A Correlation of

Elevate Science
Grade 4, ©2019

To the

Oklahoma
Academic Standards for Science
Grade 4

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Introduction

The following document demonstrates how the ***Elevate Science, ©2019*** program supports the Oklahoma Academic Standards for Science. For each standard, correlation references are to the Student Edition and Teacher Edition where applicable.

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	
4-PS3-1 Use evidence to construct an explanation relating the speed of an object to the energy of that object. Clarification Statement Energy can be moved from place to place by moving objects or through sound, light, or electric currents. At this grade level, no attempt is made to give a precise or complete definition of energy. Assessment Boundary does not include quantitative measures of changes in the speed of an object or on any precise or quantitative definition of energy.	**SE/TE:** The Essential Question: Show What You Know, 1 Motion and Energy, 12 uBe a Scientist: Force and Speed, 12 Quest Check-In: Energy, Speed, and Motion, 13
4-PS3-2 Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents. Clarification Statement When energy is transferred it can stay in the same form, change forms, or both. Examples of this can include a moving arm throwing a baseball, the light from the sun warming a windowpane, and two moving objects colliding and changing their motion. Assessment Boundary does not include quantitative measurements of energy.	**SE/TE:** Energy, 8 Quest Connection, 8 Visual Literacy Connection: How does energy affect particles of matter?, 10-11 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 uInvestigate Lab: How does heat move?, 25 Visual Literacy Connection: How is energy transferred?, 26-27 Energy and Particle Motion, 28 Light Energy, 29 Question It!, 29 Quest Connection, 30 Sound Energy, 30 Lesson 3 Check, 31 Quest Check-In: Crash It!, 32 uInvestigate Lab: How does electric energy flow in circuits?, 35 Moving Electric Charges, 37 Quest Findings: Energy Changes in Collisions, 42 Topic Assessment, 44-45 uDemonstrate Lab: What affects energy transfer?, 48-49

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4-PS3-3 Ask questions and predict outcomes about the changes in energy that occur when objects collide. Clarification Statement Emphasis is on the change in the energy due to the change in speed, not on the forces, as objects interact. Assessment Boundary does not include quantitative measurements of energy.	**SE/TE:** Quest Kickoff: Energy Changes in Collisions, 2-3 Literacy Connection: Cause and Effect, 5 Sports Connection, 16 uInvestigate Lab: How does energy transfer between objects?, 17 Visual Literacy Connection: Energy Changes in a Collision, 18-19 Model It!, 20 Quest Connection, 20 Other Energy Changes, 20-21 Lesson 2 Check, 21 uBe a Scientist: Construct a Cradle, 21 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
4-PS3-4 Apply scientific ideas to design, test, and refine a device that converts energy from one form to another. Clarification Statement Examples of devices could include electric circuits that convert electrical energy into motion energy of a vehicle, light, or sound; and, a passive solar heater that converts light into heat, mousetrap cars, rubber band-powered vehicles. Examples of constraints could include the materials, cost, or time to design the device.	**SE/TE:** STEM uInvestigateLab: How can a potato provide energy to a light bulb?, 57 Using Energy, 58 Chemical Energy, 59 Visual Literacy Connection: How is electrical power generated from chemical energy?, 60-61 Quest Check-In: Human Power, 63

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4-PS4 Waves and Their Applications in Technologies for Information Transfer	
4-PS4-1 Develop a model of waves to describe patterns in terms of amplitude and wavelength and to show that waves can cause objects to move. Clarification Statement Examples of models could include diagrams, analogies, and physical models using wire to illustrate wave-length and amplitude of waves. Examples of wave patterns could include the vibrating patterns associated with sound; the vibrating patterns of seismic waves produced by earthquakes Assessment Boundary does not include interference effects, electromagnetic waves, non-periodic waves, or quantitative models of amplitude and wavelength	**SE/TE:** uConnect Lab: How do we describe waves?, 104 Sports Connection, 106 uInvestigate Lab: How does a wave carry energy?, 107 Waves, 108 Wave Characteristics, 109 Visual Literacy Connection: How does a wave move?, 110-111 Lesson 1 Check, 112 Wave Energy, 112 uInvestigate Lab: What patterns can waves make?, 117 Patterns in Wave Characteristics, 118 Quest Connection, 118 uBe a Scientist: Ripples, 118 Crosscutting Concepts Toolbox: Patterns, 119 Wave Patterns, 119 Visual Literacy Connection: How do wave patterns move?, 120-121 Lesson 2 Check, 122 Waves Can Combine, 122 Topic Assessment, 144-145 Evidence-Based Assessment, 146-147 uDemonstrate Lab: How can you model a light or sound wave?, 148-149
4-PS4-2 Develop a model to describe that light reflecting from objects and entering the eye allows objects to be seen. Assessment Boundary does not include knowledge of specific colors reflected and seen, the cellular mechanisms of vision, or how the retina works.	**SE/TE:** uInvestigate Lab: How is light reflected?, 125 Seeing Objects, 127 Lesson 3 Check, 131 Topic Assessment, 144-145
4-PS4-3 Generate and compare multiple solutions that use patterns to transfer information. Clarification Statement Examples of solutions could include drums sending coded information through sound waves, using a grid of 1's and 0's representing black and white to send information about a picture, QR codes, barcodes, and using Morse code to send text.	**SE/TE:** STEM Quest Check-In: How can you send a message with light?, 132-133 uInvestigate Lab: How can information from waves be translated?, 135 How do cell phone calls work?, 137 Lesson 4 Check, 139 Quest Check-In: Compare Codes, 140

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4-LS1 From Molecules to Organisms: Structure and Processes	
4-LS1-1 Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction. Clarification Statement Examples of structures could include thorns, stems, roots, colored petals, heart, stomach, lung, brain, and skin. Assessment Boundary is limited to macroscopic structures within plant and animal systems.	**SE/TE:** Topic 7 Opener: Structures and Functions, 276-277 Quest Kickoff: Let Plants and Animals Inspire You!, 278-279 uConnect Lab: How do your eyes respond to differences in lighting?, 280 Curriculum Connection, 282 uInvestigate Lab: What parts are inside a flower?, 283 Literacy Toolbox: Compare and Contrast, 284 Plant Systems, 284 Interactivity, 285 Functions of Plant Structures, 285 Visual Literacy Connection: What are some functions of internal leaf structures?, 286-287 uBe a Scientist: Make a Plant Collection, 288 Lesson 1 Check, 289 Quest Check-In Lab: How can you observe a plant's vascular system in action?, 290-291 uInvestigate Lab: How are leaf coverings different?, 293 External Structures of a Plant, 294 Stems and Their Coverings, 295 Visual Literacy Connection: What structures do flowering plants use to reproduce?, 296-297 Adaptations of Flowers, 298 Lesson 2 Check, 298 uInvestigate Lab: How can you compare the stomachs of cows and dogs?, 301 Animal Structures for Support, 302 Quest Connection, 302 Structure of the Animal Heart, 303 Structure of the Animal Brain, 306 Quest Check-In: Fish Float and Sink, 307 Curriculum Connection, 308 uInvestigate Lab: How can you design a protective insect shell?, 309 Visual Literacy Connection: What do exoskeletons do?, 310-311 Other External Structures of Animals, 312 Lesson 4 Check, 313

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Continued	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 uDemonstrate Lab: How do earthworms respond to stimuli?, 332-333 Topic 8 Opener: Human Body Systems, 334-335 Quest Kickoff: Make a Human Body Road Map, 336-337 uInvestigate Lab: How can you model how you breathe?, 341 uInvestigate Lab: How can you test the strength of a bone?, 351 uInvestigate Lab: How are intestines arranged inside your body?, 367 uDemonstrate Lab: How do your sensory organs gather information?, 382-383
4-LS1-2 Use a model 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. Clarification Statement Emphasis is on systems of information transfer. Examples of response to stimuli include animals running from predators and plant leaves turning toward the sun. Assessment Boundary does not include the mechanisms by which the brain stores and recalls information or the mechanisms of how sensory receptors function.	**SE/TE:** Engineering Connection, 316 uInvestigate Lab: How can you locate an object using only sound?, 317 Visual Literacy Connection: How do elephants respond to stimulus?, 318-319 Animal Responses to Smells, 320 Lesson 5 Check, 322 Quest Check-In: Sound Off!, 323 Evidence-Based Assessment, 330-331 uDemonstrate Lab: How do earthworms respond to stimuli?, 332-333 Quest Kickoff: Make a Human Body Road Map, 336-337 uInvestigate Lab: Which parts of the body are more sensitive?, 359 Visual Literacy Connection: What are sensory organs?, 360-361 STEM Quest Check-In Lab: How can you test signals to and from your brain?, 364-365

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4-ESS1 Earth's Place in the Universe	
4-ESS1-1 Identify evidence from patterns in rock formations and fossils in rock layers to support an explanation for changes in a landscape over time. Clarification Statement Examples of evidence from patterns could include rock layers with marine shell fossils above rock layers with plant fossils and no shells, indicating a change from land to water over time; and, a canyon with different rock layers in the walls and a river in the bottom, indicating that over time a river cut through the rock. Assessment Boundary does not include specific knowledge of the mechanism of rock formation or memorization of specific rock formations and layers. Assessment is limited to relative time.	**SE/TE:** Topic 6 Opener: The History of Planet Earth, 242-243 Quest Kickoff: Dig for the Truth, 244-245 uConnect Lab: Where are fossils found in rock layers?, 246 STEM Connection, 248 uInvestigate Lab: What patterns do fossils follow?, 249 Fossils, 250 Quest Connection, 250 Rock Formations, 251 Rock Strata Can Change, 251 A Colorful Change, 252 Interactivity, 252 Geologic Time Scale, 253 Lesson 1 Check, 253 Quest Check-In: Existing Evidence, 254 STEM Math Connection: Canyonlands, 255 Engineering Connection, 258 uInvestigate Lab: How can rock layers show change?, 259 Fossil Clues on Earth, 260 Index Fossils, 261 Question It!, 261 Visual Literacy Connection: How can layers of rock change?, 262-263 Comparing Rock Layers, 264 Quest Connection, 264 uBe a Scientist: Be a Rock Hound, 264 Lesson 2 Check, 265 Quest Check-In Lab: What does a core sample tell us?, 266-267 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

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4-ESS2 Earth's Systems	
4-ESS2-1 Plan and conduct investigations on the effects of water, ice, wind, and vegetation on the relative rate of weathering and erosion. Clarification Statement Examples of variables to test could include angle of slope in the downhill movement of water, amount of vegetation, speed of wind, relative rate of deposition, cycles of freezing and thawing of water, cycles of heating and cooling, and volume of water flow. Assessment Boundary is limited to a single form of weathering or erosion.	**SE/TE:** uConnect Lab: How can rain affect land?, 154 uInvestigate Lab: How can a rock wear away?, 185 uBe a Scientist: Weathering, 186 Physical Weathering, 187 Quest Connection, 187 Erosion, 188 Movement of Particles, 189 Changes in Landforms over Time, 191 STEM Quest Check-In Lab: How does water affect landforms?, 192 Extreme Science: Powerful Plants, 193 Quest Findings: Does X Mark the Spot? That's Up to You!, 194 Topic Assessment, 196-197 Evidence-Based Assessment, 198-199 uConnect Lab: How can you reduce the impact of rapidly sliding soil?, 206 uBe a Scientist: Soil in Runoff, 228
4-ESS2-2 Analyze and interpret data from maps to describe patterns of Earth's features. Clarification Statement Maps can include topographic maps of Earth's land and ocean floor, as well as maps of the locations of mountains, continental boundaries, volcanoes, and earthquakes.	**SE/TE:** Topic 4 Opener: Earth's Features, 150-151 Sports Connection, 156 uInvestigate Lab: How do tools help us?, 157 Quest Connection, 158 Types of Maps, 159 Visual Literacy Connection: How can you see the same place in different ways?, 160-161 Interactivity, 161 Lesson 1 Check, 162 Resource Maps, 162 Quest Check-In: The Making of a Legend, 163 uEngineer It!: Take a Hike!, 164-165 Patterns of Mountains, 168 Crosscutting Concepts Toolbox: Patterns, 169 Patterns of Earthquakes and Volcanoes, 169 Visual Literacy Connection: How can a physical map help me locate different landforms?, 170-171 Lesson 2 Check, 172 Quest Check-In: A Changing Landscape, 173 Evidence-Based Assessment, 198-199

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4-ESS3 Earth and Human Activity	
4-ESS3-1 Obtain and combine information to describe that energy and fuels are derived from renewable and non-renewable resources and how their uses affect the environment. Clarification Statement Examples of renewable energy resources could include wind energy, water behind dams, and sunlight; non-renewable energy resources are fossil fuels and fossil materials. Examples of environmental effects could include loss of habitat due to dams, loss of habitat due to surface mining, and air pollution from burning of fossil fuels.	**SE/TE:** Topic 2 Opener: Human Uses of Energy, 50-51 uConnect Lab: How are energy resources used?, 54 Using Energy, 58 Coal, 66 Fossil Fuels, 66 Petroleum, 67 Design It!, 70 Interactivity, 70 Natural Gas, 70 Lesson 2 Check, 71 uBe a Scientist: Make it Turn, 71 Engineering Connection, 74 uInvestigate Lab: How does a windmill capture wind energy?, 75 Visual Literacy Connection: Is renewable energy all around?, 76-77 Hydropower, 78 Interactivity, 78 Renewable Fuel, 78 Interactivity, 78 Energy That Does Not Run Out, 79 Lesson 3 Check, 79 STEM Quest Check-In Lab: How can the sun make a motor work?, 80 Why is oil cleanup so hard?, 85 Impact of Energy Production, 86 Impact of Nuclear Power, 87 Impact of Obtaining Fuel, 87 Quest Connection, 87 Visual Literacy Connection: How can the use of energy damage ecosystems?, 88-89 Impact of Transporting Fuels, 90 Lesson 4 Check, 90 Quest Check-In: Impact Inspections, 91 Topic Assessment, 94-95 Evidence-Based Assessment, 96-97 uDemonstrate Lab: How can energy resource usage change?, 98-99 Topic Assessment, 196-197

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4-ESS3-2 Generate and compare multiple solutions to reduce the impacts of natural Earth processes on humans. Clarification Statement Examples of solutions could include designing an earthquake resistant building and improving monitoring of volcanic activity. Assessment Boundary is limited to earthquakes, floods, tsunamis, and volcanic eruptions.	**SE/TE:** Topic 5 Opener: Earth's Natural Hazards, 202-203 Quest Kickoff: Protect the City! Hazard Incoming!, 204-205 uConnect Lab: How can you reduce the impact of rapidly sliding soil?, 206 Curriculum Connection, 208 uInvestigate Lab: How can a large wave affect land?, 209 Earthquakes, 210 uBe a Scientist: Earthquake Evidence, 210 Hazards of Earthquakes, 211 Quest Connection, 211 Visual Literacy Connection: What happens during a tsunami?, 212-213 Lesson 1 Check, 214 Volcanoes, 214 Quest Check-In: Beware: Hot Ash!, 215 uEngineer It!: Warning!, 216-217 Quest Check-In: Water Warnings, 224 Solve it With Science: Where is the greatest earthquake risk?, 225 STEM Engineering Connection, 226 uInvestigate Lab: Where should you build an earthquake-safe structure?, 227 Plan It!, 228 Long-Term Effects of Hazards, 229 Predict Natural Hazards, 230 Lesson 3 Check, 231 When Hazards Strike, 231 Quest Check-In Lab: How can you reduce hazard damage?, 232-233 Quest Findings: Hazard incoming!, 234 Topic Assessment, 236-237 Evidence-Based Assessment, 238-239 uDemonstrate Lab: How can homes be designed to be more earthquake resistant?, 240-241

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5-PS1 Matter and Its Interactions	
5-PS1-1 Develop a model to describe that matter is made of particles too small to be seen. Clarification Statement Examples of evidence that could be utilized in building models include adding air to expand a basketball, compressing air in a syringe, dissolving sugar in water, and evaporating salt water. Assessment Boundary does not include atomic scale mechanism of evaporation and condensation or defining the unseen particles.	**SE/TE:** Also, refer to Grade 5 Elevate Science, Topic 1 Visual Literacy Connection: How does energy affect particles of matter?, 10-11 Properties of Matter, Lesson 2 Model Matter, 16-25 Energy and Particle Motion, 28 Lesson 3 Check, 31 Sound Waves, 31 Supporting Content: Science and Engineering Practice Handbook: Science Practices Developing and Using Models, EM6
5-PS1-2 Measure and graph quantities to provide evidence that regardless of the type of change that occurs when heating, cooling, or mixing substances, the total weight of matter is conserved. Clarification Statement Examples of reactions or changes could include phase changes, dissolving, and mixing that forms new substances. Assessment Boundary does not include distinguishing mass and weight.	**SE/TE:** Visual Literacy Connection: How is energy transferred?, 26-27 Chemical Energy, 59 Also, refer to Grade 5 Elevate Science, Topic 2 Changes in Matter, Lesson 3 Chemical Changes, 68-69Supporting Content: Science and Engineering Practice Handbook: Science Practices, Science Tools, EM3 Supporting Content: Science and Engineering Practice Handbook: Science Practices, Using Math, EM5
5-PS1-3 Make observations and measurements to identify materials based on their properties. Clarification Statement Examples of materials to be identified could include baking soda and other powders, metals, minerals, and liquids. Examples of properties could include color, hardness, reflectivity, electrical conductivity, thermal conductivity, response to magnetic forces, and solubility; density is not intended as an identifiable property. Assessment Boundary does not include density or distinguishing mass and weight.	**SE/TE:** uEngineer It! Design STEM: Toys on the Move, 14-15 Supporting Content: uInvestigate Lab: How does heat move?, 25 Also, refer to Grade 5 Elevate Science, Topic 1 Properties of Matter, Lesson 1 Observe Matter; Lesson 2 Model Matter; Lesson 3 Properties of Matter, 6-15, 16-25, 26-35 uinvestigate Lab: How can you classify minerals?, 175 Lesson 3 Check, 181 Soil, 181 Light and Matter, 130 uDemonstrate Lab: How can you identify minerals?, 200-201

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