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A Correlation of

South Carolina Elevate Science Grade 7, ©2023

To the

South Carolina College- and Career-Ready Science Standards 2021 Grade 7

Prepared by Savvas Learning Company, formerly Pearson K12 Learning

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Introduction

The following document demonstrates how the ***South Carolina Elevate Science ©2023*** program supports the South Carolina College- and Career-Ready Science Standards 2021. Correlation references include the Student Edition, Teacher Edition, and online Realize™ digital resources.

Savvas Learning Company, LLC is proud to introduce ***South Carolina Elevate Science*** Middle Grades – where exploration is the heart of science! Designed to address the rigors of new science standards, students will experience science up close and personal, using real-world, relevant phenomena to solve project-based problems. Our newest program 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 arguments. The blended print and digital curriculum covers all Next Generation Science Standards at every grade level.

South Carolina Elevate Science helps teachers transform learning, promote innovation, and manage their classroom.

Transform science classrooms by immersing students in active, three-dimensional learning.
South Carolina Elevate Science engages students with real-world tasks, open-ended Quests, uDemonstrate performance-based labs, and in the engineering/design process with uEngineer It! investigations.

- A new 3-D learning model enhances best practices.
- Engineering-focused features infuse STEM learning.
- Phenomena-based activities put students at the heart of a Quest for knowledge.

Innovate learning by focusing on 21st century skills. Students are encouraged to think, collaborate, and innovate! With *South Carolina Elevate Science*, students explore STEM careers, experience engineering activities, and discover our scientific and technological world. The content, strategies, and resources of South Carolina Elevate Science equip the science classroom for scientific inquiry and science and engineering practices.

- Problem-based learning Quests put students on a journey of discovery.
- STEM connections help integrate curriculum.
- Coding and innovation engage students and build 21st century skills.

Manage the classroom with confidence.
Teachers will lead their class in asking questions and engaging in argumentation. Evidence-based assessments provide new options for monitoring student understanding.

- Professional development offers practical point-of-use support.
- Embedded standards in the program allow for easy integration.
- ELL and differentiated instruction strategies help instructors reach every learner.
- Interdisciplinary connections relate science to other subjects.

Designed for today's classroom, preparing students for tomorrow's world. ***South Carolina Elevate Science*** promises to:

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

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Crosscutting Concepts	
Energy and Matter The transfer of energy can be tracked as energy flows through a designed or natural system.	**Realize™ Digital Resources:** **Topic 3: Chemical Reactions** >Lesson 1: Mixtures and Solutions>Quest Check-In Lab: Energy Salts >Lesson 4: Producing Useful Materials>Quest Check-In Lab: Heat It Up or Ice It Down
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Scale, Proportion, and Quantity Proportional relationships (e.g. speed as the ratio of distance traveled to time taken) among different types of quantities provide information about the magnitude of properties and processes.	**SE/TE:** Math Toolbox: Mass, Speed, and Kinetic Energy, 18 Topic 1 Review and Assess, #9, 44 **Realize™ Digital Resources:** **Topic 1: Energy** >Lesson 2: Kinetic Energy and Potential Energy>uInvestigate Lab: Mass, Velocity, and Kinetic Energy;>Interactivity: Racing for Kinetic Energy ;>uInvestigate Lab: Graphing Kinetic Energy
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Performance Expectation	
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7-LS1-6. Construct a scientific explanation based on evidence for the role of photosynthesis in the cycling of matter and flow of energy into and out of organisms.	**SE/TE:** Living Things and Energy, 151-153 Photosynthesis, 154-155 Case Study: Florida's Vital Seagrass in Peril, 160-161 Topic 4 Review and Assess, #5, #7, 170 uDemonstrate Lab: Cycling Energy and Matter, 174-177 **Realize™ Digital Resources:** **Topic 4: Cell Processes** >Lesson 1: Photosynthesis>Interactivity: Making Food for Cells
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LS1.C: Organization for Matter and Energy Flow in Organisms	
Plants, algae (including phytoplankton), and many microorganisms use the energy from light to make sugars (food) from carbon dioxide from the atmosphere and water through the process of photosynthesis, which also releases oxygen. These sugars can be used immediately or stored for growth or later use.	**SE/TE:** Living Things and Energy, 151 Making and Obtaining Food, 153 Photosynthesis, 154-155 Expressing Photosynthesis, 156 Reading Check: Determine Central Ideas, 156 Topic 4 Review and Assess, #4, 170 **Realize™ Digital Resources:** **Topic 4: Cell Processes** >Lesson 1: Photosynthesis>Interactivity: Making Food for Cells
Within individual organisms, food moves through a series of chemical reactions in which it is broken down and rearranged to form new molecules, to support growth, or to release energy. In most animals and plants, oxygen reacts with carbon- containing molecules (sugars) to provide energy and produce carbon dioxide; anaerobic bacteria achieve their energy needs in other chemical processes that do not require oxygen.	**SE/TE:** Living Things and Energy, 151 Expressing Photosynthesis, 156 Reading Check: Determine Central Ideas, 156 Topic 4 Review and Assess, #4, 170

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Constructing Explanations and Designing Solutions Construct a scientific explanation based on valid and reliable evidence obtained from sources (including the students' own experiments) and the assumption that theories and laws that describe the natural world operate today as they did in the past and will continue to do so in the future.	**SE/TE:** Case Study: Florida's Vital Seagrass in Peril, 160-161 Topic 4 Review and Assess, #5, #7, 170 **Realize™ Digital Resources:** **Topic 4: Cell Processes** >Lesson 1: Photosynthesis>Interactivity: Making Food for Cells; >uInvestigate Lab: Energy from the Sun
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Performance Expectation	
7-LS1-7. Develop a model to describe how food molecules in plants and animals are rearranged through chemical reactions forming new molecules that support growth and/or release energy as this matter moves through an organism.	**SE/TE:** Energy and Cellular Respiration, 163-166 Model It!, 165 Fermentation, 167 Lesson 2 Check, #2, 168 Topic 4 Review and Assess, #16, 171 uDemonstrate Lab: Cycling Energy and Matter, 174-177 **Realize™ Digital Resources:** **Topic 4: Cell Processes** >Lesson 2: Cellular Respiration>uInvestigate Lab: Exhaling Carbon Dioxide
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Within individual organisms, food moves through a series of chemical reactions in which it is broken down and rearranged to form new molecules, to support growth, or to release energy.	**SE/TE:** Food for Energy, Figure 1, 163 Using Energy, 163 Cellular Respiration Process, 164 Releasing Energy, Figure 2: Integrate Information, 164 Lesson 2 Check, #4, 168 **Realize™ Digital Resources:** **Topic 4: Cell Processes** >Lesson 2: Cellular Respiration>Interactivity: Making Food for Cells
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Developing and Using Models Develop a model to describe unobservable mechanisms.	**SE/TE:** Model It!, 165 Lesson 2 Check, #2, 168 Topic 4 Review and Assess, #16, 171 uDemonstrate Lab: Cycling Energy and Matter, 174-177 **Realize™ Digital Resources:** **Topic 4: Cell Processes** >Lesson 2: Cellular Respiration>uInvestigate Lab: Exhaling Carbon Dioxide
Crosscutting Concepts	
Energy and Matter Matter is conserved because atoms are conserved in physical and chemical processes.	**SE/TE:** Comparing Two Energy Processes, 166 Math Toolbox: Conservation of Matter in the Balance, 166 Lesson 2 Check, #5, 168 **Realize™ Digital Resources:** **Topic 4: Cell Processes** >Lesson 2: Cellular Respiration>Quest Check-In Interactivity: Cycling of Matter in the Greenhouse

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Ecosystems: Interactions, Energy, and Dynamics (LS2)	
Performance Expectation	
7-LS2-1. Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem.	**SE/TE:** Math Toolbox: Graphing Population Changes, 186 Factors That Limit Population Growth, 188 Lesson 1 Check, #2, #3, 189 Case Study: The Case of the Disappearing Cerulean Warbler, 190-191 Topic 5 Review and Assess, #5, 212 Population Size, 229 Math Toolbox: Predator-Prey Interactions, 229 Lesson 1 Check, #3, 233 Topic 6 Evidence-Based Assessment, 268-269 uDemonstrate Lab: Changes in an Ecosystem, 270-273 **Realize™ Digital Resources:** **Topic 5: Ecosystems** >Lesson 1: Living Things and the Environment>Interactivity: An Ecological Mystery;>uInvestigate Lab: Elbow Room **Topic 6: Populations, Communities, and Ecosystems** >Lesson 1: Interactions in Ecosystems>Interactivity: Life on the Reef;>Worksheet: Life on the Reef
Disciplinary Core Ideas	
LS2.A: Interdependent Relationships in Ecosystems	
Organisms, and populations of organisms, are dependent on their environmental interactions both with other living things and with nonliving factors.	**SE/TE:** Organisms and Habitats, 183 Biotic Factors, 184 Abiotic Factors, 184 Lesson 1 Check, #4, 189 **Realize™ Digital Resources:** **Topic 5: Ecosystems** >Lesson 1: Living Things and the Environment>Interactivity: There's No Place Like Home;>uInvestigate Lab: Elbow Room

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In any ecosystem, organisms and populations with similar requirements for food, water, oxygen, or other resources may compete with each other for limited resources, access to which consequently constrains their growth and reproduction.	**SE/TE:** Factors That Limit Population Growth, 188 Topic 5 Review and Assess, #5, 212 Competition, 227 Reading Check: Summarize, 229 Lesson 1 Check, #3, 233 **Realize™ Digital Resources:** **Topic 5: Ecosystems** >Lesson 1: Living Things and the Environment>uInvestigate Lab: Elbow Room
Growth of organisms and population increases are limited by access to resources.	**SE/TE:** Factors That Limit Population Growth, 188 Reading Check: Summarize Text, 188 Topic 5 Review and Assess, #5, 212 Population Size, 229 Lesson 1 Check, #3, 233 Topic 6 Evidence-Based Assessment, 268-269 **Realize™ Digital Resources:** **Topic 5: Ecosystems** >Lesson 1: Living Things and the Environment>uInvestigate Lab: Elbow Room
Science and Engineering Practices	
Analyzing and Interpreting Data Analyze and interpret data to provide evidence for phenomena.	**SE/TE:** Math Toolbox: Graphing Population Changes, 186 Lesson 1 Check, #2, #3, 189 Case Study: The Case of the Disappearing Cerulean Warbler, 190-191 Math Toolbox: Predator-Prey Interactions, 229 Lesson 1 Check, #3, 233 Topic 6 Evidence-Based Assessment, 268-269 uDemonstrate Lab: Changes in an Ecosystem, 270-273 **Realize™ Digital Resources:** **Topic 5: Ecosystems** >Lesson 1: Living Things and the Environment>Interactivity: An Ecological Mystery **Topic 6: Populations, Communities, and Ecosystems** >Lesson 1: Interactions in Ecosystems>Interactivity: Life on the Reef;>Worksheet: Life on the Reef

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Crosscutting Concepts	
Cause and Effect Cause-and-effect relationships may be used to predict phenomena in natural or designed systems.	**SE/TE:** Limited Space, Figure 5: CCC Cause and Effect, 188 Reading Check: Summarize Text, 188 Lesson 1 Check, #4, 189 Quest Check-In, 189 Case Study: The Case of the Disappearing Cerulean Warbler, 190-191 Reading Check: Summarize, 229 Lesson 1 Check, #3, #5, 233 Topic 6 Evidence-Based Assessment, 268-269 uDemonstrate Lab: Changes in an Ecosystem, 270-273 **Realize™ Digital Resources:** **Topic 5: Ecosystems** >Lesson 1: Living Things and the Environment>Interactivity: An Ecological Mystery;>uInvestigate Lab: Elbow Room **Topic 6: Populations, Communities, and Ecosystems** >Lesson 1: Interactions in Ecosystems>Interactivity: Life on the Reef;>Worksheet: Life on the Reef
Performance Expectation	
7-LS2-2. Construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems.	**SE/TE:** Competition, 227 Predation, 228 Symbiotic Relationships, 230-232 Lesson 1 Check, #4, 233 Topic 6 Review and Assess, #5, 266 **Realize™ Digital Resources:** **Topic 6: Populations, Communities, and Ecosystems** >Lesson 1: Interactions in Ecosystems>Interactivity: Symbiotic Relationships;>uInvestigate Lab: Competition and Predation;>Interactivity: Shared Interactions

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Disciplinary Core Ideas	
LS2.A: Interdependent Relationships in Ecosystems	
Similarly, predatory interactions may reduce the number of organisms or eliminate whole populations of organisms. Mutually beneficial interactions, in contrast, may become so interdependent that each organism requires the other for survival. Although the species involved in these competitive, predatory, and mutually beneficial interactions vary across ecosystems, the patterns of interactions of organisms with their environments, both living and nonliving, are shared.	**SE/TE:** Competition, 227 Predation, 228 Population Size, 229 Reading Check: Summarize, 229 Math Toolbox: Predator-Prey Interactions, 229 Mutualism, 230 **Realize™ Digital Resources:** **Topic 6: Populations, Communities, and Ecosystems** >Lesson 1: Interactions in Ecosystems>Interactivity: Symbiotic Relationships;>uInvestigate Lab: Competition and Predation
Science and Engineering Practices	
Constructing Explanations and Designing Solutions Construct an explanation that includes qualitative or quantitative relationships between variables that predict phenomena.	**SE/TE:** Lesson 1 Check, #4, 233 Topic 6 Review and Assess, #5, 266 **Realize™ Digital Resources:** **Topic 6: Populations, Communities, and Ecosystems** >Lesson 1: Interactions in Ecosystems>Interactivity: Symbiotic Relationships;>uInvestigate Lab: Competition and Predation;>Interactivity: Shared Interactions
Crosscutting Concepts	
Patterns Patterns can be used to identify cause- and-effect relationships.	**SE/TE:** Lesson 1 Check, #5, 233 **Realize™ Digital Resources:** **Topic 6: Populations, Communities, and Ecosystems** >Lesson 1: Interactions in Ecosystems>uInvestigate Lab: Competition and Predation

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Performance Expectation	
7-LS2-3. Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem.	**SE/TE:** uConnect Lab: Every Breath You Take, 180-181 Energy and Matter Transfer, 196 Model It!: Food Web, 197 Energy Pyramids, 198 Lesson 2 Check, #1, 200 Model It!: Where does your water come from?, 204 Water Cycle, 204-205 Carbon and Oxygen Cycles, 206-207 The Carbon and Oxygen Cycles, Figure 4: SEP Develop Models, 206-207 Nitrogen Cycle in Ecosystems, 208-209 Figure 5: Nitrogen Cycle, 208 Lesson 3 Check, #3, 210 Topic 5 Review and Assess, #8, #9, #17, 212-213 Topic 5 Evidence-Based Assessment, 214-215 uDemonstrate Lab: Last Remains, 216-219 **Realize™ Digital Resources:** **Topic 5: Ecosystems** >Lesson 2: Energy Flow in Ecosystems>uInvestigate Lab: Observing Decomposition >Lesson 3: Cycles of Matter>uInvestigate Lab: Following Water
Disciplinary Core Ideas	
LS2.B: Cycle of Matter and Energy Transfer in Ecosystems	
Food webs are models that demonstrate how matter and energy is transferred between producers, consumers, and decomposers as the three groups interact within an ecosystem. Transfers of matter into and out of the physical environment occur at every level. Decomposers recycle nutrients from dead plant or animal matter back to the soil in terrestrial environments or to the water in aquatic environments.	**SE/TE:** Decomposers, 195 Food Webs, 196 Model It!: Food Web, 197 Lesson 2 Check, #1, 200 Water Cycle, 204 Carbon Cycle, 206 Oxygen Cycle, 206 Nitrogen Cycle in Ecosystems, 208 Topic 5 Review and Assess, #9, #17, 212-213 Topic 5 Evidence-Based Assessment, 214-215 uDemonstrate Lab: Last Remains, 216-219 **Realize™ Digital Resources:** **Topic 5: Ecosystems** >Lesson 2: Energy Flow in Ecosystems>uInvestigate Lab: Observing Decomposition >Lesson 3: Cycles of Matter>Interactivity: Cycles of Matter

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The atoms that make up the organisms in an ecosystem are cycled repeatedly between the living and nonliving parts of the ecosystem.	**SE/TE:** Energy and Matter Transfer, 196 Conservation of Matter and Energy, 203 Topic 5 Review and Assess, #16, 213 Topic 5 Evidence-Based Assessment, 214-215
Science and Engineering Practices	
Developing and Using Models Develop a model to describe phenomena.	**SE/TE:** uConnect Lab: Every Breath You Take, 180-181 Model It!: Food Web, 197 Model It!: Where does your water come from?, 204 The Carbon and Oxygen Cycles, Figure 4: SEP Develop Models, 206-207 Lesson 3 Check, #3, 210 Topic 5 Review and Assess, #9, 212 uDemonstrate Lab: Last Remains, 216-219 **Realize™ Digital Resources:** **Topic 5: Ecosystems** >Lesson 2: Energy Flow in Ecosystems>uInvestigate Lab: Observing Decomposition >Lesson 3: Cycles of Matter>uInvestigate Lab: Following Water
Crosscutting Concepts	
Energy and Matter The transfer of energy can be tracked as energy flows through a natural system.	**SE/TE:** Connect It!, 192 Energy Pyramid, 198 Energy Pyramid, Figure 5: Use Mathematics, 198 Math Toolbox: Relationships in an Energy Pyramid, 199 Lesson 2 Check, #3, 200 Figure 5: Nitrogen Cycle, 208 Lesson 3 Check, #5, 210 Topic 5 Review and Assess, #8, 212 **Realize™ Digital Resources:** **Topic 5: Ecosystems** >Lesson 2: Energy Flow in Ecosystems>Interactivity: Energy Roles and Flows;>uInvestigate Lab: Observing Decomposition

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Performance Expectation	
7-LS2-4. Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.	**SE/TE:** uConnect Lab: How Communities Change, 222-223 Succession, 235-236 Literacy Connection: Write Arguments, 236 Model It!: Pioneers, 237 Ecosystem Disruptions and Population Survival, 238 Lesson 2 Check, #2, #3, 240 The Value of Biodiversity, 243 Ecological Value, 245 Damaging Biodiversity, 250 Lesson 3 Check, #3, #5, 253 Case Study: The Dependable Elephant, 254-255 Topic 6 Evidence-Based Assessment, 268-269 uDemonstrate Lab: Changes in an Ecosystem, 270-273 **Realize™ Digital Resources:** **Topic 6: Populations, Communities, and Ecosystems** >Lesson 2: Dynamic and Resilient Ecosystems>Interactivity: Succession in an Ecosystem;>Interactivity: A Butterfly Mystery >Lesson 3: Biodiversity>uInvestigate Lab: Modeling Keystone Species
Disciplinary Core Ideas	
LS2.C: Ecosystem Dynamics, Functioning, and Resilience	
Ecosystems are dynamic in nature; their characteristics can vary over time. Disruptions to any physical or biological component of an ecosystem can lead to shifts in all its populations.	**SE/TE:** uConnect Lab: How Communities Change, 222-223 Succession, 235-236 Model It!: Pioneers, 237 Ecosystem Disruptions and Population Survival, 238 Changes to Populations, Figure 4, 238 Lesson 2 Check, #2, #3, 240 Ecological Value, 245 Damaging Biodiversity, 250 Topic 6 Evidence-Based Assessment, 268-269 **Realize™ Digital Resources:** **Topic 6: Populations, Communities, and Ecosystems** >Lesson 2: Dynamic and Resilient Ecosystems>Interactivity: Succession in an Ecosystem;>Interactivity: A Butterfly Mystery >Lesson 3: Biodiversity>uInvestigate Lab: Modeling Keystone Species

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Science and Engineering Practices	
Engaging in Argument from Evidence Construct an oral and written argument supported by empirical evidence and scientific reasoning to support or refute an explanation or a model for a phenomenon or a solution to a problem.	**SE/TE:** Literacy Connection: Write Arguments, 236 Lesson 2 Check, #2, 240 The Value of Biodiversity, 243 Damaging Biodiversity, 250 Lesson 3 Check, #5, 253 uDemonstrate Lab: Changes in an Ecosystem, 270-273 **Realize™ Digital Resources:** **Topic 6: Populations, Communities, and Ecosystems** >Lesson 2: Dynamic and Resilient Ecosystems>Interactivity: A Butterfly Mystery >Lesson 3: Biodiversity>uInvestigate Lab: Modeling Keystone Species
Crosscutting Concepts	
Stability and Change Small changes in one part of a system might cause large changes in another part.	**SE/TE:** Mature Communities, 236 Case Study: The Dependable Elephant, 254-255 **Realize™ Digital Resources:** **Topic 6: Populations, Communities, and Ecosystems** >Lesson 2: Dynamic and Resilient Ecosystems>Interactivity: A Butterfly Mystery >Lesson 3: Biodiversity>uInvestigate Lab: Modeling Keystone Species

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Performance Expectation	
7-LS2-5. Evaluate competing design solutions for maintaining biodiversity and ecosystem services.	**SE/TE:** Protecting Biodiversity, 251 Habitat Preservation, 251 Global Cooperation, 252 Ecosystem Services, 257-260 Figure 3: Interactions Between Cycles of an Ecosystem, 260 Biodiversity in Ecosystems, Figure 4: Specify Design Constraints, 261 Conservation, 263 Design It!: Ecological Restoration, 263 Lesson 4 Check, #4, #8, 264 uEngineer It!: From Bulldozers to Biomes, 265 **Realize™ Digital Resources:** **Topic 6: Populations, Communities, and Ecosystems** >Lesson 3: Biodiversity>Quest Check-In Lab: Design and Model a Crossing >Lesson 4: Ecosystem Services>Interactivity: Preventing Soil Erosion;>Worksheet: Preventing Soil Erosion;>uInvestigate Lab: Ecosystem Impacts;>Interactivity: Walk This Way or That Way
Disciplinary Core Ideas	
LS2.C: Ecosystem Dynamics, Functioning, and Resilience	
Biodiversity describes the variety of species found in Earth's terrestrial and oceanic ecosystems. The completeness or integrity of an ecosystem's biodiversity is often used as a measure of its health.	**SE/TE:** The Value of Biodiversity, 243 Lesson 3 Check, #2, 253
LS4.D: Biodiversity and Humans	
Changes in biodiversity can influence humans' resources, such as food, energy, and medicines, as well as ecosystem services that humans rely on—for example, water purification and recycling. (secondary)	**SE/TE:** Economic Value, 244 Damaging Biodiversity, 250 Ecosystem Services, 257 Provisional Services, 258 Regulatory Services, 259 Supporting Services, 260 Factors Impacting Ecosystem Services, 261-262

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ETS1.B: Developing Possible Solutions	
There are systematic processes for evaluating solutions with respect to how well they meet the criteria and constraints of a problem.	**SE/TE:** Biodiversity in Ecosystems, Figure 4: Specify Design Constraints, 261 **Realize™ Digital Resources:** **Topic 6: Populations, Communities, and Ecosystems** >Lesson 3: Biodiversity>Quest Check-In Lab: Design and Model a Crossing >Lesson 4: Ecosystem Services>Interactivity: Preventing Soil Erosion;>Worksheet: Preventing Soil Erosion;>uInvestigate Lab: Ecosystem Impacts;>Interactivity: Walk This Way or That Way
ETS2.B: Influence of Science, Engineering, and Technology on Society and the Natural World	
The use of technologies and any limitations on their use are driven by individual or societal needs, desires, and values; by the findings of scientific research; and by differences in such factors as climate, natural resources, and economic conditions. Thus, technology use varies from region to region and over time.	**Realize™ Digital Resources:** **Topic 6: Populations, Communities, and Ecosystems** >Lesson 2: Dynamic and Resilient Ecosystems>Quest Check-In Interactivity: Community Opinions >Lesson 3: Biodiversity>Quest Check-In Lab: Design and Model a Crossing
Science and Engineering Practices	
Engaging in Argument from Evidence Evaluate competing design solutions based on jointly developed and agreed-upon design criteria.	**Realize™ Digital Resources:** **Topic 6: Populations, Communities, and Ecosystems** >Lesson 3: Biodiversity>Quest Check-In Lab: Design and Model a Crossing >Lesson 4: Ecosystem Services>Interactivity: Preventing Soil Erosion;>Worksheet: Preventing Soil Erosion;>uInvestigate Lab: Ecosystem Impacts;>Interactivity: Walk This Way or That Way

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Crosscutting Concepts	
Stability and Change Small changes in one part of a system might cause large changes in another part.	**SE/TE:** The Value of Biodiversity, 243 A Valuable Tree, Figure 3: CCC Cause and Effect, 245 A Narrow Niche, Figure 4: CCC Analyze Systems, 246 Quest Check-In, 253 Connect It!, 256 Figure 3: Interactions Between Cycles of an Ecosystem, 260 **Realize™ Digital Resources:** **Topic 6: Populations, Communities, and Ecosystems** >Lesson 1: Interactions in Ecosystems>Quest Check-In Interactivity: Research Animal Crossings >Lesson 3: Biodiversity>Quest Check-In Lab: Design and Model a Crossing >Lesson 4: Ecosystem Services>uInvestigate Lab: Ecosystem Impacts
Earth and Human Activity (ESS3)	
Performance Expectation	
7-ESS3-1. Construct a scientific explanation based on evidence for how the uneven distributions of Earth's mineral, energy, and groundwater resources are the result of past and current geoscience processes.	**SE/TE:** Coal, 280 Coal Formation and Distribution, Figure 3: SEP Construct Explanations, 281 Oil, 282 Petroleum Formation and Distribution, Figure 5, 283 Nuclear Energy, 285 Distribution of Uranium, Figure 7, 285 Lesson 1 Check, #5, 287 Distribution of Minerals, 300 Mineral Distribution, Figure 5: Reasoning, 301 Lesson 3 Check, #3, 303 Water on Earth, 307-309 Math Toolbox: Distribution of Water Resources, 308 Distribution of Groundwater, Figure 3, 309 Lesson 4 Check, #2, 312 Topic 7 Review and Assess, #5, #13, 314-315 Topic 7 Evidence-Based Assessment, 316-317 uDemonstrate Lab: To Drill or Not to Drill, 318-321 **Realize™ Digital Resources:** **Topic 7: Distribution of Natural Resources** >Lesson 1: Nonrenewable Energy Resources>Interactivity: Distribution of Fossil Fuels >Lesson 3: Mineral Resources>Interactivity: Distribution of Minerals

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Disciplinary Core Ideas	
ESS3.A: Natural Resources	
Humans depend on Earth's land, ocean, atmosphere, and biosphere for many different resources. Minerals, fresh water, and biosphere resources are limited, and many are not renewable or replaceable over human lifetimes. These resources are distributed unevenly around the planet as a result of past geologic processes.	**SE/TE:** Natural Resources, 279 Coal, 280 Coal Formation and Distribution, Figure 3, 281 Oil, 282 Petroleum Formation and Distribution, Figure 5, 283 Nuclear Energy, 285 Distribution of Uranium, Figure 7, 285 Using Energy Resources, 286 Lesson 1 Check, #5, 287 Reflect, 297 Distribution of Minerals, 300 Mineral Distribution, Figure 5, 301 Humans and Minerals, 302 Reading Check: Summarize Text, 302 Lesson 3 Check, #3, 303 Case Study: Phosphorus Fiasco, 304-305 Water on Earth, 307 Distribution of Groundwater, Figure 3, 309 Human Impacts, 310 Lesson 4 Check, #2, 312 **Realize™ Digital Resources:** **Topic 7: Distribution of Natural Resources** >Lesson 1: Nonrenewable Energy Resources>Inquiry Warm-Up Lab: Using Resources;>Interactivity: Distribution of Fossil Fuels >Lesson 3: Mineral Resources>Interactivity: Distribution of Minerals >Lesson 4: Water Resources>Interactivity: Distribution of Water Resources
ETS2.B: Influence of Engineering, Technology, and Science on Society and the Natural World	
All human activity draws on natural resources and has both short and long-term consequences, positive as well as negative, for the health of people and the natural environment.	**SE/TE:** Natural Resources, 279 Using Energy Resources, 286 Humans and Minerals, 302 Human Impacts, 310-311 **Realize™ Digital Resources:** **Topic 7: Distribution of Natural Resources** >Lesson 1: Nonrenewable Energy Resources>Inquiry Warm-Up Lab: Using Resources

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Science and Engineering Practices	
Constructing Explanations and Designing Solutions Construct a scientific explanation based on valid and reliable evidence obtained from sources (including the students' own experiments) and the assumption that theories and laws that describe the natural world operate today as they did in the past and will continue to do so in the future.	**SE/TE:** Coal Formation and Distribution, Figure 3: SEP Construct Explanations, 281 Lesson 1 Check, #5, 287 Mineral Distribution, Figure 5: Reasoning, 301 A Volcanic Lake, Figure 2: SEP Construct Explanations, 308 Lesson 4 Check, #2, 312 Topic 7 Review and Assess, #5, #13, 314-315 Topic 7 Evidence-Based Assessment, 316-317 uDemonstrate Lab: To Drill or Not to Drill, 318-321 **Realize™ Digital Resources:** **Topic 7: Distribution of Natural Resources** >Lesson 1: Nonrenewable Energy Resources>Interactivity: Distribution of Fossil Fuels >Lesson 3: Mineral Resources>Interactivity: Distribution of Minerals
Crosscutting Concepts	
Cause and Effect Cause-and-effect relationships may be used to predict phenomena in natural or designed systems.	**SE/TE:** Lesson 1 Check, #2, 287 Minerals from Magna, Figure 4: CCC Cause and Effect, 299 Lesson 3 Check, #3, 303 Water Scarcity, Figure 4: CCC Cause and Effect, 310 Lesson 4 Check, #4, 312 Topic 7 Evidence-Based Assessment, 316-317 uDemonstrate Lab: To Drill or Not to Drill, 318-321 **Realize™ Digital Resources:** **Topic 7: Distribution of Natural Resources** >Lesson 1: Nonrenewable Energy Resources>uInvestigate Lab: Fossil Fuels >Lesson 3: Mineral Resources>Interactivity: Distribution of Minerals

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Performance Expectation	
7-ESS3-3. Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.	**SE/TE:** uEngineer It!: Micro-Hydro Power, 295 Design It!: Sustainable Fishing, 311 uConnect Lab: Finding a Solution for Your Pollution, 324-325 Effects of Pollution, Figure 3: SEP Design Solutions, 362 Plan It!: Reducing Waste in Factories, 365 Design It!: Adapting for Climate Change, 408 Dealing with Climate Change, 408-409 uEngineer It!: Changing Climate Change, 411 Topic 9 Review and Assess, #16, 413 **Realize™ Digital Resources:** **Topic 7: Distribution of Natural Resources** >Lesson 2: Renewable Energy Resources>uInvestigate Lab: The Power of Wind **Topic 8: Human Impacts on the Environment** >Lesson 4: Water Pollution>Quest Check-In Lab: Reducing Waste **Topic 9: Climate** >Lesson 2: Climate Change>Quest Check-In Lab: Energy Savings at School >Lesson 3: Effects of a Changing Climate>Quest Check-In Interactivity: Make a Difference
Disciplinary Core Ideas	
ESS3.C: Human Impacts on Earth Systems	
Human activities have significantly altered the biosphere, sometimes damaging, or destroying natural habitats and causing the extinction of other species. But changes to Earth's environments can have different impacts (negative and positive) for different living things.	**SE/TE:** Other Natural Resources, 311 Using Natural Resources, 330-331 Acid Rain, 338 Agriculture, 346 Development, 346 Land Use, Figure 2, 346 Human Activities, 362-363 Human Activities, 396
Typically, as human populations and per- capita consumption of natural resources increase, so do the negative impacts on Earth unless the activities and technologies involved are engineered otherwise.	**SE/TE:** Using Natural Resources, 330-331 Balancing Needs, 332 Engineering New Solutions, 409

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ETS2.B: Influence of Engineering, Technology, and Science on Society and the Natural World	
All human activity draws on natural resources and has both short and long-term consequences, positive as well as negative, for the health of people and the natural environment. The uses of technologies and any limitations on their use are driven by individual or societal needs, desires, and values; by the findings of scientific research; and by differences in such factors as climate, natural resources, and economic conditions. Thus, technology use varies from region to region and over time.	**SE/TE:** Natural Resources, 279 Using Energy Resources, 286 Reducing Fossil Fuel Usage, 289 Lesson 2 Check, #4, 294 Using Water, 310 Desalination, 311 Using Natural Resources, 330-331 Human Activities, 396 Alternative Energy, 408 Energy-Efficient Technologies, 408 Topic 9 Review and Assess, #16, 413
Science and Engineering Practices	
Constructing Explanations and Designing Solutions Apply scientific principles to design an object, tool, process or system.	**SE/TE:** uEngineer It!: Micro-Hydro Power, 295 Design It!: Sustainable Fishing, 311 uConnect Lab: Finding a Solution for Your Pollution, 324-325 Effects of Pollution, Figure 3: SEP Design Solutions, 362 Plan It!: Reducing Waste in Factories, 365 Design It!: Adapting for Climate Change, 408 uEngineer It!: Changing Climate Change, 411 **Realize™ Digital Resources:** **Topic 7: Distribution of Natural Resources** >Lesson 2: Renewable Energy Resources>uInvestigate Lab: The Power of Wind **Topic 8: Human Impacts on the Environment** >Lesson 4: Water Pollution>Quest Check-In Lab: Reducing Waste **Topic 9: Climate** >Lesson 2: Climate Change>Quest Check-In Lab: Energy Savings at School >Lesson 3: Effects of a Changing Climate>Quest Check-In Interactivity: Make a Difference
Crosscutting Concepts	
Cause and Effect Relationships can be classified as causal or correlational, and correlation does not necessarily imply causation.	**SE/TE:** Connect It!, 288 Lesson 2 Check, #2, 294 uConnect Lab: Finding a Solution for Your Pollution, 324-325 **Realize™ Digital Resources:** **Topic 7: Distribution of Natural Resources** >Lesson 2: Renewable Energy Resources>uInvestigate Lab: The Power of Wind

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Performance Expectation	
7-ESS3-4. Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth's systems.	**SE/TE:** Connect It!, 326 The Human Population, 327 Using Natural Resources, 330-331 **Realize™ Digital Resources:** **Topic 8: Human Impacts on the Environment** >Lesson 1: Population Growth and Resource Consumption>Interactivity: Modern Life;>Interactivity: Human Population Growth;>Worksheet: Human Population Growth;>uInvestigate Lab: Doubling Time >Lesson 2: Air Pollution >Quest Check-In Lab: Trash versus Water >Lesson 3: Water Pollution > Quest Check-In Lab: Reducing Waste
Disciplinary Core Ideas	
ESS3.C: Human Impacts on Earth Systems	
Typically as human populations and per- capita consumption of natural resources increase, so do the negative impacts on Earth unless the activities and technologies involved are engineered otherwise.	**SE/TE:** Using Natural Resources, 330-331 Balancing Needs, 332 **Realize™ Digital Resources:** **Topic 8: Human Impacts on the Environment** >Lesson 1: Population Growth and Resource Consumption>Interactivity: Modern Life;>uInvestigate Lab: Doubling Time
ETS2.B: Influence of Engineering, Technology, and Science on Society and the Natural World	
All human activity draws on natural resources and has both short and long-term consequences, positive as well as negative, for the health of people and the natural environment.	**SE/TE:** Connect It!, 326 Using Natural Resources, 330-331 Reading Check: Determine Conclusions, 331 **Realize™ Digital Resources:** **Topic 8: Human Impacts on the Environment** >Lesson 1: Population Growth and Resource Consumption>Inquiry Warm-Up Lab: Growth Spurt

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Science and Engineering Practices	
Engaging in Argument from Evidence Construct an oral and written argument supported by empirical evidence and scientific reasoning to support or refute an explanation or a model for a phenomenon or a solution to a problem.	**SE/TE:** Reading Check: Develop an Argument, 332 Lesson 1 Check, #3, 333 Reading Check: Write Arguments, 338 Lesson 2 Check, #5, 342 Write About It, 354 Lesson 3 Check, #3, 355 Case Study: Nothing Goes to Waste, 356-357 Lesson 4 Check, #5, 366 Topic 8 Review and Assess, #16, #18, 369 Topic 8 Evidence-Based Assessment, 370-371 uDemonstrate Lab: Washing Away, 372-375 **Realize™ Digital Resources:** **Topic 8: Human Impacts on the Environment** >Lesson 1: Population Growth and Resource Consumption>Interactivity: Modern Life;>Interactivity: Human Population Growth;>Worksheet: Human Population Growth;>uInvestigate Lab: Doubling Time
Crosscutting Concepts	
Cause and Effect Cause-and-effect relationships may be used to predict phenomena in natural or designed systems.	**SE/TE:** uConnect Lab: Finding a Solution for Your Pollution, 324-325 Impact of Agriculture, Figure 3: CCC Cause and Effect, 331 Effects of Acid Rain, Figure 4, 338 Lesson 2 Check, #4, 342 Connect It!, 344 Plan It!: Community Considerations, 347 Erosion, Figure 4: CCC Cause and Effect, 348 Lesson 3 Check, #5, 355 Lesson 4 Check, #2, 366 Topic 8 Review and Assess, #4, 368 Topic 8 Evidence-Based Assessment, 370-371 **Realize™ Digital Resources:** **Topic 8: Human Impacts on the Environment** >Lesson 1: Population Growth and Resource Consumption>Interactivity: Modern Life;>Interactivity: Human Population Growth;>Worksheet: Human Population Growth;>uInvestigate Lab: Doubling Time

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Performance Expectation	
7-ESS3-5. Ask questions to clarify evidence of the factors that have impacted global temperatures over the past century.	**SE/TE:** Recent Climate Change, 395-398 Figure 6: Carbon Dioxide Concentrations, 398 Lesson 2 Check, #5, #6, 399 Topic 9 Review and Assess, #9, 412 Topic 9 Evidence-Based Assessment, 414-415 **Realize™ Digital Resources:** **Topic 9: Climate** >Lesson 2: Climate Change>Interactivity: In the Greenhouse;>uInvestigate Lab: What Is the Greenhouse Effect?;>Interactivity: Climate Change Q & A >Lesson 3: Effects of a Changing Climate>uInvestigate Lab: Thermal Expansion of Water
Disciplinary Core Ideas	
ESS3.D: Global Climate Change	
Human activities, such as the release of greenhouse gases from burning fossil fuels, are major factors in the current rise in Earth's mean surface temperature. Reducing the level of climate change and reducing human vulnerability to whatever climate changes do occur depend on the understanding of climate science, engineering capabilities, and other kinds of knowledge, such as understanding of human behavior and on applying that knowledge wisely in decisions and activities.	**SE/TE:** Human Activities, 396 Humans and Global Warming, Figure 5: SEP Engage in Argument, 396-397 Carbon Dioxide Concentrations, 398 Reading Check: Integrate with Visuals, 398 Lesson 2 Check, #6, 399 Dealing with Climate Change, 408-409 Lesson 3 Check, #5, 410 Topic 9 Review and Assess, #9, #14, 412-413 **Realize™ Digital Resources:** **Topic 9: Climate** >Lesson 2: Climate Change>Interactivity: Human Impact on Climate Change;>Worksheet: Human Impact on Climate Change >Lesson 3: Effects of a Changing Climate>Interactivity: Methane Management

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ETS2.B: Influence of Engineering, Technology, and Science on Society and the Natural World	
All human activity draws on natural resources and has both short and long-term consequences, positive as well as negative, for the health of people and the natural environment. The uses of technologies and any limitations on their use are driven by individual or societal needs, desires, and values; by the findings of scientific research; and by differences in such factors as climate, natural resources, and economic conditions. Thus, technology use varies from region to region and over time.	**SE/TE:** Human Activities, 396 Carbon Dioxide Concentrations, 398 Lesson 2 Check, #6, 399 Impact of Rising Temperatures, 403-406 Cascading Effects of Climate Change, Figure 3: CCC Cause and Effect, 407 Dealing with Climate Change, 408-409 Lesson 3 Check, #2, #3, #4, 410 uEngineer It!: Changing Climate Change, 411 Topic 9 Review and Assess, #16, 413
Science and Engineering Practices	
Asking Questions and Defining Problems Ask questions to identify and clarify evidence of an argument.	**SE/TE:** Figure 6: Carbon Dioxide Concentrations, 398 Lesson 2 Check, #5, 399 Topic 9 Evidence-Based Assessment, 414-415 **Realize™ Digital Resources:** **Topic 9: Climate** >Lesson 2: Climate Change>Interactivity: In the Greenhouse;>uInvestigate Lab: What Is the Greenhouse Effect?;>Interactivity: Climate Change Q & A >Lesson 3: Effects of a Changing Climate>uInvestigate Lab: Thermal Expansion of Water
Crosscutting Concepts	
Stability and Change Stability might be disturbed either by sudden events or gradual changes that accumulate over time.	**SE/TE:** Figure 6: Carbon Dioxide Concentrations, 398 Lesson 2 Check, #6, 399 Topic 9 Review and Assess, #9, 412 **Realize™ Digital Resources:** **Topic 9: Climate** >Lesson 2: Climate Change> Interactivity: Climate Change Q & A