

A Correlation of
Elevate Science
Grade 5, ©2019



To the
**Utah Science and Engineering Education
Standards (SEEd)**
Grade 5

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To the
Utah SEEd Standards for Grade 5**

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Table of Contents

Strand 5.1: CHARACTERISTICS AND INTERACTIONS OF EARTH’S SYSTEMS..... 4

Strand 5.2: PROPERTIES AND CHANGES OF MATTER..... 7

Strand 5.3: CYCLING OF MATTER IN ECOSYSTEMS..... 11

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INTRODUCTION	
The fifth-grade SEEd standards provide a framework for students to analyze and interpret data about Earth’s major systems and how they interact. Students plan and carry out investigations to explain the properties of matter and to determine if new substances form when matter is combined. Students construct explanations for how matter cycles and energy flows through environments and Earth’s systems. Additionally, students design and evaluate solutions to problems that exist in these areas.	
Strand 5.1: CHARACTERISTICS AND INTERACTIONS OF EARTH’S SYSTEMS	
Earth’s major systems are the geosphere (solid and molten rock, soil, and sediments), the hydrosphere (water and ice), the atmosphere (air), and the biosphere (living things, including humans). Within these systems, the location of Earth’s land and water can be described. Also, these systems interact in multiple ways. Weathering and erosion are examples of interactions between Earth’s systems. Some interactions cause landslides, earthquakes, and volcanic eruptions that impact humans and other organisms. Humans cannot eliminate natural hazards, but solutions can be designed to reduce their impact.	
<p>Standard 5.1.1 Analyze and interpret data to describe patterns of Earth’s features.</p> <p>Emphasize most earthquakes and volcanoes occur in bands that are often along the boundaries between continents and oceans while major mountain chains may be found inside continents or near their edges. Examples of data could include maps showing locations of mountains on continents and the ocean floor or the locations of volcanoes and earthquakes. (ESS2.B)</p>	<p>Please see Elevate Science, Grade 4: Topic 4: Earth’s Features; Lesson 2: Patterns of Earth’s Features, 166-173, 196</p>
<p>Standard 5.1.2 Use mathematics and computational thinking to compare the quantity of saltwater and freshwater in various reservoirs to provide evidence for the distribution of water on Earth. Emphasize reservoirs such as oceans, lakes, rivers, glaciers, groundwater, and polar ice caps.</p> <p>Examples of using mathematics and computational thinking could include measuring, estimating, graphing, or finding percentages of quantities. (ESS2.C)</p>	<p>SE/TE: Freshwater Shortages, 158 uBe a Scientist: Modeling Water Distribution, 158 Where Is Water?: Graph Data, 164 Quest Check-In, Water Resources, 170 Assessment, #7, 175 Evidence-Based Assessment: Question 1, 176-177</p> <p>Realize™ Digital Resources: Earth’s Water >Topic Launch>Quest Kickoff: Water, Water Everywhere >Lesson 2, Earth’s Freshwater>Video: Earth’s Freshwater;>Interactivity: Earth’s Underground Water >Lesson 3, Earth’s Ocean>Interactivity: Earth’s Waters</p>

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(Continued)	(Continued) >Topic Close>Quest Findings Water, Water Everywhere
<p>Standard 5.1.3 Ask questions to plan and carry out investigations that provide evidence for the effects of weathering and the rate of erosion on the geosphere.</p> <p>Emphasize weathering and erosion by water, ice, wind, gravity, or vegetation. Examples could include observing the effects of cycles of freezing and thawing of water on rock or changing the slope in the downhill movement of water. (ESS2.A, ESS2.E)</p>	<p>Please see Elevate Science, Grade 4: Topic 4: Earth's Features; 154, 155, Lesson 4: Weathering and Erosion, 184-194, 19197, 198-199</p>
<p>Standard 5.1.4 Develop a model to describe interactions between Earth's systems including the geosphere, biosphere, hydrosphere, and/or atmosphere.</p> <p>Emphasize interactions between only two systems at a time. Examples could include the influence of a rainstorm in a desert, waves on a shoreline, or mountains on clouds. (ESS2.A)</p>	<p>SE/TE: Quest Kickoff: Connect the Spheres, 98-99 uInvestigate Lab: How does water move through soil?, 103 Visual Literacy Connection: What are parts of Earth's geosphere and biosphere?, 106-107 uInvestigate Lab: How does a greenhouse work?, 111 Visual Literacy Connection: What are parts of Earth's hydrosphere?, 112-113 Quest Connection, 114 Quest Check-in Lab: Where are Earth's spheres?, 116-117 uInvestigate Lab: How does the geosphere affect the hydrosphere?, 121 Quest Check-In: Earth's Interactions, 128 Quest Findings, 130 Evidence-Based Assessment: Questions 1-6, 134-135 uDemonstrate Lab: How are the spheres represented in a terrarium?, 136-137 Science and Engineering Practices Handbook: Science Practices, EM6</p>

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(Continued)	(Continued) Realize™ Digital Resources: Earth's Systems >Topic Launch> Quest Kickoff: Connect the Spheres; >Lesson 1, Geosphere and Biosphere> Video: Geosphere and Biosphere; > Interactivity: The Organic Geosphere >Lesson 2, Hydrosphere and Atmosphere, Video: Hydrosphere and Atmosphere; >Interactivity: Is There Enough Water? > Lesson 3, Interactions Among Earth's Systems >Video: Interactions Among Earth's Systems; >Virtual Lab: Build Your Dream Park; > Interactivity: Interactions Among Earth's Spheres >Topic Close: Quest Findings: Connect the Spheres
<p>Standard 5.1.5 Design solutions to reduce the effects of naturally occurring events that impact humans.</p> <p>Define the problem, identify criteria and constraints, develop possible solutions using models, analyze data from testing solutions, and propose modifications for optimizing a solution. Emphasize that humans cannot eliminate natural hazards, but they can take steps to reduce their impacts. Examples of events could include landslides, earthquakes, tsunamis, blizzards, or volcanic eruptions. (ESS3.B, ETS1.A, ETS1.B, ETS1.C)</p>	<p>Please see Elevate Science, Grade 4. Topic 5: Earth's Natural Hazards, 204-205, 206, Lesson 3: Impacts of Natural Hazards, 226- 234, 240-241</p>

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Strand 5.2: PROPERTIES AND CHANGES OF MATTER	
All substances are composed of matter. Matter is made of particles that are too small to be seen but still exist and can be detected by other means. Substances have specific properties by which they can be identified. When two or more different substances are combined a new substance with different properties may be formed. Whether a change results in a new substance or not, the total amount of matter is always conserved.	
<p>Standard 5.2.1 Develop and use a model to describe that matter is made of particles on a scale that is too small to be seen.</p> <p>Emphasize making observations of changes supported by a particle model of matter. Examples could include adding air to expand a balloon, compressing air in a syringe, adding food coloring to water, or dissolving salt in water and evaporating the water. The use of the terms atoms and molecules will be taught in Grades 6 through 8. (PS1.A)</p>	<p>SE/TE: uInvestigate Lab: How can you detect matter without seeing it?, 17 uBe a Scientist: Disappearance of Particles, 18 Visual Literacy Connection: What is the matter?, 20-21 STEM Quest Check-In Lab: How do you know that matter is still there?, 23 uInvestigate Lab: How can you use properties to identify solids?, 27 Model It!, 28 Math Toolbox: Use Models, 67 Science and Engineering Practices Handbook: Science Practices, Developing and Using Models, EM6</p> <p>Realize™ Digital Resources: Properties of Matter >Lesson 2, Model Matter>Model Matter; >Virtual Lab: Water as Fuel; >Interactivity: Matter Is Everywhere</p>

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<p>Standard 5.2.2 Ask questions to plan and carry out investigations to identify substances based on patterns of their properties.</p> <p>Emphasize using properties to identify substances. Examples of properties could include color, hardness, conductivity, solubility, or a response to magnetic forces. Examples of substances could include powders, metals, minerals, or liquids. (PS1.A)</p>	<p>SE/TE: uConnect Lab: What’s in the box?, 4 uInvestigate Lab: How do we describe materials?, 7 Observing Properties, 8 Measuring Properties, 9 Visual Literacy Connection: Can you tell them apart?, 10-11 Quest Check-In Lab: How can you observe matter?, 14 uInvestigate Lab: How can you detect matter without seeing it?, 17 STEM Quest Check-In Lab: How do you know that matter is still there?, 23 uInvestigate Lab: How can you use properties to identify solids?, 27 Quest Findings: STEM Identify the Mystery Material, 34 uDemonstrate Lab: How do you know what it is?, 40-41</p> <p>Realize™ Digital Resources: Properties of Matter >Topic Launch>Quest Kickoff: Identify the Mystery Material >Lesson 1, Observe Matter>Video: Observe Matter; >Interactivity: Measuring Matter Lesson 3, Properties of Matter>Video: Properties of Matter; Interactivity: Measuring Matter; Interactivity: Matter and Its Properties; Properties of Matter >Topic Close>Quest Findings: Identify the Mystery Material</p>

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<p>Standard 5.2.3 Plan and carry out investigations to determine the effect of combining two or more substances.</p> <p>Emphasize whether a new substance is or is not created by the formation of a new substance with different properties. Examples could include combining vinegar and baking soda or rusting an iron nail in water. (PS1.B)</p>	<p>SE/TE: uInvestigate Lab: How can you identify chemical changes?, 65 Infographic: Baking a Cake, 66 Interactivity, 69 Quest Check-In, 74 uBe a Scientist, 85 Quest Check-in Lab, How can you make a new and improved formula?, 86-87 Quest Findings, 88 uDemonstrate Lab: How does mass change when you make glop?, 94-95 Science and Engineering Practices Handbook: Science Practices, Carry Out Investigations, EM1</p> <p>Realize™ Digital Resources: Changes in Matter >Topic Launch>STEM Quest Kickoff: Find the Right Mix—and Step on It! >Lesson 3, Chemical Changes>Interactivity: Chemical Changes; >Lesson 4, Mixtures and Solutions>Virtual Lab: Special Effects with Matter; Interactivity: Mixtures and Solutions >Topic Close>STEM Quest Findings: Find the Right Mix—and Step on It!</p>

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<p>Standard 5.2.4 Use mathematics and computational thinking to provide evidence that regardless of the type of change that occurs when heating, cooling, or combining substances, the total weight of matter is conserved.</p> <p>Examples could include melting an ice cube, dissolving salt in water, and combining baking soda and vinegar in a closed bag. (PS1.A, PS1.B)</p>	<p>SE/TE: uConnect Lab: What happens to mass when objects are mixed?, 46 uInvestigate Lab: How can you identify chemical changes?, 65 Particles and Chemical Changes, 67 Math Toolbox: Use Models, 67 Model It!, 67 Model It!, 68 Conservation of Matter, 68-69 Quest Connection, 69 Lesson 3 Check: Question 2, 73</p> <p>TE Only: Focus on Mastery!: Using Mathematics and Computational Thinking, 65, 70</p> <p>Realize™ Digital Resources: Changes in Matter >Lesson 1, States of Matter> Interactivity: The States of Matter; >Quiz>States of Matter >Lesson 2, Physical Changes>Interactivity: Changing States</p>

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Strand 5.3: CYCLING OF MATTER IN ECOSYSTEMS	
Matter cycles within ecosystems and can be traced from organism to organism. Plants use energy from the Sun to change air and water into matter needed for growth. Animals and decomposers consume matter for their life functions, continuing the cycling of matter. Human behavior can affect the cycling of matter. Scientists and engineers design solutions to con- serve Earth’s environments and resources.	
<p>Standard 5.3.1 Construct an explanation that plants use air, water, and energy from sunlight to produce plant matter needed for growth.</p> <p>Emphasize photosynthesis at a conceptual level and that plant matter comes mostly from air and water, not from the soil. Photosynthesis at the cellular level will be taught in Grades 6 through 8. (LS1.C)</p>	<p>SE/TE: Energy Paths to the Sun, 326 uInvestigate Lab: What matter do plants need to make food?, 329 How Plants Gain Mass, 331 Lesson Check, 333 Assessment, 348 Science and Engineering Practices Handbook: Science Practices, Engaging in Arguments from Evidence, EM7</p> <p>Realize™ Digital Resources: Energy and Food >Lesson 2, How Plants Make Food>Video: How Plants Make Food; >Virtual Lab: Solving Crop Problems; >Interactivity: Photosynthesis</p>
<p>Standard 5.3.2 Obtain, evaluate, and communicate information that animals obtain energy and matter from the food they eat for body repair, growth, and motion and to maintain body warmth.</p> <p>Emphasize that the energy used by animals was once energy from the Sun. Cellular respiration will be taught in Grades 6 through 8. (PS3.D, LS1.C)</p>	<p>SE/TE: uConnect Lab: How much food do you need?, 318 uInvestigate Lab: How is the sun involved in your meals?, 321 Energy Paths to the Sun; Identify, 326 uInvestigate Lab: How do animals get energy from the sun?, 339 uDemonstrate Lab: How does matter move through an ecosystem, 352-353 Science and Engineering Practices Handbook: Science Practices, Constructing Explanations, EM6</p> <p>Realize™ Digital Resources: Energy and Food >Topic Launch>Quest Kickoff: Plan Your Plate! >Lesson 1, Energy in Food>Video: Energy in Food >Lesson 3, How Animals Use Food>Video: How Animals Use Food; >Interactivity: Ectotherms and Endotherms >Topic Close>Quest Findings: Plan Your Plate!</p>

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<p>Standard 5.3.3 Develop and use a model to describe the movement of matter among plants, animals, decomposers, and the environment.</p> <p>Emphasize that matter cycles between the air and soil and among plants, animals, and microbes as these organisms live and die. Examples could include simple food chains from ecosystems such as deserts or oceans or diagrams of decomposers returning matter to the environment. Complex interactions in a food web will be taught in Grades 6 through 8. (LS2.A, LS2.B)</p>	<p>SE/TE: uDemonstrate Lab: How does matter move through an ecosystem?, 352-353 uInvestigate Lab: How can matter change in an ecosystem?, 369 uInvestigate Lab: How does change affect organisms in an ecosystem?, 379 Quest Check-In Lab: How does change affect organisms in an ecosystem?, 384-385 uInvestigate Lab: How does matter move through an ecosystem?, 387 uEngineer It! Model STEM: Ecosystems in a Box, 394-395 Assessment: The Essential Question, 399 STEM uDemonstrate Lab: How can you model matter cycles in the Earth system?, 402-403 Science and Engineering Practices Handbook: Science Practices, Developing and Using Models, EM6</p> <p>TE Only: Focus on Mastery!, Developing and Using Models, 364</p> <p>Realize™ Digital Resources: Matter and Energy in Ecosystems >Topic Launch>Quest Kickoff: Public Relations Gone Wild! >Lesson 2, Organisms Within Ecosystems>Video: Organisms Within Ecosystems; >Interactivity: Explore Organism Interactions >Topic Close>Quest Findings: Public Relations Gone Wild!</p>

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<p>Standard 5.3.4 Evaluate design solutions whose primary function is to conserve Earth’s environments and resources.</p> <p>Define the problem, identify criteria and constraints, analyze available data on proposed solutions, and determine an optimal solution. Emphasize how humans can balance everyday needs (agriculture, industry, and energy) while conserving Earth’s environments and resources. (ESS3.A, ESS3.C, ETS1.A, ETS1.B, ETS1.C)</p>	<p>SE/TE: Quest Kickoff: Take Care of Earth – It’s Our Home!, 182-183 STEM uConnect Lab: How can we reuse materials to design new products?, 184 Science Practice Toolbox: Obtain Information, 199 uEngineer It!: Make Energy the Solar Way, 194-195 Quest Check-in, 203 STEM Quest Check-In Lab: How do building materials affect energy efficiency?, 210-211 uInvestigate Lab: How can you collect rainwater?, 213 uBe a Scientist: Recycling Plastic Investigation, 219 Quest Check-In: Increase Conservation, 220 STEM uDemonstrate Lab: How can you use the energy of water?, 228-229</p> <p>TE Only: Differentiated Instruction: Support Advanced Learners, 209</p> <p>Realize™ Digital Resources: Human Impacts on Earth’s Systems, >Topic Launch>Quest Kickoff: Take Care of Earth—It’s Our Home! >Lesson 1, Earth’s Natural Resources>Video: Earth’s Natural Resources; >Interactivity: Drinkable Water >Lesson 2, Earth’s Energy Resources>Video: Earth’s Energy Resources; >Interactivity: How We Use Earth’s Resources >Lesson 3, Human Activity and Earth’s Systems>Video: Human Activity and Earth’s Systems; >Interactivity: Causes of Environmental Damage >Lesson 4, Protection of Earth’s Resources and Environments>Video: Protection of Earth’s Resources and Environments; >Virtual Lab: Electronics and Our Earth; >Interactivity: Go Green >Topic Close>Interactivity: Take Care of Earth—It’s Our Home!</p>

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