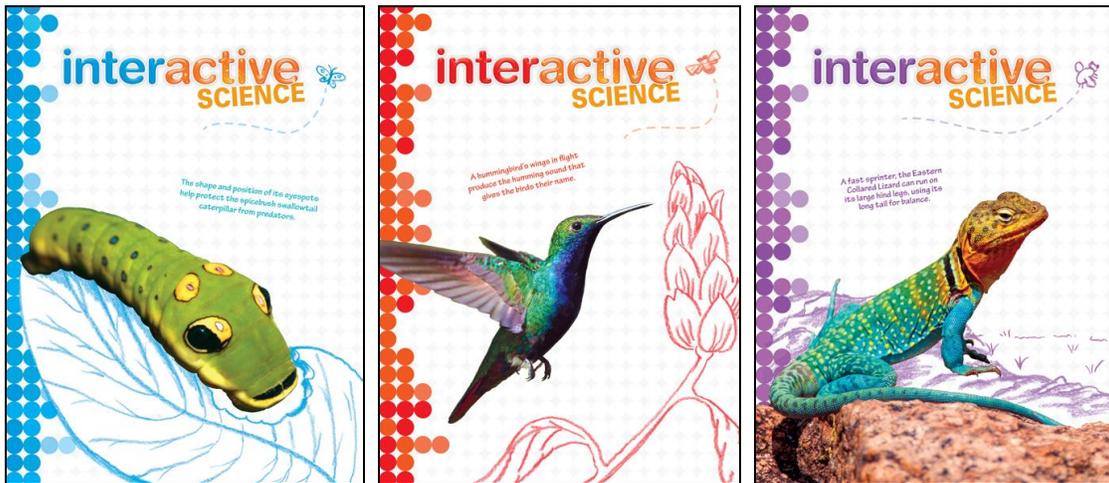


A Correlation of  
**Interactive Science**  
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To the  
**Utah Core Standards  
for Science  
Grades 3 - 5**

**A Correlation of Interactive Science, ©2016 to the  
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**A Correlation of Interactive Science, ©2016 to the  
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Utah Core Curriculum for Science	Interactive Science, ©2016 Grade 3
<b>GRADE 3</b>	
<b>Intended Learning Outcomes for Third Grade Science</b>	
The Intended Learning Outcomes (ILOs) describe the skills and attitudes students should learn as a result of science instruction. They are an essential part of the Science Core Curriculum and provide teachers with a standard for evaluation of student learning in science. Instruction should include significant science experiences that lead to student understanding using the ILOs.	
<b>The main intent of science instruction in Utah is that students will value and use science as a process of obtaining knowledge based upon observable evidence.</b>	
By the end of third grade students will be able to:	
<b>1. Use Science Process and Thinking Skills</b>	
a. Observe simple objects and patterns and report their observations.	<b>SE/TE:</b> 14, Explore It: How does mass affect motion? 22, Explore It: How does gravity pull an object? 40, Try It: How can energy of motion change? 140–141, Investigate It: How does water move through celery? 200–203, STEM Activity: Nothing Like a Habitat  <b>TE Only:</b> 141a–141d, Activity Card Support
b. Sort and sequence data according to a given criterion.	<b>SE/TE:</b> 94–97, Apply It: How does energy affect the distance a toy car travels? 210, Explore It: What do yeast use for energy?
c. Make simple predictions and inferences based upon observations.	<b>SE/TE:</b> 102, Try It: How do plants change? 216, Explore It: How can pollution affect an organism? 240–243, Apply It: How can plants survive in the desert? 82–83, Investigate It: How does heat cause motion?  <b>TE Only:</b> 83a–83d, Activity Card Support

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<b>Utah Core Curriculum for Science</b>	<b>Interactive Science, ©2016 Grade 3</b>
d. Compare things and events.	<p><b>SE/TE:</b> 228–229, Investigate It: What can you find in your local ecosystem?</p> <p><b>TE Only:</b> 19, Differentiated Instruction 163, Common Misconceptions 207, Differentiated Instruction 229a–229d, Activity Card Support</p>
e. Use instruments to measure length, temperature, volume, and weight using appropriate units.	<p><b>SE/TE:</b> 94–97, Apply It: How does energy affect the distance a toy car travels? 216, Explore It: How can pollution affect an organism?</p>
f. Conduct a simple investigation when given directions.	<p><b>SE/TE:</b> 94–97, Apply It: How does energy affect the distance a toy car travels? 240–243, Apply It: How can plants survive in the desert?</p> <p><b>TE Only:</b> 24, 21st Century Learning 99a, Performance Expectation Activity</p>
g. Develop and use simple classification systems.	<p><b>SE/TE:</b> 160–166, Chapter 4, Lesson 1: How can you classify animals? 184–185, Investigate It: What do leaves have in common?</p> <p><b>TE Only:</b> 163, Common Misconceptions 164, Differentiated Instruction 165, 21st Century Learning 185a–185d, Activity Card Support</p>

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<b>Utah Core Curriculum for Science</b>	<b>Interactive Science, ©2016 Grade 3</b>
h. Use observations to construct a reasonable explanation.	<p><b>SE/TE:</b> 140–141, Investigate It: How does water move through celery? 228–229, Investigate It: What can you find in your local ecosystem? 240–243, Apply It: How can plants survive in the desert?</p> <p><b>TE Only:</b> 141a–141d, Activity Card Support 229a–229d, Activity Card Support</p>
<b>2. Manifest Scientific Attitudes and Interests</b>	
a. Demonstrate a sense of curiosity about nature.	<p><b>SE/TE:</b> 102, Try It: How do plants change? 200–203, STEM Activity: Nothing Like a Habitat</p>
b. Voluntarily read or look at books and other materials about science.	<p><b>SE/TE:</b> 245, Performance-Based Assessment: Matching Traits</p>
c. Pose questions about objects, events, and processes.	<p><b>SE/TE:</b> 298–301, Part 1, Lesson 1: What questions do scientists ask?</p>
<b>3. Understand Science Concepts and Principles</b>	
a. Know science information specified for their grade level.	<p><b>SE/TE:</b> 303–307, Part 1, Lesson 2: What skills do scientists use? 309–313, Part 1, Lesson 3: How do scientists answer questions?</p>
b. Distinguish between examples and non-examples of science concepts taught.	<p><b>SE/TE:</b> 303–307, Part 1, Lesson 2: What skills do scientists use?</p>
c. Explain science concepts and principles using their own words and explanations.	<p><b>SE/TE:</b> 314, Explore It: How can scientists communicate what they learn?</p> <p><b>TE Only:</b> 19, Differentiated Instruction 245b: Performance Expectation Activity</p>

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<b>4. Communicate Effectively Using Science Language and Reasoning</b>	
a. Record data accurately when given the appropriate form and format (e.g., table, graph, chart).	<p><b>SE/TE:</b> 26–27, Investigate It: How can you describe motion? 202, STEM Activity: Nothing Like a Habitat 240–243, Apply It: How can plants survive in the desert?</p> <p><b>TE Only:</b> 171, Science Notebook 182, 21st Century Learning</p>
b. Report observation with pictures, sentences, and models.	<p><b>SE/TE:</b> 4–7, STEM Activity: Heave Ho! 94–97, Apply It: How does energy affect the distance a toy car 102, Try It: How do plants change? 140–141, Investigate It: How does water move through celery? 240–243, Apply It: How can plants survive in the desert? travels?</p> <p><b>TE Only:</b> 141a–141d: Activity Card Support 172, 21st Century Learning 223, Differentiated Instruction</p>
c. Use scientific language appropriate to grade level in oral and written communication.	<p><b>SE/TE:</b> 314–319, Part 1, Lesson 4: How do scientists communicate?</p> <p><b>TE Only:</b> 54, Differentiated Instruction</p>
d. Use available reference sources to obtain information.	<p><b>SE/TE:</b> 358, Part 2, Lesson 3: What is the design process?</p> <p><b>TE Only:</b> 175, 21st Century Learning 179, 21st Century Learning 219, 21st Century Learning</p> <p><b>Digital:</b> Quest: Where Have All the Organisms Gone? - Environmental Changes</p>

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<b>Science Benchmark</b> Earth orbits around the sun, and the moon orbits around Earth. Earth is spherical in shape and rotates on its axis to produce the night and day cycle. To people on Earth, this turning of the planet makes it appear as though the sun, moon, planets, and stars are moving across the sky once a day. However, this is only a perception as viewed from Earth.	
<b>STANDARD 1: Students will understand that the shape of Earth and the moon are spherical and that Earth rotates on its axis to produce the appearance of the sun and moon moving through the sky.</b>	
<b>Objective 1:</b> Describe the appearance of Earth and the moon.	
a. Describe the shape of Earth and the moon as spherical.	The <i>Interactive Science</i> program addresses this objective in Grade 5, Chapter 6, Lesson 3.
b. Explain that the sun is the source of light that lights the moon.	The <i>Interactive Science</i> program addresses this objective in Grade 5, Chapter 6, Lesson 2.
c. List the differences in the physical appearance of Earth and the moon as viewed from space.	The <i>Interactive Science</i> program addresses this objective in Grade 5, Chapter 6, Lesson 3.
<b>Objective 2:</b> Describe the movement of Earth and the moon and the apparent movement of other bodies through the sky.	
a. Describe the motions of Earth (i.e., the rotation [spinning] of Earth on its axis, the revolution [orbit] of Earth around the sun).	The <i>Interactive Science</i> program addresses this objective in Grade 5, Chapter 6, Lesson 1.
b. Use a chart to show that the moon orbits Earth approximately every 28 days.	The <i>Interactive Science</i> program addresses this objective in Grade 1, Chapter 3, Lesson 2.
c. Use a model of Earth to demonstrate that Earth rotates on its axis once every 24 hours to produce the night and day cycle.	The <i>Interactive Science</i> program addresses this objective in Grade 5, Chapter 6, Lesson 1.
d. Use a model to demonstrate why it seems to a person on Earth that the sun, planets, and stars appear to move across the sky.	The <i>Interactive Science</i> program addresses this objective in Grade 5, Chapter 6, Lesson 2.
Science language students should use: model, orbit, sphere, moon, axis, rotation, revolution, appearance	

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Utah Core Curriculum for Science	Interactive Science, ©2016 Grade 3
<b>Science Benchmark</b>	
For any particular environment, some types of plants and animals survive well, some survive less well and some cannot survive at all. Organisms in an environment interact with their environment. Models can be used to investigate these interactions.	
<b>STANDARD 2: Students will understand that organisms depend on living and nonliving things within their environment.</b>	
<b>Objective 1:</b> Classify living and nonliving things in an environment.	
a. Identify characteristics of living things (i.e., growth, movement, reproduction).	<p><b>SE/TE:</b>            102, Try It: How do plants change?            117, Chapter 3, Lesson 2: How do plants use leaves to make food?            135, Chapter 3, Lesson 5: What are the life cycles of some plants?            161–167, Chapter 4, Lesson 1: How can you classify animals?            169–175, Chapter 4, Lesson 2: How are offspring like their parents?            177–183, Chapter 4, Lesson 3: What are the life cycles of some animals?            210, Explore It: What do yeast use for energy?            211–215, Chapter 5, Lesson 2: How do living things get energy?            245, Performance-Based Assessment: Life Cycle Poster/Matching Traits</p> <p><b>TE Only:</b>            152C–152D, Teacher Background, How do living things grow and change?            163, Common Misconceptions            164, Differentiated Instruction            165, 21st Century Learning            166, Science—Math            171, Science Notebook            172, 21st Century Learning            175, 21st Century Learning            179, 21st Century Learning            182, 21st Century Learning            214, Common Misconceptions            245a: Performance Expectation Activity</p> <p><b>Digital:</b>            Quest: Where Have All the Organisms Gone? - Characteristics of Organisms in Different Habitats, Animal Groups</p>

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b. Identify characteristics of nonliving things.	<p><b>SE/TE:</b> 228–229, Investigate It: What can you find in your local ecosystem?</p> <p><b>TE Only:</b> 229a–229d, Activity Card Support</p> <p><b>Digital:</b> Quest: Where Have All the Organisms Gone? - Characteristics of Organisms in Different Habitats</p>
c. Classify living and nonliving things in an environment.	<p><b>SE/TE:</b> 205–209, Chapter 5, Lesson 1: What is an ecosystem? 228–229, Investigate It: What can you find in your local ecosystem?</p> <p><b>TE Only:</b> 196C, Teacher Background, How do living things interact? 207, Differentiated Instruction 209, Common Misconception 229a–229d, Activity Card Support</p> <p><b>Digital:</b> Quest: Where Have All the Organisms Gone? - Characteristics of Organisms in Different Habitats</p>
<b>Objective 2:</b> Describe the interactions between living and nonliving things in a small environment.	
a. Identify living and nonliving things in a small environment (e.g., terrarium, aquarium, flowerbed) composed of living and nonliving things.	<p><b>SE/TE:</b> 200–203, STEM Activity: Nothing Like a Habitat 228–229, Investigate It: What can you find in your local ecosystem?</p> <p><b>TE Only:</b> 229a–229d, Activity Card Support</p> <p><b>Digital:</b> Quest: Where Have All the Organisms Gone? - Characteristics of Organisms in Different Habitats</p>

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<p>b. Predict the effects of changes in the environment (e.g., temperature, light, moisture) on a living organism.</p>	<p><b>SE/TE:</b> 217–223, Chapter 5, Lesson 3: How do ecosystems change?</p> <p><b>TE Only:</b> 219, 21st Century Learning 245b, Performance Expectation Activity 245d, Performance Expectation Activity</p> <p><b>Digital:</b> Quest: Where Have All the Organisms Gone? - Reacting to Environmental Change</p>
<p>c. Observe and record the effect of changes (e.g., temperature, amount of water, light) upon the living organisms and nonliving things in a small-scale environment.</p>	<p><b>SE/TE:</b> 216, Explore It: How can pollution affect an organism? 217–223, Chapter 5, Lesson 3: How do ecosystems change? 240–243, Apply It: How can plants survive in the desert?</p> <p><b>TE Only:</b> 219, 21st Century Learning 223, Differentiated Instruction</p> <p><b>Digital:</b> Quest: Where Have All the Organisms Gone? - Environmental Changes, Reacting to Environmental Change</p>
<p>d. Compare a small-scale environment to a larger environment (e.g., aquarium to a pond, terrarium to a forest).</p>	<p><b>SE/TE:</b> 228–229, Investigate It: What can you find in your local ecosystem? 240–243, Apply It: How can plants survive in the desert?</p> <p><b>TE Only:</b> 229a–229d, Activity Card Support</p>

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e. Pose a question about the interaction between living and nonliving things in the environment that could be investigated by observation.	<p><b>SE/TE:</b> 140–141, Investigate It: How does water move through celery? 228–229, Investigate It: What can you find in your local ecosystem? 240–243, Apply It: How can plants survive in the desert?</p> <p><b>TE Only:</b> 141a–141d, Activity Card Support 229a–229d, Activity Card Support 245g, Performance Expectation Activity</p>
Science language students should use: environment, interaction, living, nonliving, organism, survive, observe, terrarium, aquarium, temperature, moisture, small-scale	
<p><b>Science Benchmark</b> Forces cause changes in the speed or direction of the motion of an object. The greater the force placed on an object, the greater the change in motion. The more massive an object is, the less effect a given force will have upon the motion of the object. Earth’s gravity pulls objects toward it without touching them.</p>	
<b>STANDARD 3: Students will understand the relationship between the force applied to an object and resulting motion of the object.</b>	
<b>Objective 1:</b> Demonstrate how forces cause changes in speed or direction of objects.	
a. Show that objects at rest will not move unless a force is applied to them.	<p><b>SE/TE:</b> 16, Chapter 1, Lesson 2: How does force affect motion?</p> <p><b>TE Only:</b> 99a, Performance Expectation Activity</p>
b. Compare the forces of pushing and pulling.	<p><b>SE/TE:</b> 4–7, STEM Activity: Heave Ho! 15–17, Chapter 1, Lesson 2: How does force affect motion? 99, Performance-Based Assessment (Plan an Investigation)</p>

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c. Investigate how forces applied through simple machines affect the direction and/or amount of resulting force.	<p><b>SE/TE:</b> 4–7, STEM Activity: Heave Ho! 14, Explore It: How does mass affect motion? 26–27, Investigate It: How can you describe motion?</p> <p><b>TE Only:</b> 16, Differentiated Instruction 27a–27d, Activity Card Support</p>
<b>Objective 2:</b> Demonstrate that the greater the force applied to an object, the greater the change in speed or direction of the object.	
a. Predict and observe what happens when a force is applied to an object (e.g., wind, flowing water).	<p><b>SE/TE:</b> 94–97, Apply It: How does energy affect the distance a toy car travels?</p>
b. Compare and chart the relative effects of a force of the same strength on objects of different weight (e.g., the breeze from a fan will move a piece of paper but may not move a piece of cardboard).	<p><b>SE/TE:</b> 14, Explore It: How does mass affect motion?</p>
c. Compare the relative effects of forces of different strengths on an object (e.g., strong wind affects an object differently than a breeze).	<p><b>SE/TE:</b> 18–19, Chapter 1, Lesson 2: How does force affect motion?</p> <p><b>TE Only:</b> 19, Differentiated Instruction</p>
d. Conduct a simple investigation to show what happens when objects of various weights collide with one another (e.g., marbles, balls).	<p><b>TE Only:</b> 99a, Performance Expectation Activity</p>
e. Show how these concepts apply to various activities (e.g., batting a ball, kicking a ball, hitting a golf ball with a golf club) in terms of force, motion, speed, direction, and distance (e.g. slow, fast, hit hard, hit soft).	<p><b>SE/TE:</b> 14, Explore It: How does mass affect motion? 40, Try It: How can energy of motion change?</p>

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<b>STANDARD 4: Students will understand that objects near Earth are pulled toward Earth by gravity.</b>	
<b>Objective 1:</b> Demonstrate that gravity is a force.	
a. Demonstrate that a force is required to overcome gravity.	<b>SE/TE:</b> 24–25, Chapter 1, Lesson 3: What is gravity? 25, Lighting Lab
b. Use measurement to demonstrate that heavier objects require more force than lighter ones to overcome gravity.	<b>SE/TE:</b> 24, Chapter 1, Lesson 3: What is gravity?  <b>TE Only:</b> 24, 21st Century Learning
<b>Objective 2:</b> Describe the effects of gravity on the motion of an object.	
a. Compare how the motion of an object rolling up or down a hill changes with the incline of the hill.	<b>SE/TE:</b> 26–27, Investigate It: How can you describe motion?  <b>TE Only:</b> 27a–27d, Activity Card Support
b. Observe, record, and compare the effect of gravity on several objects in motion (e.g., a thrown ball and a dropped ball falling to Earth).	<b>SE/TE:</b> 22, Explore It: How does gravity pull an object? 23, Chapter 1, Lesson 3: What is gravity? 25, Lighting Lab: Overcoming Gravity
c. Pose questions about gravity and forces.	<b>SE/TE:</b> 22, Explore It: How does gravity pull an object? 23–25, Chapter 1, Lesson 3: What is gravity?  <b>TE Only:</b> 24, 21st Century Learning
Science language students should use: distance, force, gravity, weight, motion, speed, direction, simple machine	

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<p><b>Science Benchmark</b> Light is produced by the sun and observed on Earth. Living organisms use heat and light from the sun. Heat is also produced from motion when one thing rubs against another. Things that give off heat often give off light. While operating, mechanical and electrical machines produce heat and/or light.</p>	
<p><b>STANDARD 5: Students will understand that the sun is the main source of heat and light for things living on Earth. They will also understand that the motion of rubbing objects together may produce heat.</b></p>	
<p><b>Objective 1:</b> Provide evidence showing that the sun is the source of heat and light for Earth.</p>	
<p>a. Compare temperatures in sunny and shady places.</p>	<p>For related content, please see <b>SE/TE:</b> 258, Explore It: What is the daily temperature? 268, Lightning Lab</p>
<p>b. Observe and report how sunlight affects plant growth.</p>	<p><b>SE/TE:</b> 116, Explore It: How does sunlight affect plant survival? 117–119, Chapter 3, Lesson 2: How do plants use leaves to make food?</p>
<p>c. Provide examples of how sunlight affects people and animals by providing heat and light.</p>	<p><b>SE/TE:</b> 116, Explore It: How does sunlight affect plant survival? 117–119, Chapter 3, Lesson 2: How do plants use leaves to make food?</p> <p><b>TE Only:</b> 119, 21st Century Learning</p>
<p>d. Identify and discuss as a class some misconceptions about heat sources (e.g., clothes do not produce heat, ice cubes do not give off cold).</p>	<p><b>SE/TE:</b> 67–69, Chapter 2, Lesson 4: What are heat and light energy?</p>

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<b>Utah Core Curriculum for Science</b>	<b>Interactive Science, ©2016 Grade 3</b>
<b>Objective 2:</b> Demonstrate that mechanical and electrical machines produce heat and sometimes light.	
a. Identify and classify mechanical and electrical sources of heat.	<b>SE/TE:</b> 69, Chapter 2, Lesson 4: What are heat and light energy?
b. List examples of mechanical or electrical devices that produce light.	<b>SE/TE:</b> 48–49, 51 Chapter 2, Lesson 1: What are some forms of energy? 54, Chapter 2, Lesson 2: How does energy change form? 69, Chapter 2, Lesson 4: What are heat and light energy? 82–83, Investigate It: How does heat cause motion?  <b>TE Only:</b> 54, Differentiated Instruction 83a–83d, Activity Card Support
c. Predict, measure, and graph the temperature changes produced by a variety of mechanical machines and electrical devices while they are operating.	<b>SE/TE:</b> 82–83, Investigate It: How does heat cause motion?  <b>TE Only:</b> 83a–83d, Activity Card Support
<b>Objective 3:</b> Demonstrate that heat may be produced when objects are rubbed against one another.	
a. Identify several examples of how rubbing one object against another produces heat.	<b>SE/TE:</b> 68, Chapter 2, Lesson 4: What are heat and light energy?
b. Compare relative differences in the amount of heat given off or force required to move an object over lubricated/non-lubricated surfaces and smooth/rough surfaces (e.g., waterslide with and without water, hands rubbing together with and without lotion).	<b>SE/TE:</b> 16–17, Chapter 1, Lesson 2: How does force affect motion?
Science language students should use: mechanical, electrical, temperature, degrees, lubricated, misconception, heat source, machine	

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Utah Core Curriculum for Science	Interactive Science ©2016 Grade 4
<b>GRADE 4</b>	
<b>Intended Learning Outcomes for Fourth Grade Science</b>	
The Intended Learning Outcomes (ILOs) describe the skills and attitudes students should learn as a result of science instruction. They are an essential part of the Science Core Curriculum and provide teachers with a standard for evaluation of student learning in science. Instruction should include significant science experiences that lead to student understanding using the ILOs.	
<b>The main intent of science instruction in Utah is that students will value and use science as a process of obtaining knowledge based upon observable evidence.</b>	
By the end of fourth grade students will be able to:	
<b>1. Use Science Process and Thinking Skills</b>	
a. Observe simple objects and patterns and report their observations.	<b>SE/TE:</b> 114, Try It: How can flower parts be classified? 322, Explore It: How can data help you draw a conclusion?  <b>TE Only:</b> 256, Differentiated Instruction
b. Sort and sequence data according to a given criterion.	<b>SE/TE:</b> 212–213, Investigate It: How do earthworms meet their needs in a model of an ecosystem? 322, Explore It: How can data help you draw a conclusion?  <b>TE Only:</b> 202, Differentiated Instruction 213a–213d, Activity Card Support
c. Make simple predictions and inferences based upon observations.	<b>SE/TE:</b> 272, Explore It: How can water move in the water cycle? 244, Explore It: What can you learn from rock layers?  <b>TE Only:</b> 186, Differentiated Instruction 274, Science Notebook

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d. Compare things and events.	<p><b>SE/TE:</b> 114, Try It: How can flower parts be classified? 232, Try It: How can rocks and minerals be classified?</p> <p><b>TE Only:</b> 159, Differentiated Instruction</p>
e. Use instruments to measure length, temperature, volume, and weight using appropriate units.	<p><b>SE/TE:</b> 308–313, Part 1, Lesson 2: How do scientists use tools?</p> <p><b>TE Only:</b> 310, Science Notebook</p>
f. Conduct a simple investigation when given directions.	<p><b>SE/TE:</b> 234–237, STEM Activity: Hold Back the Water 306–307, Part 1, Lesson 1: What questions do scientists ask? 316–317, Part 1, Lesson 3: How do scientists answer questions?</p>
g. Develop and use simple classification systems.	<p><b>SE/TE:</b> 114, Try It: How can flower parts be classified? 120, Explore It: What are some ways you can classify animals? 232, Try It: How can rocks and minerals be classified?</p> <p><b>TE Only:</b> 125, Differentiated Instruction 127 Differentiated Instruction 128, Content Refresher</p>
h. Use observations to construct a reasonable explanation.	<p><b>SE/TE:</b> 136, Explore It: How can plants react to light? 178–181, STEM Activity: Home, Sweet, Home!</p> <p><b>TE Only:</b> 274, Science Notebook</p>

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<b>Utah Core Curriculum for Science</b>	<b>Interactive Science ©2016 Grade 4</b>
<b>2. Manifest Scientific Attitudes and Interests</b>	
a. Demonstrate a sense of curiosity about nature.	<b>SE/TE:</b> 341, Part 1, Science in Your Backyard, Observing Plants
b. Voluntarily read or look at books and other materials about science.	<b>SE/TE:</b> 306, Part 1, Lesson 1: What questions do scientists ask?  <b>TE Only:</b> 140, 21 <sup>st</sup> Century Learning
c. Pose questions about objects, events, and processes.	<b>SE/TE:</b> 305, Part 1, Lesson 1: What questions do scientists ask?  <b>TE Only:</b> 144, Differentiated Instruction 208, 21st Century Learning
<b>3. Understand Science Concepts and Principles</b>	
a. Know science information specified for their grade level.	<b>SE/TE:</b> 224–227, Apply It: (Using Scientific Methods) Do mealworms prefer damp or dry places?
b. Distinguish between examples and non-examples of science concepts taught.	<b>SE/TE:</b> 315, Part 1, Lesson 3: How do scientists answer questions?
c. Explain science concepts and principles using their own words and explanations.	<b>SE/TE:</b> 272, Explore It: How can water move in the water cycle? 321, Part 1, Lesson 3: How do scientists answer questions?  <b>TE Only:</b> 247, Science Notebook 270, Differentiated Instruction 275, Science—Writing

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<b>4. Communicate Effectively Using Science Language and Reasoning</b>	
a. Record data accurately when given the appropriate form and format (e.g., table, graph, chart).	<p><b>SE/TE:</b> 314, Explore It: What helps scientists answer questions? 322, Explore It: How can data help you draw a conclusion? 323–329, Part 1, Lesson 4: How do scientists draw conclusions?</p> <p><b>TE Only:</b> 204, Differentiated Instruction</p>
b. Report observation with pictures, sentences, and models.	<p><b>SE/TE:</b> 244, Explore It: What can you learn from rock layers? 298, Try It: How do scientists make observations?</p> <p><b>TE Only:</b> 159, Differentiated Instruction 203, 21st Century Learning 268, 21st Century Learning 270, Science Notebook 274, Differentiated Instruction 274, Science Notebook</p>
c. Use scientific language appropriate to grade level in oral and written communication.	<p><b>SE/TE:</b> 314–321, Part 1, Lesson 3: How do scientists answer questions?</p> <p><b>TE Only:</b> 184, Science–Social Studies</p>
d. Use available reference sources to obtain information.	<p><b>SE/TE:</b> 305, Part 1, Lesson 1: What questions do scientists ask?</p> <p><b>TE Only:</b> 184, Science–Social Studies 184, 21st Century Learning 205, 21st Century Learning 242, 21st Century Learning 270, Science Notebook 271, 21st Century Learning</p>

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<p><b>Science Benchmark</b> Matter on Earth cycles from one form to another. The cycling of matter on Earth requires energy. The cycling of water is an example of this process. The sun is the source of energy for the water cycle. Water changes state as it cycles between the atmosphere, land, and bodies of water on Earth.</p>	
<p><b>STANDARD 1: Students will understand that water changes state as it moves through the water cycle.</b></p>	
<p><b>Objective 1:</b> Describe the relationship between heat energy, evaporation and condensation of water on Earth.</p>	
<p>a. Identify the relative amount and kind of water found in various locations on Earth (e.g., oceans have most of the water, glaciers and snowfields contain most fresh water).</p>	<p><b>SE/TE:</b> 266–271, Chapter 6, Lesson 5: Where is Earth's water?</p> <p><b>TE Only:</b> 268, 21st Century Learning</p>
<p>b. Identify the sun as the source of energy that evaporates water from the surface of Earth.</p>	<p><b>SE/TE:</b> 274–275, Chapter 6, Lesson 6: What is the water cycle?</p> <p><b>TE Only:</b> 274, Differentiated Instruction</p>
<p>c. Compare the processes of evaporation and condensation of water.</p>	<p><b>SE/TE:</b> 272, Explore It: How can water move in the water cycle? 274–275, Chapter 6, Lesson 6: What is the water cycle?</p> <p><b>TE Only:</b> 274, Differentiated Instruction 274, Science Notebook</p>
<p>d. Investigate and record temperature data to show the effects of heat energy on changing the states of water.</p>	<p>The <i>Interactive Science</i> program addresses this objective in Grade 5, Chapter 1, Lesson 3.</p> <p>For supporting content in Grade 4, please see: <b>SE/TE:</b> 272, Explore It: How can water move in the water cycle? 276, Water Cycle and Weather <b>TE Only:</b> 274, Science Notebook</p>

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<b>Objective 2:</b> Describe the water cycle.	
a. Locate examples of evaporation and condensation in the water cycle (e.g., water evaporates when heated and clouds or dew forms when vapor is cooled).	<p><b>SE/TE:</b> 272, Explore It: How can water move in the water cycle? 274–276, Chapter 6, Lesson 6: What is the water cycle?</p> <p><b>TE Only:</b> 274, Differentiated Instruction 274, Science Notebook</p>
b. Describe the processes of evaporation, condensation, and precipitation as they relate to the water cycle.	<p><b>SE/TE:</b> 274–276, Chapter 6, Lesson 6: What is the water cycle?</p> <p><b>TE Only:</b> 274, Differentiated Instruction 274, Science Notebook</p>
c. Identify locations that hold water as it passes through the water cycle (e.g., oceans, atmosphere, fresh surface water, snow, ice, and ground water).	<p><b>SE/TE:</b> 268–271, Chapter 6, Lesson 5: Where is Earth's water? 274–276, Chapter 6, Lesson 6: What is the water cycle?</p> <p><b>SE/TE:</b> 270, Differentiated Instruction 276, Differentiated Instruction</p>
d. Construct a model or diagram to show how water continuously moves through the water cycle over time.	<p><b>SE/TE:</b> 274–276, Chapter 6, Lesson 6: What is the water cycle?</p> <p><b>TE Only:</b> 274, Differentiated Instruction</p>
e. Describe how the water cycle relates to the water supply in your community.	<p><b>SE/TE:</b> 268–271, Chapter 6, Lesson 5: Where is Earth's water? 274–276, Chapter 6, Lesson 6: What is the water cycle?</p> <p><b>SE/TE:</b> 271, 21st Century Learning</p>

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Science language students should use: vapor, precipitation, evaporation, clouds, dew, condensation, temperature, water cycle	
<p><b>Science Benchmark</b> Weather describes conditions in the atmosphere at a certain place and time. Water, energy from the sun, and wind create a cycle of changing weather. The sun's energy warms the oceans and lands at Earth's surface, creating changes in the atmosphere that cause the weather. The temperature and movement of air can be observed and measured to determine the effect on cloud formation and precipitation. Recording weather observations provides data that can be used to predict future weather conditions and establish patterns over time. Weather affects many aspects of people's lives.</p>	
<b>STANDARD 2: Students will understand that the elements of weather can be observed, measured, and recorded to make predictions and determine simple weather patterns.</b>	
<b>Objective 1:</b> Observe, measure, and record the basic elements of weather.	
a. Identify basic cloud types (i.e., cumulus, cirrus, stratus clouds).	The <i>Interactive Science</i> program addresses this objective in Grade 5, Chapter 5, Lesson 4.
b. Observe, measure, and record data on the basic elements of weather over a period of time (i.e., precipitation, air temperature, wind speed and direction, and air pressure).	The <i>Interactive Science</i> program addresses this objective in Grade 3, Chapter 6, Lesson 3 and in Grade 5, Chapter 5, Lesson 3.
c. Investigate evidence that air is a substance (e.g., takes up space, moves as wind, temperature can be measured).	The <i>Interactive Science</i> program addresses this objective in Grade 5, Chapter 5, Lesson 3.
d. Compare the components of severe weather phenomena to normal weather conditions (e.g., thunderstorm with lightning and high winds compared to rainstorm with rain showers and breezes).	The <i>Interactive Science</i> program addresses this objective in Grade 3, Chapter 6, Lesson 4.
<b>Objective 2:</b> Interpret recorded weather data for simple patterns.	
a. Observe and record effects of air temperature on precipitation (e.g., below freezing results in snow, above freezing results in rain).	<p><b>SE/TE:</b> 276, Chapter 6, Lesson 6: What is the water cycle?</p> <p><b>TE Only:</b> 276, Differentiated Instruction</p>
b. Graph recorded data to show daily and seasonal patterns in weather.	The <i>Interactive Science</i> program addresses this objective in Grade 3, Chapter 6, Lessons 2 and 3 and in a Grade 3, Chapter 6 Performance Expectation Activity.

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c. Infer relationships between wind and weather change (e.g., windy days often precede changes in the weather; south winds in Utah often precede a cold front coming from the north).	The <i>Interactive Science</i> program addresses this objective in Grade 5, Chapter 5, Lesson 3.
<b>Objective 3:</b> Evaluate weather predictions based upon observational data.	
a. Identify and use the tools of a meteorologist (e.g., measure rainfall using rain gauge, measure air pressure using barometer, measure temperature using a thermometer).	The <i>Interactive Science</i> program addresses this objective in Grade 3, Chapter 6, Lesson 3 and in Grade 5, Chapter 5, Lesson 3.
b. Describe how weather and forecasts affect people's lives.	The <i>Interactive Science</i> program addresses this objective in Grade 3, Chapter 6, Lesson 4.
c. Predict weather and justify prediction with observable evidence.	The <i>Interactive Science</i> program addresses this objective in Grade 5, Chapter 5, Lesson 3.
d. Evaluate the accuracy of student and professional weather forecasts.	The <i>Interactive Science</i> program addresses this objective in Grade 5, Chapter 5, Lesson 3.
e. Relate weather forecast accuracy to evidence or tools used to make the forecast (e.g., feels like rain vs. barometer is dropping).	The <i>Interactive Science</i> program addresses this objective in Grade 3, Chapter 6, Lesson 3. And in Grade 5, Chapter 5, Lesson 3.
Science language students should use: atmosphere, meteorologist, freezing, cumulus, stratus, cirrus, air pressure, thermometer, air temperature, wind speed, forecast, severe, phenomena, precipitation, seasonal, accuracy, barometer, rain gauge, components	

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<p><b>Science Benchmark</b> Earth materials include rocks, soils, water, and gases. Rock is composed of minerals. Earth materials change over time from one form to another. These changes require energy. Erosion is the movement of materials and weathering is the breakage of bedrock and larger rocks into smaller rocks and soil materials. Soil is continually being formed from weathered rock and plant remains. Soil contains many living organisms. Plants generally get water and minerals from soil.</p>	
<p><b>STANDARD 3: Students will understand the basic properties of rocks, the processes involved in the formation of soils, and the needs of plants provided by soil.</b></p>	
<p><b>Objective 1:</b> Identify basic properties of minerals and rocks.</p>	
<p>a. Describe the differences between minerals and rocks.</p>	<p><b>SE/TE:</b> 232, Try It: How can rocks and minerals be classified? 239–243, Chapter 6, Lesson 1: How are minerals classified? 245–253, Chapter 6, Lesson 2: How are rocks classified?</p> <p><b>TE Only:</b> 242, 21st Century Learning 253, Differentiated Instruction</p>
<p>b. Observe rocks using a magnifying glass and draw shapes and colors of the minerals.</p>	<p><b>SE/TE:</b> 232, Try It: How can rocks and minerals be classified?</p>
<p>c. Sort rocks by appearance according to the three basic types: sedimentary, igneous and metamorphic (e.g., sedimentary–rounded-appearing mineral and rock particles that are cemented together, often in layers; igneous–with or without observable crystals that are not in layers or with or without air holes or glasslike; metamorphic –crystals/minerals, often in layers).</p>	<p><b>SE/TE:</b> 246–251, Chapter 6, Lesson 2: How are rocks classified?</p> <p><b>TE Only:</b> 247, Science Notebook 253, Differentiated Instruction</p>
<p>d. Classify common rocks found in Utah as sedimentary (i.e., sandstone, conglomerate, shale), igneous (i.e., basalt, granite, obsidian, pumice) and metamorphic (i.e., marble, gneiss, schist).</p>	<p>For opportunities to meet this standard, please see <b>SE/TE:</b> 246–251, Chapter 6, Lesson 2: How are rocks classified?</p> <p><b>TE Only:</b> 242, 21st Century Learning</p>

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<b>Objective 2:</b> Explain how the processes of weathering and erosion change and move materials that become soil.	
a. Identify the processes of physical weathering that break down rocks at Earth's surface (i.e., water movement, freezing, plant growth, wind).	<b>SE/TE:</b> 254, Explore It: How does a rock wear away? 255–259, Chapter 6, Lesson 3: What are weathering and erosion?
b. Distinguish between weathering (i.e., wearing down and breaking of rock surfaces) and erosion (i.e., the movement of materials).	<b>SE/TE:</b> 254, Explore It: How does a rock wear away? 255–259, Chapter 6, Lesson 3: What are weathering and erosion?
c. Model erosion of Earth materials and collection of these materials as part of the process that leads to soil (e.g., water moving sand in a playground area and depositing this sand in another area).	<b>SE/TE:</b> 234–237, STEM Activity: Hold Back the Water
d. Investigate layers of soil in the local area and predict the sources of the sand and rocks in the soil.	<b>SE/TE:</b> 244, Explore It: What can you learn from rock layers?
<b>Objective 3:</b> Observe the basic components of soil and relate the components to plant growth.	
a. Observe and list the components of soil (i.e., minerals, rocks, air, water, living and dead organisms) and distinguish between the living, nonliving, and once living components of soil.	For supporting content, please see <b>SE/TE:</b> 254-259, Chapter 6, Lesson 3: What are weathering and erosion?
b. Diagram or model a soil profile showing topsoil, subsoil, and bedrock, and how the layers differ in composition.	This objective falls outside the scope of the <i>Interactive Science</i> program.
c. Relate the components of soils to the growth of plants in soil (e.g., mineral nutrients, water).	For supporting content, please see <b>SE/TE:</b> 140, Leaves, Stems, and Roots 238, My Planet Diary

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d. Explain how plants may help control the erosion of soil.	<p><b>SE/TE:</b> 265, Chapter 6, Lesson 4: How can Earth's surface change rapidly?</p> <p><b>TE Only:</b> 235, STEM Activity: Hold Back the Water (Background) 295a, Performance Expectation Activity</p>
e. Research and investigate ways to provide mineral nutrients for plants to grow without soil (e.g., grow plants in wet towels, grow plants in wet gravel, grow plants in water).	The <i>Interactive Science</i> program addresses this objective in the Grade 3, Chapter 3, STEM Activity.
Science language students should use: mineral, weathering, erosion, sedimentary, igneous, metamorphic, topsoil, subsoil, bedrock, organism, freeze, thaw, profile, nonliving, structural support, nutrients	
<b>Science Benchmark</b> Fossils are evidence of living organisms from the past and are usually preserved in sedimentary rocks. A fossil may be an impression left in sediments, the preserved remains of an organism, or a trace mark showing that an organism once existed. Fossils are usually made from the hard parts of an organism because soft parts decay quickly. Fossils provide clues to Earth's history. They provide evidence that can be used to make inferences about past environments. Fossils can be compared to one another, to living organisms, and to organisms that lived long ago.	
<b>STANDARD 4: Students will understand how fossils are formed, where they may be found in Utah, and how they can be used to make inferences.</b>	
<b>Objective 1:</b> Describe Utah fossils and explain how they were formed.	
a. Identify features of fossils that can be used to compare them to living organisms that are familiar (e.g., shape, size and structure of skeleton, patterns of leaves).	<p><b>SE/TE:</b> 207–208, Chapter 5, Lesson 5: What can fossils tell us?</p> <p><b>TE Only:</b> 208, 21st Century Learning</p>
b. Describe three ways fossils are formed in sedimentary rock (i.e., preserved organisms, mineral replacement of organisms, impressions or tracks).	<p><b>SE/TE:</b> 202–205, Chapter 5, Lesson 4: What are fossils?</p> <p><b>TE Only:</b> 202, Differentiated Instruction 203, 21st Century Learning 204, Differentiated Instruction 205, 21st Century Learning</p>

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c. Research locations where fossils are found in Utah and construct a simple fossil map.	For supporting content, please see <b>TE Only:</b> 205, 21 <sup>st</sup> Century Learning
<b>Objective 2:</b> Explain how fossils can be used to make inferences about past life, climate, geology, and environments.	
a. Explain why fossils are usually found in sedimentary rock.	<b>SE/TE:</b> 202-203, Chapter 5, Lesson 4: What are fossils?  <b>TE Only:</b> 203, 21 <sup>st</sup> Century Learning
b. Based on the fossils found in various locations, infer how Utah environments have changed over time (e.g., trilobite fossils indicate that Millard County was once covered by a large shallow ocean; dinosaur fossils and coal indicate that Emery and Uintah County were once tropical and swampy).	For supporting content, please see <b>SE/TE:</b> 206-211, Chapter 5. Lesson 5: What can fossils tell us?  Further opportunities to meet this objective occur in the Chapter 5 Performance Expectation Activity on p. 245e of the Grade 3 Teacher’s Edition.
c. Research information on two scientific explanations for the extinction of dinosaurs and other prehistoric organisms.	This objective falls outside the scope of the <i>Interactive Science</i> program.
d. Formulate questions that can be answered using information gathered on the extinction of dinosaurs.	This objective falls outside the scope of the <i>Interactive Science</i> program.
Science language students should use: infer, environments, climate, dinosaur, preserved, extinct, extinction, impression, fossil, prehistoric, mineral, organism, replacement, trilobite, sedimentary, tropical	

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<p><b>Science Benchmark</b> Utah has diverse plant and animal life that is adapted to and interacts in areas that can be described as wetlands, forests, and deserts. The characteristics of the wetlands, forests, and deserts influence which plants and animals survive best there. Living and nonliving things in these areas are classified based on physical features.</p>	
<p><b>STANDARD 5: Students will understand the physical characteristics of Utah's wetlands, forests, and deserts and identify common organisms for each environment.</b></p>	
<p><b>Objective 1:</b> Describe the physical characteristics of Utah's wetlands, forests, and deserts.</p>	
<p>a. Compare the physical characteristics (e.g., precipitation, temperature, and surface terrain) of Utah's wetlands, forests, and deserts.</p>	<p>For supporting content, please see <b>SE/TE:</b> 184-185, Kinds of Ecosystems</p>
<p>b. Describe Utah's wetlands (e.g., river, lake, stream, and marsh areas where water is a major feature of the environment) forests (e.g., oak, pine, aspen, juniper areas where trees are a major feature of the environment), and deserts (e.g., areas where the lack of water provided an environment where plants needing little water are a major feature of the environment).</p>	<p>Opportunities to meet this objective occur in the following activities: <b>SE/TE:</b> 186, At-Home Lab  <b>TE Only:</b> 184, 21<sup>st</sup> Century Learning 185, Science Notebook</p>
<p>c. Locate examples of areas that have characteristics of wetlands, forests, or deserts in Utah.</p>	<p>For supporting content, please see <b>TE Only:</b> 184, Science—Social Studies</p>
<p>d. Based upon information gathered, classify areas of Utah that are generally identified as wetlands, forests, or deserts.</p>	<p>For supporting content, please see <b>SE/TE:</b> 184-185, Kinds of Ecosystems</p>
<p>e. Create models of wetlands, forests, and deserts.</p>	<p><b>SE/TE:</b> 178–181, STEM Activity: Home, Sweet, Home! 186, At-Home Lab 228, Performance-Based Assessment (Build a Model of an Ecosystem)</p>

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<b>Objective 2:</b> Describe the common plants and animals found in Utah environments and how these organisms have adapted to the environment in which they live.	
a. Identify common plants and animals that inhabit Utah's forests, wetlands, and deserts.	<b>SE/TE:</b> 228, Performance-Based Assessment (Write a Biography)
b. Cite examples of physical features that allow particular plants and animals to live in specific environments (e.g., duck has webbed feet, cactus has waxy coating).	<b>SE/TE:</b> 143–147, Chapter 4, Lesson 4: What are adaptations? 228, Performance-Based Assessment (Write a Biography)  <b>TE Only:</b> 144, Differentiated Instruction 229a, Performance Expectation Activity
c. Describe some of the interactions between animals and plants of a given environment (e.g., woodpecker eats insects that live on trees of a forest, brine shrimp of the Great Salt Lake eat algae and birds feed on brine shrimp).	<b>SE/TE:</b> 183–187, Chapter 5, Lesson 1: What are ecosystems?  <b>TE Only:</b> 184, 21st Century Learning 184, Science–Social Studies 186, Differentiated Instruction
d. Identify the effect elevation has on types of plants and animals that live in a specific wetland, forest, or desert.	This objective falls outside the scope of the <i>Interactive Science</i> program.
e. Find examples of endangered Utah plants and animals and describe steps being taken to protect them.	This objective falls outside the scope of the <i>Interactive Science</i> program.
<b>Objective 3:</b> Use a simple scheme to classify Utah plants and animals.	
a. Explain how scientists use classification schemes.	<b>SE/TE:</b> 114, Try It: How can flower parts be classified? 120, Explore It: What are some ways you can classify animals? 121–127, Chapter 4, Lesson 1: How are plants and animals classified?  <b>TE Only:</b> 128, Content Refresher

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<p>b. Use a simple classification system to classify unfamiliar Utah plants or animals (e.g., fish/amphibians/reptile/bird/mammal, invertebrate/vertebrate, tree/shrub/grass, deciduous/conifers).</p>	<p>For opportunities to meet this objective, see <b>SE/TE:</b> 121–127, Chapter 4, Lesson 1: How are plants and animals classified?</p> <p><b>TE Only:</b> 125, Differentiated Instruction 128, Content Refresher</p>
<p><b>Objective 4:</b> Observe and record the behavior of Utah animals.</p>	
<p>a. Observe and record the behavior of birds (e.g., caring for young, obtaining food, surviving winter).</p>	<p>For opportunities to meet this objective, see <b>SE/TE:</b> 157, At-Home Lab</p> <p><b>TE Only:</b> 159, Differentiated Instruction</p>
<p>b. Describe how the behavior and adaptations of Utah mammals help them survive winter (e.g., obtaining food, building homes, hibernation, migration).</p>	<p>For opportunities to meet this objective, see <b>SE/TE:</b> 143–147, Chapter 4, Lesson 4: What are adaptations? 154–159, Chapter 4, Lesson 6: How do animals respond to the environment?</p> <p><b>TE Only:</b> 144, Differentiated Instruction</p>
<p>c. Research and report on the behavior of a species of Utah fish (e.g., feeding on the bottom or surface, time of year and movement of fish to spawn, types of food and how it is obtained).</p>	<p>For supporting content, please see <b>SE/TE:</b> 124, Chapter 4, Lesson 1: How are plants and animals classified? 142, Explore It: How can some fish float?</p> <p><b>TE Only:</b> 124, Common Misconception</p>
<p>d. Compare the structure and behavior of Utah amphibians and reptiles.</p>	<p>For opportunities to meet this objective, see <b>SE/TE:</b> 124–125, Chapter 4, Lesson 1: How are plants and animals classified?</p> <p><b>TE Only:</b> 125, Differentiated Instruction</p>

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e. Use simple classification schemes to sort Utah's common insects and spiders.	For opportunities to meet this objective, see <b>SE/TE:</b> 126–127, Chapter 4, Lesson 1: How are plants and animals classified?  <b>TE Only:</b> 127, Differentiated Instruction
Science language students should use: wetland, forest, desert, adaptation, deciduous, coniferous, invertebrate, vertebrate, bird, amphibian, reptile, fish, mammal, insect, hibernation, migration	
Common plants: sagebrush, pinyon pine, Utah juniper, spruce, fir, oak brush, quaking aspen, cottonwood, cattail, bulrush, prickly pear cactus	
Common animals: jackrabbit, cottontail rabbit, red fox, coyote, mule deer, elk, moose, cougar, bobcat, deer mouse, kangaroo rat, muskrat, beaver, gopher snake, rattlesnake, lizard, tortoise, frog, salamander, red-tailed hawk, barn owl, lark, robin, pinyon jay, magpie, crow, trout, catfish, carp, grasshopper, ant, moth, butterfly, housefly, bee, wasp, pill bug, millipede	

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<b>GRADE 5</b>	
<b>Intended Learning Outcomes for Fifth Grade Science</b>	
The Intended Learning Outcomes (ILOs) describe the skills and attitudes students should learn as a result of science instruction. They are an essential part of the Science Core Curriculum and provide teachers with a standard for evaluation of student learning in science. Instruction should include significant science experiences that lead to student understanding using the ILOs.	
<b>The main intent of science instruction in Utah is that students will value and use science as a process of obtaining knowledge based upon observable evidence.</b>	
By the end of fifth grade students will be able to:	
<b>1. Use Science Process and Thinking Skills</b>	
a. Observe simple objects, patterns, and events and report their observations.	<b>SE/TE:</b> 16, Explore It: What are some properties of solids? 34, Explore It: What happens when air heats up? 98–99, Performance-Based Assessment 328, Explore It: Which method keeps bread freshest?  <b>TE Only:</b> 108, 21st Century Learning 122, Differentiated Instruction 128, Differentiated Instruction
b. Sort and sequence data according to criteria given.	<b>SE/TE:</b> 348–349, Investigate It: How does a banana slice change over time?  <b>TE Only:</b> 128, Differentiated Instruction 349a–349d: Activity Card Support
c. Given the appropriate instrument, measure length, temperature, volume, and mass in metric units as specified.	<b>SE/TE:</b> 18–20, Chapter 1, Lesson 2: How can matter be described?  <b>TE Only:</b> 18, Science—Math

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d. Compare things, processes, and events.	<p><b>SE/TE:</b> 34, Explore It: What happens when air heats up? 120, Explore It: Which bird beak can crush seeds? 236, Explore It: How does melting ice cause erosion?</p> <p><b>TE Only:</b> 14, Differentiated Instruction 108, 21st Century Learning</p>
e. Use classification systems.	<p><b>SE/TE:</b> 108–113, Chapter 3, Lesson 1: What are some physical structures in living things?</p>
f. Plan and conduct simple experiments.	<p><b>SE/TE:</b> 2, Try It: How are weight and volume affected when objects are combined? 236, Explore It: How does melting ice cause erosion? 344, Explore It: Which towel absorbs the most water?</p>
g. Formulate simple research questions.	<p><b>SE/TE:</b> 114, Explore It: How can plants survive in the desert?</p>
h. Predict results of investigations based on prior data.	<p><b>SE/TE:</b> 82, Investigate It: What forces affect the motion of a rocket?</p>
i. Use data to construct a reasonable conclusion.	<p><b>SE/TE:</b> 264, Explore It: How does sunlight strike Earth’s surface? 327, Part 1, Lesson 1: What do scientists do? 328, Explore It: Which method keeps bread freshest?</p> <p><b>TE Only:</b> 123, Science–Social Studies</p>

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<b>2. Manifest Scientific Attitudes and Interests</b>	
a. Demonstrate a sense of curiosity about nature.	<b>SE/TE:</b> 104–107, STEM Activity: Come in Out of Nature! 114, Explore It: How can plants survive in the desert?
b. Voluntarily read and look at books and other materials about science.	<b>TE Only:</b> 123, Science–Social Studies 195d, Performance Expectation Activity 274, 21st Century Learning
c. Pose science questions about objects, events, and processes.	<b>SE/TE:</b> 325, Part 1, Lesson 1: What do scientists do?
d. Maintain an open and questioning mind toward new ideas and alternative points of view.	<b>SE/TE:</b> 345–347, Part 1, Lesson 4: How do scientists support their conclusions?
e. Seek and weigh evidence before drawing conclusions.	<b>SE/TE:</b> 346, Part 1, Lesson 4: How do scientists support their conclusions?
f. Accept and use scientific evidence to help resolve ecological problems.	<b>SE/TE:</b> 169, Chapter 4, Lesson 3: How do ecosystems change? 175–177, Chapter 4, Lesson 4: How do humans impact ecosystems? 200–203, STEM Activity: Filter It Out!
<b>3. Understand Science Concepts and Principles</b>	
a. Know and explain science information specified for the grade level.	<b>SE/TE:</b> 102, Try It: How can temperature affect seed growth?  <b>TE Only:</b> 122, Differentiated Instruction 128, Differentiated Instruction
b. Distinguish between examples and non-examples of concepts that have been taught.	<b>SE/TE:</b> 316, Try It: What questions do scientists ask?
c. Solve problems appropriate to grade level by applying science principles and procedures.	<b>SE/TE:</b> 146–149, STEM Activity: Let It Self-Water! 200–203, STEM Activity: Filter It Out!

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<b>4. Communicate Effectively Using Science Language and Reasoning</b>	
a. Record data accurately when given the appropriate form (e.g., table, graph, chart).	<p><b>SE/TE:</b> 336, Explore It: Why do scientists use thermometers? 337–343, Part 1, Lesson 3: How do scientists collect and interpret data?</p> <p><b>TE Only:</b> 128, Differentiated Instruction</p>
b. Describe or explain observations carefully and report with pictures, sentences, and models.	<p><b>SE/TE:</b> 120, Explore It: Which bird beak can crush seeds? 236, Explore It: How does melting ice cause erosion? 330, Part 1, Lesson 2: How do scientists investigate?</p> <p><b>TE Only:</b> 12, Differentiated Instruction 110, 21st Century Learning 111, Differentiated Instruction 122, Differentiated Instruction 128, Differentiated Instruction 239, Differentiated Instruction 240, Differentiated Instruction</p>
c. Use scientific language in oral and written communication.	<p><b>SE/TE:</b> 198, Try It: How can water move in the water cycle? 255, Science in Your Backyard: Keep a Weather Journal</p> <p><b>TE Only:</b> 128, Differentiated Instruction 195b, Performance Expectation Activity 195d, Performance Expectation Activity 238, Science Notebook 239, Differentiated Instruction 240, Science–Writing</p>

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d. Use reference sources to obtain information and cite the source.	<p><b>SE/TE:</b> 324, Part 1, Lesson 1: What do scientists do?</p> <p><b>TE Only:</b> 11, 21st Century Learning 14, Differentiated Instruction 108, 21st Century Learning 110, 21st Century Learning 122, Differentiated Instruction 123, Science–Social Studies</p>
e. Use mathematical reasoning to communicate information.	<p><b>SE/TE:</b> 178–179, Investigate It: What heats up air? 216, Explore It: How accurate are weather forecasts?</p> <p><b>TE Only:</b> 179a–179d, Activity Card Support</p>
<b>5. Demonstrate Awareness of Social and Historical Aspects of Science</b>	
a. Cite examples of how science affects life.	<p><b>SE/TE:</b> 369–373, Part 2, Lesson 1: What is technology? 374–379, Part 2, Lesson 2: How does technology mimic living things?</p> <p><b>TE Only:</b> 314C, Part 1, Teacher Background</p>
b. Understand the cumulative nature of science knowledge.	<p><b>SE/TE:</b> 370–373, Part 2, Lesson 1: What is technology? 381–387, Part 2, Lesson 3: What is the design process?</p>
<b>6. Understand the Nature of Science</b>	
a. Science is a way of knowing that is used by many people not just scientists.	<p><b>SE/TE:</b> 323–327, Part 1, Lesson 1: What do scientists do?</p>
b. Understand that science investigations use a variety of methods and do not always use the same set of procedures; understand that there is not just one "scientific method."	<p><b>SE/TE:</b> 332–335, Part 1, Lesson 2: How do scientists investigate?</p>

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c. Science findings are based upon evidence.	<b>SE/TE:</b> 322–327, Part 1, Lesson 1: What do scientists do? 346, Part 1, Lesson 4: How do scientists support their conclusions?
<b>Science Benchmark</b> The weight of an object is always equal to the sum of its parts, regardless of how it is assembled. In a chemical reaction or physical change matter is neither created nor destroyed. When two or more materials are combined, either a chemical reaction or physical change may occur. Chemical reactions are often indicated when materials give off heat or cool as they take in heat, give off light, give off gas, or change colors. In a chemical reaction, materials are changed into new substances. In a physical change a new substance is not formed.	
<b>STANDARD 1: Students will understand that chemical and physical changes occur in matter.</b>	
<b>Objective 1:</b> Describe that matter is neither created nor destroyed even though it may undergo change.	
a. Compare the total weight of an object to the weight of its individual parts after being disassembled.	<b>SE/TE:</b> 2, Try It: How are weight and volume affected when objects are combined?
b. Compare the weight of a specified quantity of matter before and after it undergoes melting or freezing.	<b>TE Only:</b> 99b, Performance Expectation Activity
c. Investigate the results of the combined weights of a liquid and a solid after the solid has been dissolved and then recovered from the liquid (e.g., salt dissolved in water then water evaporated).	<b>SE/TE:</b> 16, Explore It: What are some properties of solids?
d. Investigate chemical reactions in which the total weight of the materials before and after reaction is the same (e.g., cream and vinegar before and after mixing, borax and glue mixed to make a new substance).	<b>TE Only:</b> 99b, Performance Expectation Activity

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<b>Objective 2:</b> Evaluate evidence that indicates a physical change has occurred.	
a. Identify the physical properties of matter (e.g., hard, soft, solid, liquid, gas).	<b>SE/TE:</b> 8–15, Chapter 1, Lesson 1: What makes up matter? 17–21, Chapter 1, Lesson 2: How can matter be described?  <b>TE Only:</b> 99c, Performance Expectation Activity
b. Compare changes in substances that indicate a physical change has occurred.	<b>SE/TE:</b> 35, Chapter 1, Lesson 5: How does matter change?
c. Describe the appearance of a substance before and after a physical change.	<b>SE/TE:</b> 34, Explore It: What happens when air heats up? 35, Chapter 1, Lesson 5: How does matter change?
<b>Objective 3:</b> Investigate evidence for changes in matter that occur during a chemical reaction.	
a. Identify observable evidence of a chemical reaction (e.g., color change, heat or light given off, heat absorbed, gas given off).	<b>SE/TE:</b> 37–39, Chapter 1, Lesson 5: How does matter change? 99, Performance-Based Assessment (Investigate Mixtures)  <b>TE Only:</b> 99d, Performance Expectation Activity
b. Explain why the measured weight of a remaining product is less than its reactants when a gas is produced.	This objective falls outside the scope of the <i>Interactive Science</i> program.
c. Cite examples of chemical reactions in daily life.	<b>SE/TE:</b> 37, Chapter 1, Lesson 5: How does matter change?  <b>TE Only:</b> 38, Differentiated Instruction

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d. Compare a physical change to a chemical change.	<p><b>SE/TE:</b> 34-39, Chapter 1, Lesson 5: How does matter change?</p> <p><b>TE Only:</b> 99b, Performance Expectation Activity</p>
e. Hypothesize how changing one of the materials in a chemical reaction will change the results.	<p><b>SE/TE:</b> 99, Performance-Based Assessment (In</p> <p><b>TE Only:</b> 99d, Performance Expectation Activity</p>
Science language students should use: heat, substance, chemical change, dissolve, physical change, matter, product, reactants, solid, liquid, weight	
<p><b>Science Benchmark</b> The Earth’s surface is constantly changing. Some changes happen very slowly over long periods of time, such as weathering, erosion, and uplift. Other changes happen abruptly, such as landslides, volcanic eruptions, and earthquakes. All around us, we see the visible effects of the building up and breaking down of the Earth’s surface.</p>	
<p><b>STANDARD 2: Students will understand that volcanoes, earthquakes, uplift, weathering, and erosion reshape Earth's surface.</b></p>	
<p><b>Objective 1:</b> Describe how weathering and erosion change Earth’s surface.</p>	
a. Identify the objects, processes, or forces that weather and erode Earth’s surface (e.g., ice, plants, animals, abrasion, gravity, water, wind).	<p><b>SE/TE:</b> 236, Explore It: How does melting ice cause erosion? 237–241, Chapter 5, Lesson 6: What are erosion and deposition?</p> <p><b>TE Only:</b> 239, Differentiated Instruction</p>
b. Describe how geological features (e.g., valleys, canyons, buttes, arches) are changed through erosion (e.g., waves, wind, glaciers, gravity, running water).	<p><b>SE/TE:</b> 236, Explore It: How does melting ice cause erosion? 237–241, Chapter 5, Lesson 6: What are erosion and deposition?</p> <p><b>TE Only:</b> 238, Science Notebook 239, Differentiated Instruction</p>

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c. Explain the relationship between time and specific geological changes.	<b>SE/TE:</b> 210, Chapter 5, Lesson 2: My Planet Diary 239, Chapter 5, Lesson 6: What are erosion and deposition?
<b>Objective 2:</b> Explain how volcanoes, earthquakes, and uplift affect Earth's surface.	
a. Identify specific geological features created by volcanoes, earthquakes, and uplift.	The <i>Interactive Science</i> program addresses this objective in Grade 4, Chapter 6, Lesson 4.
b. Give examples of different landforms that are formed by volcanoes, earthquakes, and uplift (e.g., mountains, valleys, new lakes, canyons).	The <i>Interactive Science</i> program addresses this objective in Grade 4, Chapter 6, Lesson 4.
c. Describe how volcanoes, earthquakes, and uplift change landforms.	The <i>Interactive Science</i> program addresses this objective in Grade 4, Chapter 6, Lesson 4.
d. Cite examples of how technology is used to predict volcanoes and earthquakes.	This objective falls outside the scope of the <i>Interactive Science</i> program.
<b>Objective 3:</b> Relate the building up and breaking down of Earth's surface over time to the various physical land features.	
a. Explain how layers of exposed rock, such as those observed in the Grand Canyon, are the result of natural processes acting over long periods of time.	The <i>Interactive Science</i> program addresses this objective in Grade 4, Chapter 6, Lesson 3.
b. Describe the role of deposition in the processes that change Earth's surface.	<b>SE/TE:</b> 237–241, Chapter 5, Lesson 6: What are erosion and deposition?  <b>TE Only:</b> 240, Differentiated Instruction
c. Use a time line to identify the sequence and time required for building and breaking down of geologic features on Earth.	The <i>Interactive Science</i> program addresses this objective in Grade 4, Chapter 6, Lesson 3.
d. Describe and justify how the surface of Earth would appear if there were no mountain uplift, weathering, or erosion.	The <i>Interactive Science</i> program addresses this objective in Grade 4, Chapter 6, Lesson 3.
Science language students should use: earthquakes, erode, erosion, faults, uplift, volcanoes, weathering, buttes, arches, glaciers, geological, deposition	

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<p><b>Science Benchmark</b> Earth and some earth materials have magnetic properties. Without touching them, a magnet attracts things made of iron and either pushes or pulls on other magnets. Electricity is a form of energy. Current electricity can be generated and transmitted through pathways. Some materials are capable of carrying electricity more effectively than other materials. Static electricity is a result of objects being electrically charged. Without touching them, materials that are electrically charged may either push or pull other charged materials.</p>	
<p><b>STANDARD 3: Students will understand that magnetism can be observed when there is an interaction between the magnetic fields of magnets or between a magnet and materials made of iron.</b></p>	
<p><b>Objective 1:</b> Investigate and compare the behavior of magnetism using magnets.</p>	
<p>a. Compare various types of magnets (e.g., permanent, temporary, and natural magnets) and their abilities to push or pull iron objects they are not touching.</p>	<p>The <i>Interactive Science</i> program addresses this objective in the Performance Expectation Activity--Mathematics on p. 99c of the Grade 3 Teacher's Edition.</p> <p>For supporting content in Grade 5, please see <b>SE/TE:</b> 65, Electric and Magnetic Forces</p>
<p>b. Investigate how magnets will both attract and repel other magnets.</p>	<p>For supporting content, please see <b>SE/TE:</b> 65, Electric and Magnetic Forces</p>
<p>c. Compare permanent magnets and electromagnets.</p>	<p>This objective is supported in the Grade 4, Chapter 3 Leveled Content Readers.</p>
<p>d. Research and report the use of magnets that is supported by sound scientific principles.</p>	<p>This objective is supported in the Grade 4, Chapter 3 Leveled Content Readers.</p>
<p><b>Objective 2:</b> Describe how the magnetic field of Earth and a magnet are similar.</p>	
<p>a. Compare the magnetic fields of various types of magnets (e.g., bar magnet, disk magnet, horseshoe magnet).</p>	<p>This objective is supported in the Grade 4, Chapter 3 Leveled Content Readers.</p>
<p>b. Compare Earth's magnetic field to the magnetic field of a magnet.</p>	<p>This objective is supported in the Grade 4, Chapter 3 Leveled Content Readers.</p>
<p>c. Construct a compass and explain how it works.</p>	<p>This objective is supported in the Grade 4, Chapter 3 Leveled Content Readers.</p>

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d. Investigate the effects of magnets on the needle of a compass and compare this to the effects of Earth's magnetic field on the needle of a compass (e.g., magnets effect the needle only at close distances, Earth's magnetic field affects the needle at great distances, magnets close to a compass overrides the Earth's effect on the needle)	This objective is supported in the Grade 4, Chapter 3 Leveled Content Readers.
<b>STANDARD 4: Students will understand features of static and current electricity.</b>	
<b>Objective 1:</b> Describe the behavior of static electricity as observed in nature and everyday occurrences.	
a. List several occurrences of static electricity that happen in everyday life.	The <i>Interactive Science</i> program addresses this objective in Grade 4, Chapter 3, Lesson 1.  For additional supporting content in Grade 5, please see <b>SE/TE:</b> 65, Chapter 2, Lesson 1: What are forces?
b. Describe the relationship between static electricity and lightning.	The <i>Interactive Science</i> program addresses this objective in Grade 4, Chapter 3, Lesson 1.
c. Describe the behavior of objects charged with static electricity in attracting or repelling without touching.	The <i>Interactive Science</i> program addresses this objective in Grade 4, Chapter 3, Lesson 1.
d. Compare the amount of static charge produced by rubbing various materials together (e.g., rubbing fur on a glass rod produces a greater charge then rubbing the fur with a metal rod, the static charge produced when a balloon is rubbed on hair is greater than when a plastic bag is rubbed on hair).	The <i>Interactive Science</i> program addresses this objective in Grade 3, Chapter 2, Lesson 6.
e. Investigate how various materials react differently to statically charged objects.	The <i>Interactive Science</i> program addresses this objective in Grade 3, Chapter 2, Lesson 6.

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<b>Objective 2:</b> Analyze the behavior of current electricity.	
a. Draw and label the components of a complete electrical circuit that includes switches and loads (e.g., light bulb, bell, speaker, motor).	The <i>Interactive Science</i> program addresses this objective in Grade 4, Chapter 3, Lessons 1 & 2.
b. Predict the effect of changing one or more of the components (e.g., battery, load, wires) in an electric circuit.	The <i>Interactive Science</i> program addresses this objective in Grade 4, Chapter 3, Lessons 1 & 2.
c. Generalize the properties of materials that carry the flow of electricity using data by testing different materials.	The <i>Interactive Science</i> program addresses this objective in Grade 4, Chapter 3, Lesson 1.
d. Investigate materials that prevent the flow of electricity.	The <i>Interactive Science</i> program addresses this objective in Grade 4, Chapter 3, Lesson 1.
e. Make a working model of a complete circuit using a power source, switch, bell or light, and a conductor for a pathway.	The <i>Interactive Science</i> program addresses this objective in Grade 4, Chapter 3, Lessons 1 & 2.
Science language students should use: battery, complete circuit, incomplete circuit, current, conductor, insulator, pathway, power source, attract, compass, electromagnetism, magnetic force, magnetic field, natural magnet, permanent magnet, properties, repel, static electricity, temporary magnet, switch, load	

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<p><b>Science Benchmark</b> All living things inherit a set of characteristics or traits from their parents. Members of any given species transfer traits from one generation to the next. The passing of traits from parent to offspring is called heredity and causes the offspring to resemble the parent. Some traits differ among members of a population, and these variations may help a particular species to survive better in a given environment in getting food, finding shelter, protecting itself, and reproducing. These variations give the individual a survival advantage over other individuals of the same species.</p>	
<p><b>STANDARD 5: Students will understand that traits are passed from the parent organisms to their offspring, and that sometimes the offspring may possess variations of these traits that may help or hinder survival in a given environment.</b></p>	
<p><b>Objective 1:</b> Using supporting evidence, show that traits are transferred from a parent organism to its offspring.</p>	
<p>a. Make a chart and collect data identifying various traits among a given population (e.g., the hand span of students in the classroom, the color and texture of different apples, the number of petals of a given flower).</p>	<p><b>SE/TE:</b> 108–113, Chapter 3, Lesson 1: What are some physical structures in living things?</p>
<p>b. Identify similar physical traits of a parent organism and its offspring (e.g., trees and saplings, leopards and cubs, chickens and chicks).</p>	<p>The <i>Interactive Science</i> program addresses this objective in Grade 4, Chapter 4, Lesson 5.</p>
<p>c. Compare various examples of offspring that do not initially resemble the parent organism but mature to become similar to the parent organism (e.g., mealworms and darkling beetles, tadpoles and frogs, seedlings and vegetables, caterpillars and butterflies).</p>	<p><b>SE/TE:</b> 126, Explore It: How do butterflies grow and change? 127–131, Chapter 3, Lesson 4: What are the life cycles of some animals?</p> <p><b>TE Only:</b> 128, Differentiated Instruction</p>
<p>d. Contrast inherited traits with traits and behaviors that are not inherited but may be learned or induced by environmental factors (e.g., cat purring to cat meowing to be let out of the house; the round shape of a willow is inherited, while leaning away from the prevailing wind is induced).</p>	<p><b>SE/TE:</b> 120–125, Chapter 3, Lesson 3: How do adaptations help animals?</p> <p><b>TE Only:</b> 122, Differentiated Instruction</p>
<p>e. Investigate variations and similarities in plants grown from seeds of a parent plant (e.g., how seeds from the same plant species can produce different colored flowers or identical flowers).</p>	<p>This objective falls outside the scope of the <i>Interactive Science</i> program.</p>

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<b>Objective 2:</b> Describe how some characteristics could give a species a survival advantage in a particular environment.	
a. Compare the traits of similar species for physical abilities, instinctual behaviors, and specialized body structures that increase the survival of one species in a specific environment over another species (e.g., difference between the feet of snowshoe hare and cottontail rabbit, differences in leaves of plants growing at different altitudes, differences between the feathers of an owl and a hummingbird, differences in parental behavior among various fish).	<p><b>SE/TE:</b> 108–113, Chapter 3, Lesson 1: What are some physical structures in living things?</p> <p><b>TE Only:</b> 108, 21st Century Learning 110, 21st Century Learning 111, Science–Social Studies</p>
b. Identify that some environments give one species a survival advantage over another (e.g., warm water favors fish such as carp, cold water favors fish such as trout, environments that burn regularly favor grasses, environments that do not often burn favor trees).	<p><b>SE/TE:</b> 114, Explore It: How can plants survive in the desert? 115–119, Chapter 3, Lesson 2: How do adaptations help plants? 121–125, Chapter 3, Lesson 3: How do adaptations help animals?</p> <p><b>TE Only:</b> 122, Differentiated Instruction</p>
c. Describe how a particular physical attribute may provide an advantage for survival in one environment but not in another (e.g., heavy fur in arctic climates keep animals warm whereas in hot desert climates it would cause overheating; flippers on such animals as sea lions and seals provide excellent swimming structures in the water but become clumsy and awkward on land; cacti retain the right amount of water in arid regions but would develop root rot in a more temperate region; fish gills have the ability to absorb oxygen in water but not on land).	<p><b>SE/TE:</b> 114, Explore It: How can plants survive in the desert? 115–119, Chapter 3, Lesson 2: How do adaptations help plants? 120, Explore It: Which bird beak can crush seeds? 121–125, Chapter 3, Lesson 3: How do adaptations help animals?</p> <p><b>TE Only:</b> 122, Differentiated Instruction 123, Science–Social Studies</p>

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<p>d. Research a specific plant or animal and report how specific physical attributes provide an advantage for survival in a specific environment.</p>	<p><b>SE/TE:</b>            114, Explore It: How can plants survive in the desert?            115-119, Chapter 3, Lesson 2: How do adaptations help plants?            120, Explore It: Which bird beak can crush seeds?            121-125, Chapter 3, Lesson 3: How do adaptations help animals?</p> <p><b>TE Only:</b>            123, Science–Social Studies</p>
<p>Science language students should use: inherited, environment, species, offspring, traits, variations, survival, instincts, population, specialized structure, organism, life cycle, parent organism, learned behavior</p>	