

	Content Statement	I Can...	Key Vocabulary
Earth's Surface (ESS)	1. Earth's surface has specific characteristics and landforms that can be identified.	-Differentiate between where fresh and salt water are on Earth and how much there is of each. -Explain why planet Earth is called the Blue Planet. -Identify common landforms from maps or graphics. -Use a variety of sources (topographic maps, aerial photographs, physical geography maps, etc.) to identify common landforms and features including streams, deltas, floodplains, hills, mountains/mountain ranges, valleys, sinkholes, caves, canyons, glacial features, dunes, springs, volcanoes and islands. -Explain how the surface of the Earth can change through erosion, deposition, volcanic activity, earthquakes, glacial movement flooding and weathering. -Connect the process that occurred with the resulting landform, feature, or characteristic. -Use technology to study events that are not found locally or to demonstrate change that has occurred (e.g., satellite photos of an event such as flooding).	<ul style="list-style-type: none"> <li>• Fresh water</li> <li>• Salt water</li> <li>• Erosion</li> <li>• Deposition</li> <li>• Weathering</li> <li>• Landforms</li> <li>• Blue Planet</li> <li>• Aerial photographs</li> <li>• Physical geography maps</li> <li>• Topographic maps</li> <li>• Deltas</li> <li>• Dunes</li> <li>• Glacial feature and movement</li> <li>• Sinkholes</li> <li>• Floodplains</li> <li>• Satellite photos</li> </ul>

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Earth's Surface (ESS)	2. The surface of the Earth changes due to weathering.	-Identify weathering as processes that change rock at or near Earth's surface through the breakdown of large rock into smaller pieces of rock. -Differentiate between weathering and erosion. -Recognize that weathering can occur at different rates due to specific characteristics of the rocks and the exposure to weathering factors (e.g., freezing/thawing, wind, water). -Observe weathering processes in nature (e.g., rocks fracturing bedrock or the effects of years of precipitation on a marble statue). -Use classroom simulations, laboratory testing and field observations to study weathering. -Explain how rocks can change shape, size and/or form due to water or ice movement, freezing and thawing, wind plant growth, gases in the air, pollution and catastrophic events such as earthquakes, mass wasting, flooding and volcanic activity.	<ul style="list-style-type: none"> <li>• Weathering</li> <li>• Erosion</li> <li>• Weathering factors</li> <li>• Classroom simulations</li> <li>• Laboratory testing</li> <li>• Field observations</li> <li>• Catastrophic events</li> <li>• Mass wasting</li> </ul>
	3. The surface of Earth changes due to erosion and deposition.	-Identify erosion as a process in which water, wind, and ice transports rock, soil or sediment to a new location. -Identify deposition as the settling or coming to rest of transported rock, soil or sediment. -Differentiate between weathering, erosion (destructive) and deposition (constructive). -Explain how gravity affects erosion through catastrophic events (e.g., mudslides, avalanches, landslides, or flooding). -Use topographical maps, surficial geology maps and aerial photographs to locate erosional areas and depositional areas in Ohio.	<ul style="list-style-type: none"> <li>• Erosion</li> <li>• Deposition</li> <li>• Weathering</li> <li>• Sediment</li> <li>• Gravity</li> <li>• Catastrophic events</li> <li>• Mass wasting</li> <li>• Topographical maps</li> <li>• Surficial geology maps</li> <li>• Aerial photographs</li> <li>• Erosional areas</li> <li>• Depositional areas</li> </ul>

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Earth's Living History (LS)	<p>4. Changes in an organism's environment are sometimes beneficial to its survival and sometimes harmful.</p> <p><b>NOTE:</b> Grade 4 ES focuses on changes to Earth's surface due to erosion, deposition of soil, rock sediment, flooding, volcanoes and earthquakes that can be taught along with this content.</p>	<p>-Describe the immediate consequences of rapid ecosystem change for organisms within an ecosystem and describe the consequences this change will have on an ecosystem a decade or more later (e.g., flooding, wind storms, snowfall, volcanic eruptions).</p> <p>-Describe major changes in Ohio's environments over time and the organisms supported in each (e.g., oceanic, glacial, wetlands, forests).</p> <p>-Research and investigate areas in Ohio (e.g., Cedar Bog, Lake Erie, Hocking Hills, Ceasar Creek, Kelleys Island) to explore the relationships between previous environments, changes that have occurred in the environments and the species that lived there.</p> <p>-Use the fossil record to provide evidence for changes in populations of species.</p> <p>-Understand how changes that occur in plant and animal populations can impact access to resources for the remaining organisms, which may result in migration or death.</p> <p>-Explain how an animal's patterns of behavior are related to the environment (including the kinds and numbers of other organisms present, the availability of food and resources, and the physical attributes of the environment).</p>	<ul style="list-style-type: none"> <li>• Ecosystems</li> <li>• Population</li> <li>• Species</li> <li>• Fossil record</li> <li>• Migration</li> <li>• Survive/Survival</li> <li>• Rapid ecosystem change</li> </ul>

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	Content Statement	I Can...	Key Vocabulary
Earth's Living History (LS)	<p>5. Fossils can be compared to one another and to present-day organisms according to their similarities and differences.</p>	<ul style="list-style-type: none"> <li>-Use fossils to provide evidence that many plant and animal species are extinct and that many species have changed over time.</li> <li>-Use fossils to provide evidence about the nature of the environment at that time to prove that as the environment changed so did the types of organisms that could survive in that environment.</li> <li>-Investigate a variety of living organisms, both familiar and exotic.</li> <li>-Compare and contrast observable external characteristics of organisms.</li> <li>-Use a hand lens and microscope to explore a variety of organisms that cannot be seen by the unaided eye.</li> <li>-Create a classification system that focuses on the anatomy, behavioral patterns, habitats and other features of organisms.</li> <li>-Recognize that most types of organisms that have lived on Earth no longer exist.</li> </ul>	<ul style="list-style-type: none"> <li>• Fossils</li> <li>• Microscope</li> <li>• Classification system</li> <li>• Species</li> <li>• Extinct</li> <li>• Survive/Survival</li> <li>• Exotic</li> <li>• Hand lens</li> <li>• Anatomy</li> <li>• Habitats</li> </ul>
Electricity, Heat & Matter (PS)	<p>6. The total amount of matter is conserved when it undergoes a change.</p> <p><b>NOTE:</b> At this grade, the discussion of conservation of matter should be limited to a macroscopic, observable level.</p> <p><b>NOTE:</b> States of matter are found in PS grade 3. Heating and cooling is one way to change the state of matter.</p> <p><b>NOTE:</b> The distinction between mass and weight will be introduced at the middle school level. In Ohio, students will not be assessed on the differences between mass and weight until Grade 6.</p>	<ul style="list-style-type: none"> <li>-Recognize that the amount of matter stays constant during any change.</li> <li>-Investigate what happens to the total amount of mass during many types of changes (e.g., ice melting, salt dissolving, paper tearing, candle burning, Alka-Seltzer® in water).</li> <li>-Draw conclusions about what happens to mass when it does not appear to stay constant during an investigation (e.g., fizzing tablets in water).</li> <li>-Recognize that the sum of all of the parts in an object equals the mass of the object (e.g., when a solid is dissolved in a liquid, the mass of the mixture is equal to the sum of the masses of the liquid and solid).</li> </ul>	<ul style="list-style-type: none"> <li>• Matter</li> <li>• Conserve</li> <li>• Conservation</li> <li>• Mass</li> </ul>

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	Content Statement	I Can...	Key Vocabulary
Electricity, Heat and Matter (PS)	<p>7. Energy can be transformed from one form to another or can be transferred from one location to another.</p> <p><b>NOTE:</b> Exploring heat transfer in terms of moving submicroscopic particles is not appropriate at this grade level.</p> <p><b>NOTE:</b> Knowing the specifics of electromagnetism is not appropriate at this grade level. At this point, the connections between electricity and magnetism are kept strictly experiential and observational.</p> <p><b>NOTE:</b> The word “heat” is used loosely in everyday language, yet it has a very specific scientific meaning. Usually what is called heat is actually “thermal or radiant energy.” An object has thermal energy due to the random movement of the particles that make up the object. Radiant energy is that which is given off by objects through space (e.g., warmth from a fire, solar energy from the sun). “Heating” is used to describe the transfer of thermal or radiant energy to another object or place. Differentiating between these concepts is inappropriate at this grade level.</p> <p><b>NOTE:</b> Energy transfer (between objects or places) should not be confused with energy transformation from one form of energy to another (e.g., electrical energy to light energy).</p>	<ul style="list-style-type: none"> <li>-Understand that adding or taking heat away can change the temperature of an object.</li> <li>-Recognize that there are materials in which the entire object becomes hot when one part of the object is heated (e.g., in a metal pan, heat flows through the pan on the stove transferring the heat from the burner outside the pan to the food in the pan).</li> <li>-Recognize that there are other objects in which parts of the object remain cool even when another part of the object is heated (e.g., in a Styrofoam® cup, very little of the warmth from hot liquid inside the cup is transferred to the hand holding the cup).</li> <li>-Investigate all aspects of an electrical circuit including the conductor, insulator, energy source, light bulb, switch, continuous loop.</li> <li>-Compare and contrast electrical conductors with electrical insulators.</li> <li>-Test common materials to determine their conductive properties.</li> <li>-Recognize that electrical devices in a working circuit often get warmer.</li> <li>-Conduct an experiment that explores the connections between electricity and magnetism (e.g., when a magnet moves in relation to a coil of wire, electricity can flow through the coil, when a wire conducts electricity, the wire has magnetic properties and can push and/or pull magnets).</li> <li>-Identify different types of energy conversions within an electrical circuit (light, sound, hear or magnetic energy).</li> </ul>	<ul style="list-style-type: none"> <li>• Heat</li> <li>• Temperature</li> <li>• Conductor</li> <li>• Electricity</li> <li>• Insulator</li> <li>• Magnetism</li> <li>• Energy</li> <li>• Transform</li> <li>• Transfer</li> <li>• Energy source</li> <li>• Light bulb</li> <li>• Switch</li> <li>• Continuous loop</li> <li>• Conductive properties</li> <li>• Energy conversions</li> <li>• Magnetic energy</li> <li>• Electrical circuit</li> </ul>

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