

### 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><b>No S1-2:30 – <i>Survival of Organisms</i></b> Teachers may review Grades PreK-K Structure and Function Concepts by ...</p> <ul style="list-style-type: none"> <li>Observing and recoding the parts that make up living things (i.e. roots, stems, leaves, flower, legs, antennae, tail, shell).</li> </ul>	<ul style="list-style-type: none"> <li><b>How can the characteristics of plants help them to survive?</b></li> </ul> <p>a) Living things (plant and animals) are made of parts that enable survival.</p>	Label parts of a plant and explain how they help the plant to survive. (4a)
7.1, 7.2, 7.13	<p><b>S1-2:31 – <i>Life Cycles and Reproduction</i></b> Students demonstrate their understanding of Reproduction by...</p> <ul style="list-style-type: none"> <li>Drawing and labeling the stages of development in the life of a familiar plant or animal.</li> </ul>	<ul style="list-style-type: none"> <li><b>Where do plants come from?</b></li> <li><b>In what ways can a plant change throughout its life cycle?</b></li> </ul> <p>a) Most organisms come from male and female parents.</p>	

		b) All organisms undergo stages of development that include being born, developing into adulthood, reproducing and dying.	Draw and label the stages of a plant throughout its life cycle. (4c)
7.1, 7.2, 7.13	<p><b>S1-2:34 – <i>Interdependence within Ecosystems</i></b> Students demonstrate their understanding of Energy Flow in an Ecosystem by...</p> <ul style="list-style-type: none"> <li>• <u>Experimenting</u> with plant growth <u>under different conditions</u>, including light and no light.</li> </ul>	<ul style="list-style-type: none"> <li>• <b>How do plants meet their needs to survive?</b></li> </ul> <p>a) Plants need light (energy) to survive.</p>	Compare and contrast plant growth under different conditions, including light and no light. (4b)

**Grade Level 1, Unit 3: Creatures and Features**

**Science Domains:** Inquiry; Human Body

**Science Content:** Heredity; Body Systems; Human Disease; Patterns of Human Development

**Overarching Enduring Understandings:**

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

**Concepts to Emphasize:** physical features, senses, survival of humans

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**Concepts to Emphasize:** physical features, senses, survival of humans

### 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)

Vermont Standards	Vermont Grade Cluster Expectations Competency Focus	Essential Questions and Science Concepts	CCSU Power Indicators Proficiency Focus
7.1, 7.2, 7.14	<p><b>S1-2:40 – Heredity</b> Students demonstrate their understanding of Human Heredity by...</p> <ul style="list-style-type: none"> <li>Observing and comparing their physical features with those of classmates and other organisms.</li> </ul>	<ul style="list-style-type: none"> <li><b>In what ways are people alike and different from each other?</b></li> <li><b>In what ways are people alike and different from other animals?</b></li> </ul> <p>a) People have different external features, such as size, color of hair, skin, and eyes. However, humans are more like one another than like other animals.</p>	Compare physical features with classmates. (4d)

<p>7.1, 7.2, 7.14</p>	<p><b>S1-2:41 – <i>Body Systems</i></b> Students demonstrate their understanding of Human Body Systems by...</p> <ul style="list-style-type: none"> <li>Identifying the senses needed <u>to meet survival needs for a given scenario.</u></li> </ul>	<ul style="list-style-type: none"> <li><b>How do our senses help us to meet our needs for survival?</b> <ol style="list-style-type: none"> <li>People use their senses to find out about their surroundings and meet their needs.</li> <li>Body parts help people satisfy their need for food. <ul style="list-style-type: none"> <li>eyes/nose: find food</li> <li>legs/hands: get food</li> <li>mouth: eat food</li> </ul> </li> <li>Senses help people satisfy their need to avoid danger. <ul style="list-style-type: none"> <li>nose: smell fire</li> <li>ears: hear danger</li> </ul> </li> </ol> </li> </ul>	<p>Describe how the senses help people survive. (4e)</p>
<p>7.1, 7.2, 7.14</p>	<p><b>S1-2:42 – <i>Human Disease</i></b> Students demonstrate their understanding of the Patterns of Human Health/Disease by...</p> <ul style="list-style-type: none"> <li>Identifying things in the environment that could be harmful if swallowed (e.g., soaps, cleaning solutions, unknown pills).</li> </ul>	<ul style="list-style-type: none"> <li><b>What are things in our environment that could be harmful if taken into our bodies?</b> <ol style="list-style-type: none"> <li>Some things people take into their bodies from the environment are toxic and can hurt them.</li> </ol> <p style="text-align: center;"><i>To be covered in health class.</i></p> </li> </ul>	
<p>7.1, 7.2, 7.14</p>	<p><b>S1-2:43 – <i>Patterns of Human Development</i></b> Students demonstrate their understanding of the Patterns of Human Development by...</p> <ul style="list-style-type: none"> <li>Identifying activities that you can do now that you couldn't do as a baby (e.g., dress yourself, get food from refrigerator, bathe yourself).</li> </ul>	<ul style="list-style-type: none"> <li><b>In what ways are babies dependent on adults before and after birth?</b> <ol style="list-style-type: none"> <li>A human baby grows inside its mother until its birth. Even after birth, a human baby is unable to care for itself, and its survival depends on the care it receives from adults.</li> </ol> </li> </ul>	<p>Identify activities now that you couldn't do as a baby. (4f)</p>