

A Correlation of
Elevate Science
Grade 4, ©2019



To the
North Dakota
Science Content Standards 2019
Grade 4

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North Dakota Science Content Standards 2019 for Grade 4**

Introduction

The following document demonstrates how the ***Elevate Science* ©2019** program supports the North Dakota Science Content Standards. Correlation references include the Student Edition, Teacher Edition, and online Realize™ digital resources.

Elevate Science is a comprehensive K-5 science program that focuses on active, student-centered learning. It builds students' critical thinking, questioning, and collaboration skills, and fuels interest in STEM and creative problem solving while supporting literacy development for elementary-age learners. Developed to support Next Generation Science Standards (NGSS), ***Elevate Science*** integrates three-dimensional learning of the Scientific and Engineering Practices, Crosscutting Concepts (CCC), and Disciplinary Core Ideas (DCIs).

The ***Elevate Science*** blended **print** and **digital** curriculum engages students in phenomena-based inquiry and hands-on investigations.

- Problem-based learning Quests put students on a journey of discovery
- Engineering-focused features infuse STEM learning
- Coding and innovation engage students and build 21st century skills

The Teacher's Edition of ***Elevate Science*** helps elementary educators teach science with confidence: Scaffolding, ELD, differentiated instruction, and an instructional organization based upon the 5E learning model, (Engage, Explore, Explain, Extend/Elaborate, Evaluate), provide all the support needed for successful teaching practices. Professional development offers point-of-use support. A full-view approach to inquiry and testing provides new options for a variety of hands-on labs and assessments for three-dimensional learning.

Elevate Science prepares students for the challenges of tomorrow, building strong reasoning skills and critical thinking strategies as they engage in explorations, formulate claims, and gather and analyze data that promote evidence-based argument. Designed for today's classroom, preparing students for tomorrow's world. ***Elevate Science*** promises to:

- Elevate thinking.
- Elevate learning.
- Elevate teaching.

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4-PS3 Energy	
Performance Standard 4-PS3-1	
Use evidence to construct an explanation relating the speed of an object to the energy of that object.	<p>SE/TE: Quest Kickoff: Energy Changes in Collisions, 2-3 uConnect Lab: How can you compare the energy of objects?, 4 ulInvestigate Lab: How does starting height affect and object's energy?, 7 uBe a Scientist: Force and Speed, 12 Quest Check-In: Energy, Speed, and Motion, 13 Quest Findings: Energy Changes in Collisions, 42</p> <p>Realize™ Digital Resources: Energy and Motion >Topic Launch>Quest Kickoff>Video: Energy Changes in Collisions >Topic Close>Quest Findings>Interactivity: Energy Changes in Collisions</p>
Disciplinary Core Ideas	
PS3.A: Definitions of Energy	
The faster a given object is moving, the more energy it possesses.	<p>SE/TE: Quest Kickoff: Energy Changes in Collisions, 2-3 uConnect Lab: How can you compare the energy of objects?, 4 ulInvestigate Lab: How does starting height affect and object's energy?, 7 Energy, 8 Visual Literacy: How does energy affect particles of matter?, 10-11 Motion and Energy, 12 uBe a Scientist: Force and Speed, 12 Quest Check-In: Energy, Speed, and Motion, 13 Quest Findings: Energy Changes in Collisions, 42</p> <p>Realize™ Digital Resources: Energy and Motion >Topic Launch>Quest Kickoff>Video: Energy Changes in Collisions >Lesson 1, Energy, Speed, and Moving Objects>Video: Energy, Speed, and Moving Objects;>Interactivity: Skateboarding Energy;>Virtual Lab: Propeller Speed and Thrust >Topic Close>Quest Findings>Interactivity: Energy Changes in Collisions</p>

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Science and Engineering Practices	
Constructing Explanations and Designing Solutions Use evidence (e.g., measurements, observations, patterns) to construct an explanation.	SE/TE: uConnect Lab: How can you compare the energy of objects?, 4 ulnvestigate Lab: How does starting height affect and object's energy?, 7 Realize™ Digital Resources: Energy and Motion >Lesson 1, Energy, Speed, and Moving Objects> Interactivity: Skateboarding Energy;>Virtual Lab: Propeller Speed and Thrust
Crosscutting Concepts	
Energy and Matter Energy can be transferred in various ways and between objects.	SE/TE: Visual Literacy: How does energy affect particles of matter?, 10-11
Performance Standard 4-PS3-2	
Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents.	SE/TE: ulnvestigate Lab: How does energy transfer between objects?, 17 STEM Quest Check-In: How does modeling help you understand a collision?, 22-23 ulnvestigate Lab: How does heat move?, 25 ulnvestigate Lab: How does electric energy flow in circuits?, 35 STEM Quest Check-In: How can an electric circuit help prevent collisions?, 40-41 uDemonstrate Lab: What affects energy transfer?, 48-49

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Disciplinary Core Ideas	
PS3.A: Definitions of Energy	
<p>Energy can be moved [transferred] from place to place by moving objects or through sound, light, or electric currents.</p>	<p>SE/TE: Sports Connection, 16 uInvestigate Lab: How does energy transfer between objects?, 17 STEM Quest Check-In: How does modeling help you understand a collision?, 22-23 uInvestigate Lab: How does heat move?, 25 Visual Literacy: How is energy transferred?, 26-27 Energy and Particle Motion, 28 Light Energy, 29 Sound Energy, 30 Sound Waves, 31 Curriculum Connection, 34 uInvestigate Lab: How does electric energy flow in circuits?, 35 Electric Charge, 36 Moving Electric Charges, 37 Electric Circuits, 38 Resistance, 39 STEM Quest Check-In: How can an electric circuit help prevent collisions?, 40-41 uDemonstrate Lab: What affects energy transfer?, 48-49</p> <p>Realize™ Digital Resources: Energy and Motion >Lesson 2, Collisions>Video: Collisions;>Interactivity: The Transfer of Kinetic Energy >Lesson 3, Energy Transfer>Video: Energy Transfer;>Interactivity: How Does Thermal Energy Move? >Lesson 4, Electric Circuits>Video: Electric Circuits;>Interactivity: Making an Electric Circuit</p>

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PS3.B: Conservation of Energy and Energy Transfer	
<p>Energy is present whenever there are moving objects, sound, light, or heat. When objects collide, energy can be transferred from one object to another, thereby changing their motion. In such collisions, some energy is typically also transferred to the surrounding air; as a result, the air gets heated and sound is produced. Light also transfers energy from place to place. Energy can also be transferred from place to place by electric currents, which can then be used locally to produce motion, sound, heat, or light.</p>	<p>SE/TE: Sports Connection, 16 uInvestigate Lab: How does energy transfer between objects?, 17 STEM Quest Check-In: How does modeling help you understand a collision?, 22-23 uInvestigate Lab: How does heat move?, 25 Visual Literacy: How is energy transferred?, 26-27 Energy and Particle Motion, 28 Light Energy, 29 Sound Energy, 30 Sound Waves, 31 Curriculum Connection, 34 uInvestigate Lab: How does electric energy flow in circuits?, 35 Electric Charge, 36 Moving Electric Charges, 37 Electric Circuits, 38 Resistance, 39 STEM Quest Check-In: How can an electric circuit help prevent collisions?, 40-41 uDemonstrate Lab: What affects energy transfer?, 48-49</p> <p>Realize™ Digital Resources: Energy and Motion >Lesson 2, Collisions>Video: Collisions;>Interactivity: The Transfer of Kinetic Energy >Lesson 3, Energy Transfer>Video: Energy Transfer;>Interactivity: How Does Thermal Energy Move? >Lesson 4, Electric Circuits>Video: Electric Circuits;>Interactivity: Making an Electric Circuit</p>

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Science and Engineering Practices	
<p>Planning and Carrying Out Investigations Make observations to produce data to serve as the basis for evidence for an explanation of a phenomenon or test a design solution.</p>	<p>SE/TE: ulInvestigate Lab: How does energy transfer between objects?, 17 STEM Quest Check-In: How does modeling help you understand a collision?, 22-23 ulInvestigate Lab: How does heat move?, 25 ulInvestigate Lab: How does electric energy flow in circuits?, 35 STEM Quest Check-In: How can an electric circuit help prevent collisions?, 40-41 uDemonstrate Lab: What affects energy transfer?, 48-49</p>
Crosscutting Concepts	
<p>Energy and Matter Energy can be transferred in various ways and between objects.</p>	<p>SE/TE: STEM Quest Check-In: How does modeling help you understand a collision?, 22-23 ulInvestigate Lab: How does heat move?, 25 Visual Literacy: How is energy transferred?, 26-27 ulInvestigate Lab: How does electric energy flow in circuits?, 35</p>
Performance Standard 4-PS3-3	
<p>Ask questions and predict outcomes about the changes in energy that occur when objects collide.</p>	<p>SE/TE: ulInvestigate Lab: How does energy transfer between objects?, 17 Visual Literacy Connection: Energy Changes in a Collision, 18-19 Engineering Practices Toolbox: Design a Solution, 20 Quest Connection, 20 uBe a Scientist: Construct a Cradle, 21 Reading Check, 21 Question It!, 29 Quest Check-In: Crash It!, 32</p> <p>Realize™ Digital Resources: Energy and Motion >Lesson 2, Collisions>Interactivity: The Transfer of Kinetic Energy</p>

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Disciplinary Core Ideas	
PS3.A: Definitions of Energy	
<p>Energy can be moved from place to place by moving objects or through sound, light, or electric currents,</p>	<p>SE/TE: Sports Connection, 16 uInvestigate Lab: How does energy transfer between objects?, 17 Visual Literacy Connection: Energy Changes in a Collision, 18-19 Engineering Practices Toolbox: Design a Solution, 20 uBe a Scientist: Construct a Cradle, 21 Other Energy Changes, 20-21 Reading Check, 21 Visual Literacy: How is energy transferred?, 26-27 Energy and Particle Motion, 28 Light Energy, 29 Question It!, 29 Sound Energy, 30 Sound Waves, 31 Quest Check-In: Crash It!, 32 uInvestigate Lab: How does electric energy flow in circuits?, 35 Moving Electric Charges, 37</p> <p>Realize™ Digital Resources: Energy and Motion >Lesson 1, Energy, Speed and Moving Objects>Video: Energy, Speed and Moving Objects;>Interactivity: Climb, Slide, Spin and Swing;>Interactivity: Skateboarding Energy;>Quiz: Energy, Speed, and Moving Objects >Lesson 3, Energy Transfer>Video: Energy Transfer;>Interactivity: How Does Thermal Energy Move?;>Quiz: Energy Transfer >Lesson 4, Electric Circuits>Video: Electric Circuits;>Quiz: Electric Circuits</p>

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PS3.B: Conservation of Energy and Energy Transfer	
<p>Energy is present whenever there are moving objects, sound, light, or heat. When objects collide, energy can be transferred from one object to another, thereby changing their motion. In such collisions, some energy is typically also transferred to the surrounding air; as a result, the air gets heated and sound is produced.</p>	<p>SE/TE: uConnect Lab: How can you compare the energy of objects?, 4 uInvestigate Lab: How does starting height affect an object's energy?, 7 Energy, 8 Motion and Energy, 12 uBe a Scientist: Force and Speed, 12 Quest Check-In: Energy, Speed, and Motion, 13 uInvestigate Lab: How does energy transfer between objects?, 17 Visual Literacy Connection: Energy Changes in a Collision, 18-19 Other Energy Changes, 20 Quest Connection, 20 Other Energy Changes, 20-21 uInvestigate Lab: How does heat move?, 25 Visual Literacy Connection: How is energy transferred?, 26-27 Energy and Particle Motion, 28 Light Energy, 29 Sound Energy, 30 Sound Waves, 31 Topic Assessment, 44-45 Evidence-Based Assessment, 46-47 uDemonstrate Lab: What affects energy transfer?, 48-49</p> <p>Realize™ Digital Resources: Energy and Motion >Lesson 1, Energy, Speed and Moving Objects>Video: Energy, Speed and Moving Objects;>Interactivity: Climb, Slide, Spin and Swing;>Interactivity: Skateboarding Energy;>Quiz: Energy, Speed, and Moving Objects >Lesson 2, Collisions>Video: Collisions;>Interactivity: The Transfer of Kinetic Energy;>Quiz: Collisions >Lesson 3, Energy Transfer>Video: Energy Transfer;>Interactivity: How Does Thermal Energy Move? >Quiz: Energy Transfer</p>

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PS3.C: Relationship Between Energy and Forces	
When objects collide, the contact forces transfer energy so as to change the objects' motions.	<p>SE/TE: Sports Connection, 16 uInvestigate Lab: How does energy transfer between objects?, 17 Visual Literacy Connection: Energy Changes in a Collision, 18-19 Other Energy Changes, 20-21 Model It!, 20 STEM Quest Check-In Lab: How does modeling help you understand a collision?, 22-23 Quest Check-In: Crash It!, 32 Quest Findings: Energy Changes in Collisions, 42</p> <p>Realize™ Digital Resources: Energy and Motion >Lesson 2, Collisions>Video: Collisions;>Interactivity: The Transfer of Kinetic Energy;>Quiz: Collisions</p>
Science and Engineering Practices	
<p>Asking Questions and Defining Problems Ask questions that can be investigated and predict reasonable outcomes based on patterns such as cause-and-effect relationships.</p>	<p>SE/TE: uConnect Lab: How can you compare the energy of objects?, 4 uInvestigate Lab: How does starting height affect an object's energy?, 7 uBe a Scientist: Force and Speed, 12 uInvestigate Lab: How does energy transfer between objects?, 17 uDemonstrate Lab: What affects energy transfer?, 48-49 Science Practices: Ask Questions, 384</p> <p>Realize™ Digital Resources: Energy and Motion >Lesson 2, Collisions>Interactivity: The Transfer of Kinetic Energy</p>

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Crosscutting Concepts	
<p>Energy and Matter: Energy can be transferred in various ways and between objects.</p>	<p>SE/TE: Energy, 8 Energy at Rest/Energy in Motion, 9 uInvestigate Lab: How does energy transfer between objects?, 17 Visual Literacy Connection: Energy Changes in a Collision, 18-19 Other Energy Changes, 20-21 uInvestigate Lab: How does heat move?, 25 Visual Literacy Connection: How is energy transferred?, 26-27 Energy and Particle Motion, 28 uDemonstrate Lab: What affects energy transfer?, 48-49</p> <p>Realize™ Digital Resources: Energy and Motion >Lesson 1, Energy, Speed and Moving Objects>Video: Energy, Speed and Moving Objects;>Interactivity: Climb, Slide, Spin and Swing >Lesson 2, Collisions>Video: Collisions;>Interactivity: The Transfer of Kinetic Energy >Lesson 3, Energy Transfer>Video: Energy Transfer;>Interactivity: How Does Thermal Energy Move?;>Quiz: Energy Transfer</p>

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Performance Standard 4-PS3-4	
Using the engineering design process build a device that converts energy from one form to another.	<p>SE/TE: STEM Quest Kickoff: Power from the People, 52-53 ulnvestigate Lab: How can a potato provide energy to a light bulb?, 57 Quest Check-In: Human Power, 63 STEM ulnvestigate Lab: How do we find oil?, 65 Design It!, 70 ulnvestigate Lab: How does a windmill capture wind energy?, 75 STEM Quest Check-In Lab: How can the sun make a motor work?, 80 uEngineer It!: Hold that Phone, 82-83 STEM Quest Findings: Power to the People, 92</p> <p>Realize™ Digital Resources: Human Uses of Energy >Topic Launch>Quest Kickoff>Video: Power to the People >Topic Close>Quest Findings>Interactivity: Power to the People</p>
Disciplinary Core Ideas	
PS3.B: Conservation of Energy and Energy Transfer	
Energy can also be transferred from place to place by electric currents, which can then be used locally to produce motion, sound, heat, or light.	<p>SE/TE: STEM Quest Kickoff: Power from the People, 52-53 ulnvestigate Lab: How can a potato provide energy to a light bulb?, 57 Using Energy, 58 Plan It!. 59 Visual Literacy Connection: How is electric power generated from chemical energy?, 60-61 Storing Chemical Energy, 62 Quest Connection, 62 Quest Check-In: Human Power, 63 STEM Quest Check-In Lab: How can you use a battery to produce motion?, 72-73 STEM Quest Findings: Power to the People, 92</p> <p>Realize™ Digital Resources: Human Uses of Energy >Lesson 1, Energy Conversion>Interactivity: Electrical Energy Changes Forms >Topic Close>Quest Findings>Interactivity: Power to the People</p>

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PS3.D: Energy and Chemical Processes and Everyday Life	
The expression “produce energy” typically refers to the conversion of stored energy into a desired form for practical use.	<p>SE/TE: STEM Quest Kickoff: Power from the People, 52-53 Storing Chemical Energy, 62 Quest Connection, 62 STEM Quest Check-In Lab: How can you use a battery to produce motion?, 72-73 uEngineer It!: Hold that Phone, 82-83 STEM Quest Findings: Power to the People, 92</p> <p>Realize™ Digital Resources: Human Uses of Energy >Topic Launch>Quest Kickoff>Video: Power to the People >Topic Close>Quest Findings>Interactivity: Power to the People</p>
Science and Engineering Practices	
<p>Constructing Explanations and Designing Solutions Apply scientific ideas to solve design problems.</p>	<p>SE/TE: Visual Literacy Connection: How is electrical energy generated from chemical energy?, 60-61 Quest Check-In: Human Power, 63 STEM ulnvestigate Lab: How do we find oil?, 65 Visual Literacy Connection: Where do fossil fuels come from?, 68-69</p> <p>Realize™ Digital Resources: Human Uses of Energy >Lesson 1, Energy Conversion>Interactivity: Electrical Energy Changes Forms</p>
Crosscutting Concepts	
<p>Energy and Matter Energy can be transferred in various ways and between objects.</p>	<p>SE/TE: STEM Quest Check-In Lab: How can you use a battery to produce motion?, 72-73 STEM Quest Check-In Lab: How can the sun make a motor work?, 80</p>

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4-PS4 Waves and their Applications in Technologies for Information Transfer	
Performance Standard 4-PS4-1	
Develop a model of waves to describe patterns in terms of amplitude and wavelength and that waves can cause objects to move.	SE/TE: uConnect Lab: How do we describe waves?, 104 ulnvestigate Lab: How does a wave carry energy?, 107 Wave Characteristics, 109 Visual Literacy Connection: How does a wave move?, 111 Visual Literacy Connection: How do wave patterns move?, 120-121 uDemonstrate Lab: How can you model a light or soundwave?, 148-149
Disciplinary Core Ideas	
PS4.A: Wave Properties Waves, which are regular patterns of motion, can be made in water by disturbing the surface. When waves move across the surface of deep water, the water goes up and down in place; there is no net motion in the direction of the waves except when the water meets a beach.	SE/TE: Wave Energy, 112 ulnvestigate Lab: What patterns can waves make?, 117 uBe a Scientist: Ripples, 118 Wave Patterns, 119 Crosscutting Concepts Toolbox: Patterns, 119 Visual Literacy Connection: How do wave patterns move?, 120-121 Realize™ Digital Resources: Waves and Information >Lesson 2, Patterns of Waves>Video: Patterns of Waves
Waves of the same type can differ in amplitude (height of the wave) and wavelength (spacing between wave peaks).	SE/TE: Wave Characteristics, 109 Visual Literacy Connection: How does a wave move?, 110-111 Patterns in Wave Characteristics, 118 Realize™ Digital Resources: Waves and Information >Lesson 1, Properties of Waves>Video: Properties of Waves;>Quiz: Properties of Waves

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Science and Engineering Practices	
<p>Developing and Using Models Develop a model using an analogy, example, or abstract presentation to describe a scientific principle.</p>	<p>SE/TE: uConnect Lab: How do we describe waves?, 104 uInvestigate Lab: How does a wave carry energy?, 107 Visual Literacy Connection: How does a wave move?, 111 uDemonstrate Lab: How can you model a light or soundwave?, 148-149 Science Practices: Developing and Using Models, EM6</p>
Crosscutting Concepts	
<p>Patterns Similarities and differences in patterns can be used to sort, classify, and analyze simple rates of change for natural phenomena.</p>	<p>SE/TE: Wave Characteristics, 109 uInvestigate Lab: What patterns can waves make?, 117 Patterns in Wave Characteristics, 118 uBe a Scientist: Ripples, 118 Wave Patterns, 119 Crosscutting Concepts Toolbox: Patterns, 119 Visual Literacy Connection: How do wave patterns move?, 120-121</p> <p>Realize™ Digital Resources: Waves and Information >Lesson 2, Patterns of Waves>Video: Patterns of Waves</p>

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Performance Standard 4-PS4-3	
Construct a code to convey information by researching past and present methods of transmitting information.	<p>SE/TE: STEM Quest Kickoff: Be a Message Master, 102-103 Stem Quest Check-In Lab: How can you send a message with sound?, 123 STEM Quest Check-In Lab: How can you send a message with light?, 132-133 ulInvestigate Lab: How can information from waves be translated?, 135 Engineering Practices Toolbox: Design Solutions, 139 Quest Check-In: Compare Codes, 140</p> <p>Realize™ Digital Resources: Waves and Information >Topic Launch>Quest Kickoff>Video: Be a Message Master >Topic Close>Quest Findings>Interactivity: Be a Message Master</p>
Disciplinary Core Ideas	
PS4.C: Information Technologies and Instrumentation:	
Digitized information can be transmitted over long distances without significant degradation. High-tech devices, such as computers or cell phones, can receive and decode information—convert it from digitized form to voice—and vice versa.	<p>SE/TE: Curriculum Connection, 134 ulInvestigate Lab: How can information from waves be translated?, 135 Waves Outside the Visible Spectrum, 136-137 Digital and Analog Signals, 138 Technology Mimics Life, 139 Engineering Practices Toolbox: Design Solutions, 139</p> <p>Realize™ Digital Resources: Waves and Information >Lesson 4, Waves and Information>Video: Waves and Information;>Virtual Lab: Call the Galactic Neighbors;>Interactivity: Sending and Receiving Information</p>

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Science and Engineering Practices	
<p>Constructing Explanations and Designing Solutions Generate and compare multiple solutions to a problem based on how well they meet the criteria and constraints of the design solution.</p>	<p>SE/TE: STEM Quest Kickoff: Be a Message Master, 102-103 Stem Quest Check-In Lab: How can you send a message with sound?, 123 STEM Quest Check-In Lab: How can you send a message with light?, 132-133 uInvestigate Lab: How can information from waves be translated?, 135 Engineering Practices Toolbox: Design Solutions, 139 Quest Check-In: Compare Codes, 140 Science and Engineering Practices Handbook: Engineering Practices: Designing Solutions, EM11 Science and Engineering Practices Handbook: Engineering Practices: Optimizing Solutions, EM13</p> <p>Realize™ Digital Resources: Waves and Information >Topic Launch>Quest Kickoff>Video: Be a Message Master >Topic Close>Quest Findings>Interactivity: Be a Message Master</p>
Crosscutting Concepts	
<p>Patterns Similarities and differences in patterns can be used to sort and classify designed products.</p>	<p>SE/TE: Digital and Analog Signals, 138</p> <p>Realize™ Digital Resources: Waves and Information >Lesson 4, Waves and Information>Video: Waves and Information;>Virtual Lab: Call the Galactic Neighbors;>Interactivity: Sending and Receiving Information</p>

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4-LS1 From Molecules to Organisms: Structures and Processes	
Performance Standard 4-LS1-1	
Construct an argument that plants, and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.	<p>SE/TE: ulnvestigate Lab: What parts are inside a flower?, 283 Visual Literacy Connection What are some functions of internal leaf structures?, 286-287 Quest Check-In Lab: How can you observe a plant's vascular system in action?, 290-291 Visual Literacy Connection: Which structures do flowering plants use to reproduce?, 296-297 ulnvestigate Lab: How can you compare the stomachs of cows and dogs?, 301 Visual Literacy Connection: How do lungs and gills compare?, 304-305 Solve it with Science: Why do animals shed their exoskeletons?, 315 Topic Assessment, 328-329 Evidence-Based Assessment, 330-331</p> <p>Realize™ Digital Resources: Structures and Functions >Lesson 1, Internal Structures and Functions of Plants> Interactivity: The Structure of Flowers >Lesson 2, External Structures and Functions of Plants> Virtual Lab: Partners in Pollination >Lesson 3, Internal Structures and Functions of Animals> Interactivity: Eating Food and Making Food;>Quiz: Internal Structures and Functions of Animals >Lesson 4, External Structures and Functions of Animals> Interactivity: External Structures of Plants and Animals</p>

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Disciplinary Core Ideas	
<p>LS1.A: Structure and Function Plants and animals have both internal and external structures that serve various functions in growth, survival, behavior, and reproduction.</p>	<p>SE/TE: Structures, 284 Functions, 285 Visual Literacy Connection What are some functions of internal leaf structures?, 286-287 Photosynthesis, 288 Quest Check-In Lab: How can you observe a plant's vascular system in action?, 290-291 External Structures of a Plant, 294 Stems and Their Coverings, 295 Visual Literacy Connection: Which structures do flowering plants use to reproduce?, 296-297 Investigate Lab: How can you compare the stomachs of cows and dogs?, 301 Animal Structures for Support, 302 Structure of the Animal Heart, 303 Visual Literacy Connection: How do lungs and gills compare?, 304-305 Structure of the Animal Brain, 306 Quest Check-In: Fish Float and Sink, 307 STEM Investigate La: How can you design a protective insect shell?, 309 Visual Literacy Connection: What do exoskeletons do?, 310-311 Other External Structures of Animals, 312 Quest Check-In: Lobster Claws, 314 Solve it with Science: Why do animals shed their exoskeletons?, 315 Topic Assessment, 328-329 Evidence-Based Assessment, 330-331</p> <p>Realize™ Digital Resources: Structures and Functions >Lesson 1, Internal Structures and Functions of Plants> Interactivity: The Structure of Flowers;>Quiz: Internal Structures and Functions of Plants >Lesson 2, External Structures and Functions of Plants>Video: External Structures and Functions of Plants;>Virtual Lab: Partners in Pollination >Lesson 3, Internal Structures and Functions of Animals> Interactivity: Eating Food and Making Food;>Quiz: Internal Structures and Functions of Animals >Lesson 4, External Structures and Functions of Animals>Video: External Structures and Functions of Animals;>Interactivity: External Structures of Plants and Animals;>Quiz: External Structures and Functions of Animals</p>

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Science and Engineering Practices	
<p>Engaging in Argument from Evidence Construct an argument with evidence, data, and/or a model.</p>	<p>SE/TE: ulnvestigate Lab: What parts are inside a flower?, 283 Visual Literacy Connection What are some functions of internal leaf structures?, 286-287 Quest Check-In Lab: How can you observe a plant's vascular system in action?, 290-291 ulnvestigate Lab: How are leaf coverings different?, 293 Visual Literacy Connection: Which structures do flowering plants use to reproduce?, 296-297 ulnvestigate Lab: How can you compare the stomachs of cows and dogs?, 301 Visual Literacy Connection: How do lungs and gills compare?, 304-305 Solve it with Science: Why do animals shed their exoskeletons?, 315 Topic Assessment, 328-329 Evidence-Based Assessment, 330-331 Science Practices: Engaging in Arguments from Evidence, EM7</p> <p>Realize™ Digital Resources: Structures and Functions >Lesson 1, Internal Structures and Functions of Plants> Interactivity: The Structure of Flowers >Lesson 2, External Structures and Functions of Plants> Virtual Lab: Partners in Pollination >Lesson 3, Internal Structures and Functions of Animals> Interactivity: Eating Food and Making Food;>Quiz: Internal Structures and Functions of Animals >Lesson 4, External Structures and Functions of Animals> Interactivity: External Structures of Plants and Animals</p>

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Crosscutting Concepts	
<p>Systems and System Models A system can be described in terms of its components and their interactions.</p>	<p>SE/TE: Structures, 284 Functions, 285 Photosynthesis, 288 Quest Check-In Lab: How can you observe a plant's vascular system in action?, 290-291 uConnect Lab: Which body parts work together to do a task?, 338 Tissues, Organs and Organ Systems, 342 Respiratory System, 343 Circulatory System, 344-345 Skeletal System, 352 Muscular System, 353 Visual Literacy Connection: How do we skate on ice?, 354-355 Digestive System, 368 Excretory System 370 Reproductive System, 371 Immune System 372-373 Topic Assessment, 378-379</p> <p>Realize™ Digital Resources: Structures and Functions >Lesson 1, Internal Structures and Functions of Plants>Video: Internal Structures and Functions of Plants >Lesson 3, Internal Structures and Functions of Animals> Interactivity: Eating Food and Making Food</p> <p>Human Body Systems >Lesson 1, Circulatory and Respiratory Systems>Video: Circulatory and Respiratory Systems;>Interactivity: Follow the Flow;>Quiz: Circulatory and Respiratory Systems >Lesson 2, Skeleton, Muscles, and Skin>Interactivity: Systems that Help You Move;>Quiz: Skeleton, Muscles, and Skin >Lesson 4, Digestive, Reproductive, and Other Systems>Video: Digestive, Reproductive, and Other Systems;>Interactivity: Digested: Tale of the Eaten Apple;>Quiz: Digestive, Reproductive, and Other Systems</p>

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Performance Standard 4-LS1-2	
Form an explanation to describe that animals receive different types of information through their senses, process the information in their brain, and respond to the information in different ways.	<p>SE/TE: <ul style="list-style-type: none"> uInvestigate Lab: How can you locate an object using only sounds?, 317 uEngineer It! Model STEM: Eye See You!, 324-325 uInvestigate Lab: Which parts of the body are more sensitive?, 359 STEM Quest Check-In Lab: How can you test signals to and from your brain?, 364-365 </p> <p>Realize™ Digital Resources: Structures and Functions >Lesson 5, Plant and Animal Responses to the Environment>uEngineer It! Video: Eye see you! Human Body Systems >Lesson 3, Nervous System>Virtual Lab: Building a System</p>
Disciplinary Core Ideas	
LS1.D: Information Processing Different sense receptors are specialized for particular kinds of information which may be then processed by the animal's brain. Animals are able to use their perceptions and memories to guide their actions.	<p>SE/TE: Engineering Connection, 316 <ul style="list-style-type: none"> uInvestigate Lab: How can you locate an object using only sounds?, 317 Visual Literacy Connection: How do elephants respond to stimuli?, 318-319 Animal Responses to Smell, 320 uBe a Scientist: Test Your Senses, 320 Quest Check-In: Sound Off!, 323 uEngineer It! Model STEM: Eye See You!, 324-325 uInvestigate Lab: Which parts of the body are more sensitive?, 359 Visual Connection: What are sensory organs?, 360-361 Brain, 362 uBe a Scientist: Reaction Time, 362 STEM Quest Check-In Lab: How can you test signals to and from your brain?, 364-365 uDemonstrate Lab: How do your sensory organs gather information?, 382-383 </p> <p>Realize™ Digital Resources: Structures and Functions >Lesson 5, Plant and Animal Responses to the Environment>Video: Plant and Animal Responses to the Environment;>Interactivity: Plants and Animals Respond to the Environment;>Quiz: Plant and Animal Responses to the Environment</p>

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Science and Engineering Practices	
<p>Developing and Using Models Use a model to test interactions concerning the functioning of a natural system.</p>	<p>SE/TE: <ul style="list-style-type: none"> uInvestigate Lab: How can you locate an object using only sounds?, 317 uEngineer It! Model STEM: Eye See You!, 324-325 uInvestigate Lab: Which parts of the body are more sensitive?, 359 STEM Quest Check-In Lab: How can you test signals to and from your brain?, 364-365 Science Practices: Developing and Using Models, EM6 </p> <p>Realize™ Digital Resources: Structures and Functions >Lesson 5, Plant and Animal Responses to the Environment>uEngineer It! Video: Eye see you! Human Body Systems >Lesson 3, Nervous System>Virtual Lab: Building a System</p>
Crosscutting Concepts	
<p>Systems and System Models A system can be described in terms of its components and their interactions.</p>	<p>SE/TE: Structures, 284 Functions, 285 Photosynthesis, 288 Quest Check-In Lab: How can you observe a plant's vascular system in action?, 290-291 uConnect Lab: Which body parts work together to do a task?, 338 Tissues, Organs and Organ Systems, 342 Respiratory System, 343 Circulatory System, 344-345 Skeletal System, 352 Muscular System, 353 Visual Literacy Connection: How do we skate on ice?, 354-355 Digestive System, 368 Excretory System 370 Reproductive System, 371 Immune System 372-373 Topic Assessment, 378-379</p> <p>Realize™ Digital Resources: Structures and Functions >Lesson 1, Internal Structures and Functions of Plants>Video: Internal Structures and Functions of Plants >Lesson 3, Internal Structures and Functions of Animals> Interactivity: Eating Food and Making Food</p>

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4-ESS1 Earth's Place in the Universe	
Performance Standard 4-ESS1-1	
<p>Identify evidence from patterns in rock formations and fossils in rock layers to support an explanation for changes in a landscape over time.</p>	<p>SE/TE: Quest Kickoff: Dig for the Truth, 244-245 uConnect Lab: Where are fossils found in rock layers?, 246 ulnvestigate Lab: What patterns do fossils follow?, 249 Rock Formations, 251 A Colorful Change, 252 STEM Math Connection: Canyonlands, 255 ulnvestigate Lab: How can rock layers show change?, 259 Fossil Clues on Earth, 260 Index Fossils, 261 Crosscutting Concepts Toolbox: Patterns, 261 Visual Literacy Connection: How can layers of rock change?, 262-263 Comparing Rock Layers, 264 uBe a Scientist: Be a Rock Hound, 264 Quest Findings: Dig for the Truth, 268 Topic Assessment, 270-271 Evidence-Based Assessment, 272-273 uDemonstrate Lab: How can you correlate rock layers?, 274-275</p> <p>Realize™ Digital Resources: History of the Planet Earth >Lesson 1, Patterns in Fossils and Rock Formations>Video: Patterns in Fossils and Rock Formations;>Interactivity: Patterns in Fossils and Rock Formations;>Quiz: Patterns in Fossils and Rock Formations >Lesson 2, Evidence of Change from Fossils and Rock Formations>Video: Evidence of Change from Fossils and Rock Formations;>Interactivity: Evidence of Change from Fossils and Rock Formations;>Quiz: Evidence of Change from Fossils and Rock Formations</p>

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Disciplinary Core Ideas	
<p>ESS1.C: The History of Planet Earth Local, regional, and global patterns of rock formations reveal changes over time due to earth forces, such as earthquakes. The presence and location of certain fossil types indicate the order in which rock layers were formed.</p>	<p>SE/TE: Earthquakes, 210 uBe a Scientist: Earthquake Evidence, 210 Quest Kickoff: Dig for the Truth, 244-245 uConnect Lab: Where are fossils found in rock layers?, 246 uInvestigate Lab: What patterns do fossils follow?, 249 Rock Formations, 251 A Colorful Change, 252 STEM Math Connection: Canyonlands, 255 uInvestigate Lab: How can rock layers show change?, 259 Fossil Clues on Earth, 260 Index Fossils, 261 Crosscutting Concepts Toolbox: Patterns, 261 Visual Literacy Connection: How can layers of rock change?, 262-263 Comparing Rock Layers, 264 uBe a Scientist: Be a Rock Hound, 264 Quest Findings: Dig for the Truth, 268 Topic Assessment, 270-271 Evidence-Based Assessment, 272-273 uDemonstrate Lab: How can you correlate rock layers?, 274-275</p> <p>Realize™ Digital Resources: Earth’s Natural Hazards >Lesson 1, Tectonic Hazards>Interactivity: Tectonic Events History of the Planet Earth >Lesson 1, Patterns in Fossils and Rock Formations>Video: Patterns in Fossils and Rock Formations;>Interactivity: Patterns in Fossils and Rock Formations;>Quiz: Patterns in Fossils and Rock Formations >Lesson 2, Evidence of Change from Fossils and Rock Formations>Video: Evidence of Change from Fossils and Rock Formations;>Interactivity: Evidence of Change from Fossils and Rock Formations;>Quiz: Evidence of Change from Fossils and Rock Formations</p>

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Science and Engineering Practices	
<p>Constructing Explanations and Designing Solutions Identify the evidence that supports particular points in an explanation.</p>	<p>SE/TE: uBe a Scientist: Earthquake Evidence, 210 uConnect Lab: Where are fossils found in rock layers?, 246 uInvestigate Lab: What patterns do fossils follow?, 249 Quest Check-In: Existing Evidence, 254 uInvestigate Lab: How can rock layers show change?, 259 Quest Check-In Lab: What does a core sample tell us?, 266-267 Evidence-Based Assessment, 272-273 uDemonstrate Lab: How can you correlate rock layers?, 274-275 Science Practices: Constructing Explanations, EM6</p> <p>Realize™ Digital Resources: History of the Planet Earth >Lesson 1, Patterns in Fossils and Rock Formations>Video: Patterns in Fossils and Rock Formations;>Interactivity: Patterns in Fossils and Rock Formations >Lesson 2, Evidence of Change from Fossils and Rock Formations>Video: Evidence of Change from Fossils and Rock Formations;>Interactivity: Evidence of Change from Fossils and Rock Formations</p>

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Crosscutting Concepts	
<p>Patterns Patterns can be used as evidence to support an explanation.</p>	<p>SE/TE: uConnect Lab: Where are fossils found in rock layers?, 246 uInvestigate Lab: What patterns do fossils follow?, 249 uInvestigate Lab: How can rock layers show change?, 259 Crosscutting Concepts Toolbox: Patterns, 261 Quest Check-In Lab: What does a core sample tell us?, 266-267 uDemonstrate Lab: How can you correlate rock layers?, 274-275</p> <p>Realize™ Digital Resources: History of the Planet Earth >Lesson 1, Patterns in Fossils and Rock Formations;>Video: Patterns in Fossils and Rock Formations;>Interactivity: Patterns in Fossils and Rock Formations;>Quiz: Patterns in Fossils and Rock Formations</p>

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4-ESS2 Earth and Space Science	
Performance Standard 4-ESS2-1	
Make observations and metric measurements to provide evidence of the effects of weathering and the rate of erosion by water, ice, wind, or vegetation.	<p>SE/TE: uConnect Lab: How can rain affect land?, 154 uInvestigate Lab: How can a rock wear away?, 185 uBe a Scientist: Weathering, 186 STEM Quest Check-In Lab: How does water affect landforms?, 192</p> <p>Realize™ Digital Resources: Earth's Features >Lesson 4, Weathering and Erosion>Interactivity: Our Changing Landscape</p>
Disciplinary Core Ideas	
ESS2.A Earth Materials and Systems Rainfall helps to shape the land and affects the types of living things found in a region. Water, ice, wind, living organisms, and gravity break rocks, soils, and sediments into smaller particles and move them around.	<p>SE/TE: uConnect Lab: How can rain affect land?, 154 uInvestigate Lab: How can a rock wear away?, 185 Chemical Weathering, 186 Physical Weathering, 187 Erosion, 188 Movement of Particles, 189 Deposition, 190 Changes in Landforms over Time, 191 >Lesson 4 Check, 191 STEM Quest Check-In Lab: How does water affect landforms?, 192 Extreme Science: Powerful Plants, 193 Topic Assessment, 196-197</p> <p>Realize™ Digital Resources: Earth's Features >Lesson 4, Weathering and Erosion>Video: Weathering and Erosion;> Interactivity: Our Changing Landscape;>Quiz: Weathering and Erosion</p>
ESS2.E Biogeology Living things affect the physical characteristics of their regions.	<p>SE/TE: Extreme Science: Powerful Plants, 193</p> <p>Realize™ Digital Resources: Earth's Features >Lesson 4, Weathering and Erosion>Interactivity: Our Changing Landscape</p>

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Science and Engineering Practices	
<p>Planning and Carrying Out Investigations Make observations to produce data to serve as the basis for evidence for an explanation of a phenomenon.</p>	<p>SE/TE: uConnect Lab: How can rain affect land?, 154 uInvestigate Lab: How can a rock wear away?, 185 uBe a Scientist: Weathering, 186 STEM Quest Check-In Lab: How does water affect landforms?, 192 Science Practices: Carry Out Investigations, EM1</p> <p>Realize™ Digital Resources: Earth's Features >Lesson 4, Weathering and Erosion>Interactivity: Our Changing Landscape</p>
Crosscutting Concepts	
<p>Cause and Effect Cause and effect relationships are routinely identified, tested, and used to explain change.</p>	<p>SE/TE: uConnect Lab: How can rain affect land?, 154 uInvestigate Lab: How can a rock wear away?, 185 Chemical Weathering, 186 Physical Weathering, 187 Erosion, 188 Movement of Particles, 189 Deposition, 190 Changes in Landforms over Time, 191 >Lesson 4 Check, 191 STEM Quest Check-In Lab: How does water affect landforms?, 192 Extreme Science: Powerful Plants, 193 Topic Assessment, 196-197 Volcanoes, 214 >Lesson 1 Check, 214 Science Practice Toolbox: Cause and Effect, 229</p> <p>Realize™ Digital Resources: Earth's Features >Lesson 4, Weathering and Erosion>Video: Weathering and Erosion;> Interactivity: Our Changing Landscape;>Quiz: Weathering and Erosion</p>

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Performance Expectation 4-ESS2-2	
Analyze and interpret data from maps to describe patterns of Earth’s features.	<p>SE/TE: ulnvestigate Lab: How do tools help us?, 157 Types of Maps, 159 Visual Literacy Connection: How can you see the same place in different ways?, 160-161 Patterns of Mountains, 168 Patterns of Earthquakes and Volcanoes, 169 Crosscutting Concepts Toolbox: Patterns, 169 Visual Literacy Connection: How can a physical map help me locate different landforms?, 170-171 Patterns Under the Ocean, 172 Solve it with Science: Where is the greatest earthquake risk?, 225</p> <p>Realize™ Digital Resources: Earth’s Features >Lesson 1, Maps and Data>Video: Maps and Data >Lesson 2, Patterns of Earth’s Features>Video: Patterns of Earth’s Features</p>
Disciplinary Core Ideas	
<p>ESS2.B: Plate Tectonic and Large-Scale System Interactions The locations of mountain ranges, deep ocean trenches, ocean floor structures, earthquakes, and volcanoes occur in patterns. Most earthquakes and volcanoes occur in bands that are often along the boundaries between continents and oceans. Major mountain chains form inside continents or near their edges. Maps can help locate the different land and water features areas of Earth.</p>	<p>SE/TE: ulnvestigate Lab: How do tools help us?, 157 Types of Maps, 159 Visual Literacy Connection: How can you see the same place in different ways?, 160-161 Quest Check-In: The Making of a Legend, 163 Patterns of Mountains, 168 Patterns of Earthquakes and Volcanoes, 169 Crosscutting Concepts Toolbox: Patterns, 169 Visual Literacy Connection: How can a physical map help me locate different landforms?, 170-171 Patterns Under the Ocean, 172 Quest Check-In: A Changing Landscape, 173 Earthquakes, 210 Solve it with Science: Where is the greatest earthquake risk?, 225</p> <p>Realize™ Digital Resources: Earth’s Features >Lesson 1, Maps and Data>Video: Maps and Data;>Quiz: Maps and Data >Lesson 2, Patterns of Earth’s Features> Video: Patterns of Earth’s Features;>Quiz: Patterns of Earth’s Features</p>

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Science and Engineering Practices	
<p>Analyzing and Interpreting Data Analyze and Interpret data to make sense of phenomena using logical reasoning.</p>	<p>SE/TE: <ul style="list-style-type: none"> Investigate Lab: How do tools help us?, 157 Science Practice Toolbox: Construct Explanations, 159 Visual Literacy Connection: How can you see the same place in different ways?, 160-161 Science Practice Toolbox: Cite Evidence, 168 Patterns of Earthquakes and Volcanoes, 169 Visual Literacy Connection: How can a physical map help me locate different landforms?, 170-171 Patterns Under the Ocean, 172 Solve it with Science: Where is the greatest earthquake risk?, 225 Science Practices: Analyzing and Interpreting Data, EM4 </p> <p>Realize™ Digital Resources: Earth's Features >Lesson 1, Maps and Data>Video: Maps and Data >Lesson 2, Patterns of Earth's Features>Video: Patterns of Earth's Features</p>
Crosscutting Concepts	
<p>Patterns Patterns can be used as evidence to support and explanation.</p>	<p>SE/TE: <ul style="list-style-type: none"> Patterns of Mountains, 168 Patterns of Earthquakes and Volcanoes, 169 Crosscutting Concepts Toolbox: Patterns, 169 Patterns Under the Ocean, 172 >Lesson 2 Check, 172 Quest Check-In: A Changing Landscape, 173 Solve it with Science: Where is the greatest earthquake risk?, 225 </p> <p>Realize™ Digital Resources: Earth's Features >Lesson 2, Patterns of Earth's Features>Video: Patterns of Earth's Features;>Interactivity: The Shape of the Land;> Quiz: Patterns of Earth's Features</p>

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4-ESS3 Earth and Human Activity	
Performance Standard 4-ESS3-1	
<p>Obtain and combine information to describe that energy and fuels are derived from natural resources and their uses affect the environment.</p>	<p>SE/TE: uConnect Lab: How are energy resources used?, 54 Using Energy/Fuels, 58 Fossil Fuels/Coal, 66 Crosscutting Concepts Toolbox: Energy and Matter, 66 Petroleum, 67 Visual Literacy Connection: Where do fossil fuels come from?, 68-69 Natural Gas, 70 Visual Literacy Connection: Is renewable energy all around?, 76-77 Renewable Fuel/Hydropower, 78 Crosscutting Concepts Toolbox: Energy and Matter, 78 Energy That Does Not Run Out, 79 Impact of Energy Production, 86 Impact of Obtaining Fuel, 87 Science Practice Toolbox: Obtaining and Evaluating Information, 87 Visual Literacy Connection: How can the use of energy damage ecosystems?, 88-89 Impact of Transporting Fuels, 90 Topic Assessment, 94-95 Evidence-Based Assessment, 96-97 uDemonstrate Lab: How can energy resource usage change?, 98-99</p> <p>Realize™ Digital Resources: Human Uses of Energy >Lesson 1, Energy Conversions>Video: Natural Resources and Energy;>Quiz: Energy Conversions >Lesson 2, Nonrenewable Energy Sources>Video: Nonrenewable Energy Sources;>Interactivity: Fossil Fuels;>Quiz: Nonrenewable Energy Sources >Lesson 3, Renewable Energy Sources>Video: Renewable Energy Sources;>Interactivity: Natural Resources;>Quiz: Renewable Energy Sources >Lesson 4, Environmental Impacts of Energy Use>Video: Environmental Impacts of Using Energy;>Interactivity: Human Activity and the Environment;>Quiz: Environmental Impacts of Energy Use</p>

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Disciplinary Core Ideas	
<p>ESS3.A Natural Resources Energy and fuels that humans use are derived from natural sources, and their use affects the environment in multiple ways. Some resources are renewable over time, and others are not.</p>	<p>SE/TE: uConnect Lab: How are energy resources used?, 54 Using Energy/Fuels, 58 Fossil Fuels/Coal, 66 Crosscutting Concepts Toolbox: Energy and Matter, 66 Petroleum, 67 Visual Literacy Connection: Where do fossil fuels come from?, 68-69 Natural Gas, 70 Visual Literacy Connection: Is renewable energy all around?, 76-77 Renewable Fuel/Hydropower, 78 Crosscutting Concepts Toolbox: Energy and Matter, 78 Energy That Does Not Run Out, 79 Impact of Energy Production, 86 Impact of Obtaining Fuel, 87 Visual Literacy Connection: How can the use of energy damage ecosystems?, 88-89 Impact of Transporting Fuels, 90 Topic Assessment, 94-95 Evidence-Based Assessment, 96-97 uDemonstrate Lab: How can energy resource usage change?, 98-99</p> <p>Realize™ Digital Resources: Human Uses of Energy >Lesson 1, Energy Conversions>Video: Natural Resources and Energy;>Quiz: Energy Conversions >Lesson 2, Nonrenewable Energy Sources>Video: Nonrenewable Energy Sources;>Interactivity: Fossil Fuels;>Quiz: Nonrenewable Energy Sources >Lesson 3, Renewable Energy Sources>Video: Renewable Energy Sources;>Interactivity: Natural Resources;>Quiz: Renewable Energy Sources >Lesson 4, Environmental Impacts of Energy Use>Video: Environmental Impacts of Using Energy;>Interactivity: Human Activity and the Environment;>Quiz: Environmental Impacts of Energy Use</p>

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Science and Engineering Practices	
<p>Obtaining, Evaluating, and Communicating Information Obtain and combine information from books and other reliable media to explain phenomena.</p>	<p>SE/TE: uConnect Lab: How are energy resources used?, 54 Using Energy/Fuels, 58 Fossil Fuels/Coal, 66 Crosscutting Concepts Toolbox: Energy and Matter, 66 Petroleum, 67 Visual Literacy Connection: Where do fossil fuels come from?, 68-69 Natural Gas, 70 Visual Literacy Connection: Is renewable energy all around?, 76-77 Renewable Fuel/Hydropower, 78 Crosscutting Concepts Toolbox: Energy and Matter, 78 Energy That Does Not Run Out, 79 Impact of Energy Production, 86 Impact of Obtaining Fuel, 87 Science Practice Toolbox: Obtaining and Evaluating Information, 87 Visual Literacy Connection: How can the use of energy damage ecosystems?, 88-89 Impact of Transporting Fuels, 90 Topic Assessment, 94-95 Evidence-Based Assessment, 96-97 uDemonstrate Lab: How can energy resource usage change?, 98-99 Science Practices: Habits of Mind, EM8</p> <p>Realize™ Digital Resources: Human Uses of Energy >Lesson 1, Energy Conversions>Video: Natural Resources and Energy;>Quiz: Energy Conversions >Lesson 2, Nonrenewable Energy Sources>Video: Nonrenewable Energy Sources;>Interactivity: Fossil Fuels;>Quiz: Nonrenewable Energy Sources >Lesson 3, Renewable Energy Sources>Video: Renewable Energy Sources;>Interactivity: Natural Resources;>Quiz: Renewable Energy Sources >Lesson 4, Environmental Impacts of Energy Use>Video: Environmental Impacts of Using Energy;>Interactivity: Human Activity and the Environment;>Quiz: Environmental Impacts of Energy Use</p>

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Crosscutting Concepts	
<p>Cause and Effect Cause and effect relationships are routinely identified and used to explain change.</p>	<p>SE/TE: Impact of Energy Production, 86 Impact of Obtaining Fuel, 87 Visual Literacy Connection: How can the use of energy damage ecosystems?, 88-89 Impact of Transporting Fuels, 90 Evidence-Based Assessment, 96-97</p> <p>Realize™ Digital Resources: Human Uses of Energy >Lesson 4, Environmental Impacts of Energy Use>Video: Environmental Impacts of Using Energy;>Interactivity: Human Activity and the Environment;>Quiz: Environmental Impacts of Energy Use</p>
Performance Standard 4-ESS3-2	
<p>Generate and compare multiple solutions to reduce the impacts of natural Earth processes on humans.</p>	<p>SE/TE: uConnect Lab: How can you reduce the impact of rapidly sliding soil?, 206 Quest Check-In: Beware: Hot Ash!, 215 uEngineer It! Design STEM Warning!, 216-217 Quest Check-In: Water Warnings, 224 STEM uInvestigate lab: Where should you build an earthquake-safe structure?, 227 Plan It!, 228 >Lesson 3 Check, 231 STEM Quest Check-In Lab: How can you reduce hazard damage?, 232-233 Quest Findings: Protect the City! Hazard Incoming!, 234 STEM uDemonstrate Lab: How can homes be designed to be more earthquake resistant?, 240-241</p> <p>Realize™ Digital Resources: Earth's Natural Hazards >Lesson 3, Impacts of Natural Hazards>Virtual Lab: Withstanding Earth's Natural Hazards</p>

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Disciplinary Core Ideas	
<p>ESS3.B Natural Hazards A variety of hazards result from natural processes (e.g., earthquakes, tsunamis, volcanic eruptions). Humans cannot eliminate the hazards but can take steps to reduce their impacts.</p>	<p>SE/TE: Quest Kickoff: Protect the City! Hazard Incoming!, 204-205 Curriculum Connection, 208 Earthquakes, 210 Hazards of Earthquakes, 211 Quest Connection, 211 Visual Literacy Connection: What happens during a tsunami?, 212-213 Volcanoes, 214 Quest Check-In: Beware Hot Ash!, 215 Engineering Connection, 226 Long-Term Effects of Hazards, 229 When Hazards Strike, 231 Quest Findings: Protect the City! Hazard Incoming!, 234</p> <p>Realize™ Digital Resources: Earth's Natural Hazards >Lesson 1, Tectonic Hazards>Video: Tectonic Hazards;>Interactivity: Tectonic Events;>Quiz: Tectonic Hazards >Lesson 3, Impacts of Natural Hazards>Video: Impacts of Natural Hazards;>Virtual Lab: Withstanding Earth's Natural Hazards;>Quiz: Impacts of Natural Hazards</p>
Science and Engineering Practices	
<p>Constructing Explanations and Designing Solutions Generate and compare multiple solutions to a problem based on how well they meet the criteria and constraints of the design solution.</p>	<p>SE/TE: Quest Kickoff: Protect the City! Hazard Incoming!, 204-205 uConnect Lab: How can you reduce the impact of rapidly sliding soil?, 206 Quest Check-In: Beware Hot Ash!, 215 STEM Quest Check-In Lab: How can you reduce hazard damage?, 232-233 Quest Findings: Protect the City! Hazard Incoming!, 234 STEM uDemonstrate Lab: How can homes be designed to be more earthquake resistant?, 240-241 Engineering Practices: Designing Solutions: EM11</p> <p>Realize™ Digital Resources: Earth's Natural Hazards >Lesson 3, Impacts of Natural Hazards>Virtual Lab: Withstanding Earth's Natural Hazards</p>

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Crosscutting Concepts	
<p>Cause and Effect Cause and effect relationships are routinely identified, tested, and used to explain change.</p>	<p>SE/TE: Literacy Connection: Cause and Effect, 207 Curriculum Connection, 208 Earthquakes, 210 uBe a Scientist: Earthquake Evidence, 210 Hazards of Earthquakes, 211 Visual Literacy Connection: What happens during a tsunami?, 212-213 Volcanoes, 214 >Lesson 1 Check, 214 Engineering Connection, 226 Short-Term Effects of Hazards, 228 Long-Term Effects of Hazards, 229 Science Practice Toolbox: Cause and Effect, 229 Topic Assessment, 236-237 Evidence-Based Assessment, 238-239</p> <p>Realize™ Digital Resources: Earth's Natural Hazards >Lesson 1, Tectonic Hazards>Video: Tectonic Hazards;>Interactivity: Tectonic Events;>Quiz: Tectonic Hazards >Lesson 3, Impacts of Natural Hazards>Video: Impacts of Natural Hazards;> Quiz: Impacts of Natural Hazards</p>

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4-ET1 Engineering, Science, and the Application of Technology	
Performance Standard 4-ET1-1	
Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.	SE/TE: Quest Kickoff STEM: Let Plants and Animals Inspire You!, 278-279 STEM ulnvestigate Lab: How can you design a protective insect shell?, 309 Quest Check-In: Lobster Claws, 314 Quest Findings STEM: Let Plants and Animals Inspire You!, 326 Engineering Practices: Defining Problems, EM10
Disciplinary Core Ideas	
ETS1.A: Defining and Delimiting Engineering Problems Possible solutions to a problem are limited by available materials and resources (constraints). The success of a designed solution is determined by considering the desired features of a solution (criteria). Different proposals for solutions can be compared on the basis of how well each one meets the specified criteria for success or how well each takes the constraints into account.	SE/TE: Engineering Practices Toolbox: Design Solutions, 139 Quest Kickoff STEM: Let Plants and Animals Inspire You!, 278-279 STEM ulnvestigate Lab: How can you design a protective insect shell?, 309 Quest Check-In: Lobster Claws, 314 Quest Findings STEM: Let Plants and Animals Inspire You!, 326 Engineering Practices: Designing Solutions, EM11 Realize™ Digital Resources: Human Body Systems >Lesson 3, Nervous System>Virtual Lab: Building a System
Science and Engineering Practices	
Asking Questions and Defining Problems Define a simple design problem that can be solved through the development of an object, tool, process, or system and includes several criteria for success and constraints on materials, time, or cost.	SE/TE: Quest Kickoff STEM: Let Plants and Animals Inspire You!, 278-279 STEM ulnvestigate Lab: How can you design a protective insect shell?, 309 Quest Check-In: Lobster Claws, 314 Quest Findings STEM: Let Plants and Animals Inspire You!, 326 Engineering Practices: Defining Problems, EM10

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Performance Standard 4-ETS1-2	
Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.	SE/TE: uConnect Lab: How can you reduce the impact of rapidly sliding soil?, 206 Quest Check-In: Beware: Hot Ash!, 215 Lesson 3 Check, 231 STEM Quest Check-In Lab: How can you reduce hazard damage?, 232-233 Quest Findings: Protect the City! Hazard Incoming!, 234
Disciplinary Core Ideas	
ETS1.B: Developing Possible Solutions Research on a problem should be carried out before beginning to design a solution. Testing a solution involves investigating how well it performs under a range of likely conditions At whatever stage, communicating with peers about proposed solutions is an important part of the design process, and shared ideas can lead to improved designs.	SE/TE: uInvestigate Lab: How can a rock wear away?, 185 STEM Quest Check-In Lab: How does water affect landforms?, 192 Quest Check-In: Beware: Hot Ash!, 215 STEM Quest Check-In Lab: How can you reduce hazard damage?, 232-233 Quest Findings: Protect the City! Hazard Incoming!, 234 Realize™ Digital Resources: Earth's Natural Hazards uEngineer It! Interactivity: Bridging the Gap
Science and Engineering Practices	
Constructing Explanations and Designing Solutions Generate and compare multiple solutions to a problem based on how well they meet the criteria and constraints of the design problem.	SE/TE: uConnect Lab: How can you reduce the impact of rapidly sliding soil?, 206 Quest Check-In: Beware: Hot Ash!, 215 Lesson 3 Check, 231 STEM Quest Check-In Lab: How can you reduce hazard damage?, 232-233 Quest Findings: Protect the City! Hazard Incoming!, 234 Engineering Practices: Designing Solutions, EM11 Engineering Practices: Optimizing Solutions, EM13

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To the
North Dakota Science Content Standards 2019 for Grade 4**

North Dakota Science Content Standards Grade 4	Elevate Science Grade 4, ©2019
Performance Standard 4-ET1-3	
Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.	SE/TE: uConnect Lab: How can you reduce the impact of rapidly sliding soil?, 206 Quest Check-In: Beware: Hot Ash!, 215 >Lesson 3 Check, 231 STEM Quest Check-In Lab: How can you reduce hazard damage?, 232-233 Quest Findings: Protect the City! Hazard Incoming!, 234
Disciplinary Core Ideas	
ETS1.B: Developing Possible Solutions Tests are often designed to identify failure points or difficulties, which suggest the elements of the design that need to be improved.	SE/TE: uConnect Lab: How can you reduce the impact of rapidly sliding soil?, 206 Quest Check-In: Beware: Hot Ash!, 215 >Lesson 3 Check, 231 STEM Quest Check-In Lab: How can you reduce hazard damage?, 232-233 Quest Findings: Protect the City! Hazard Incoming!, 234EM11
ETS1.C: Optimizing the Design Solution Different solutions need to be tested in order to determine which of them best solves the problem, given the criteria and the constraints.	SE/TE: uConnect Lab: How can you reduce the impact of rapidly sliding soil?, 206 Quest Check-In: Beware: Hot Ash!, 215 >Lesson 3 Check, 231 STEM Quest Check-In Lab: How can you reduce hazard damage?, 232-233 Quest Findings: Protect the City! Hazard Incoming!, 234
Science and Engineering Practices	
Planning and Carrying Out Investigations Plan and conduct an investigation collaboratively to produce data to serve as the basis for evidence, using fair tests in which variables are controlled and the number of trials considered.	SE/TE: uConnect Lab: How can you reduce the impact of rapidly sliding soil?, 206 Quest Check-In: Beware: Hot Ash!, 215 >Lesson 3 Check, 231 STEM Quest Check-In Lab: How can you reduce hazard damage?, 232-233 Quest Findings: Protect the City! Hazard Incoming!, 234

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