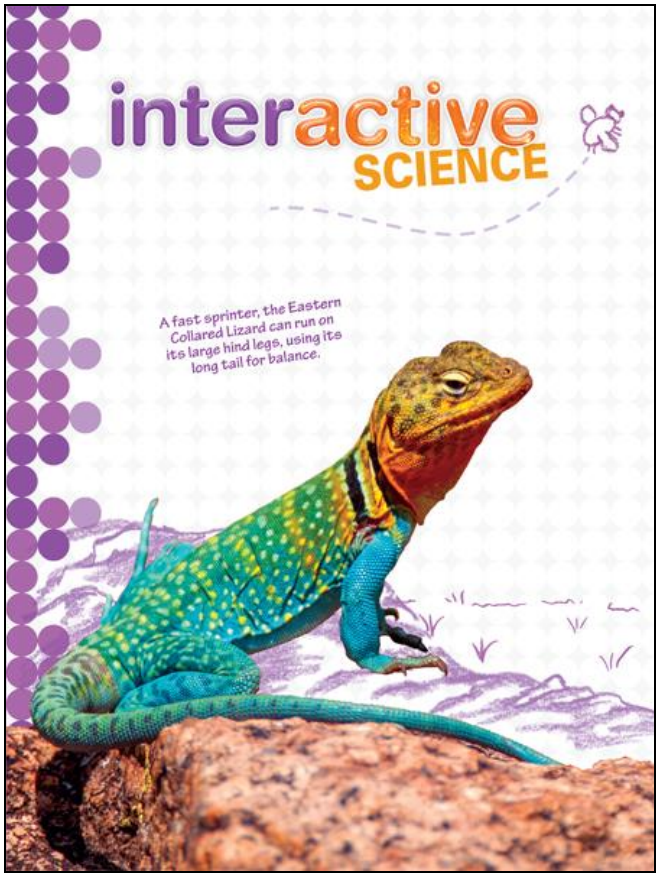
A Correlation of

Interactive Science
Grade 5, ©2016



To the

Arkansas Science Standards Learning Progressions by Topic

ALWAYS LEARNING PEARSON

A Correlation of Interactive Science Grade 5, ©2016, to the Arkansas Grade 5 Science Standards Learning Progressions by Topic

Introduction

The following document demonstrates the close alignment of ***Interactive Science,* ©2016, Grade 5** to the Arkansas Grade 5 Science Standards Learning Progression by Topic. Correlation references are to the Student Edition and Teacher's Edition.

Interactive Science is an elementary science program that makes learning personal, engaging, and relevant for today's student. The program features an innovative Write-in Student Edition that enables students to become active participants in their learning and truly connect the Big Ideas of science to their world.

The 2016 edition of ***Interactive Science*** supports the Next Generation Science Standards (NGSS) in several ways. In the Student Edition, lessons provide interactive opportunities for students to acquire the Disciplinary Core Ideas that are the building blocks of the NGSS Performance Expectations at each grade level. STEM Activities, Apply It! activities, Design It! Activities, and Performance-Based Assessments enable students to research, investigate, and apply Science and Engineering Practices to real-world problems in a meaningful way. Science and Engineering Practices are further emphasized at each grade level in the Skills Handbook portion of the Student Edition. In the Teacher's Edition, the NGSS Cross-Cutting Concepts that link across grade levels and across disciplines within grade levels are noted at the chapter level, and a detailed and focused Performance Expectation Activity is provided for each NGSS standard.

Interactive Science Grade 5 Table of Contents

A Correlation of Interactive Science Grade 5, ©2016, to the Arkansas Grade 5 Science Standards Learning Progressions by Topic

Arkansas Science Standards Learning Progressions by Topic	Interactive Science Grade 5, ©2016
Earth's Systems	
Students who demonstrate understanding can: **5-ESS2-1 Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact.** [Clarification Statement: Examples could include the influence of the ocean on ecosystems, landform shape, and climate; the influence of the atmosphere on landforms and ecosystems through weather and climate; or the influence of mountain ranges on winds and clouds in the atmosphere. The geosphere, hydrosphere, atmosphere, and biosphere are each a system.] [Assessment Boundary: Assessment is limited to the interactions of two systems at a time.] **5-ESS2-2 Describe and graph the amounts of salt water and fresh water in various reservoirs to provide evidence about the distribution of water on Earth.** [Assessment Boundary: Assessment is limited to oceans, lakes, rivers, glaciers, ground water, and polar ice caps, and does not include the atmosphere.] **5-ESS3-1 Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.**	
The performance expectations above were developed using the following elements from the NRC document *A Framework for K-12 Science Education*:	
Disciplinary Core Ideas	
ESS2.A: Earth Materials and Systems	
• Earth's major systems are the geosphere (solid and molten rock, soil, and sediments), the hydrosphere (water and ice), the atmosphere (air), and the biosphere (living things, including humans). These systems interact in multiple ways to affect Earth's surface materials and processes. The ocean supports a variety of ecosystems and organisms, shapes landforms, and influences climate. Winds and clouds in the atmosphere interact with the landforms to determine patterns of weather. (5-ESS2-1)	**SE/TE:** 206, 210-215, 217, 222, 224, 228-229, 234, 245-247, 251, 252, 253, 254 **TE only:** 196, 198, 215b, 229a, 229b, 253b, 313a
ESS2.C: The Roles of Water in Earth's Surface Processes	
• Nearly all of Earth's available water is in the ocean. Most fresh water is in glaciers or underground; only a tiny fraction is in streams, lakes, wetlands, and the atmosphere. (5-ESS2-2)	**SE/TE:** 213, 215 **TE only:** 196C, 196G-196H

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Arkansas Science Standards Learning Progressions by Topic	Interactive Science Grade 5, ©2016
ESS3.C: Human Impacts on Earth Systems	
• Human activities in agriculture, industry, and everyday life have had major effects on the land, vegetation, streams, ocean, air, and even outer space. But individuals and communities are doing things to help protect Earth's resources and environments. (5-ESS3-1)	**SE/TE:** 169, 174-177, 178-179, 183, 185, 187, 188, 189 **TE only:** 142D, 142G-142H, 173a, 177a, 177b, 179a, 179b, 179c, 179d, 189a
Connections to other Disciplinary Core Ideas (DCIs) in fifth grade: N/A	
Connections to other DCIs across grade levels: **2.ESS2.A** (5-ESS2-1); **2.ESS2.C** (5-ESS2-2); **3.ESS2.D** (5-ESS2-1); **4.ESS2.A** (5-ESS2-1); **7.ESS2.A** (5-ESS2-1); **7.ESS2.C** (5-ESS2-1, 5-ESS2-2); **6.ESS2.D** (5-ESS2-1); **7.ESS3.A** (5-ESS2-2, 5-ESS3-1)**;** **6.ESS3.C** (5-ESS3-1); **6.ESS3.D** (5-ESS3-1)	
Common Core State Standards Connections: ELA/Literacy – **RI.5.1** Quote accurately from a text when explaining what the text says explicitly and when drawing inferences from the text. (5-ESS3-1) **RI.5.7** Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently. (5-ESS2-1, 5-ESS2-2, 5-ESS3-1) **RI.5.9** Integrate information from several texts on the same topic in order to write or speak about the subject knowledgeably. (5-ESS3-1) **W.5.8** Recall relevant information from experiences or gather relevant information from print and digital sources; summarize or paraphrase information in notes and finished work, and provide a list of sources. (5-ESS2-2, 5-ESS3-1) **W.5.9** Draw evidence from literary or informational texts to support analysis, reflection, and research. (5-ESS3-1) **SL.5.5** Include multimedia components (e.g., graphics, sound) and visual displays in presentations when appropriate to enhance the development of main ideas or themes. (5-ESS2-1, 5-ESS2-2) *Mathematics –* **MP.2** Reason abstractly and quantitatively. (5-ESS2-1, 5-ESS2-2, 5-ESS3-1) **MP.4** Model with mathematics. (5-ESS2-1, 5-ESS2-2, 5-ESS3-1) **5.G.2** Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation. (5-ESS2-1)	
Crosscutting Concepts	
Scale, Proportion, and Quantity	
• Standard units are used to measure and describe physical quantities such as weight, and volume. (5-ESS2-2) •	**SE/TE:** 214, 260-263, 339, EM1 **TE only:** 99B
Systems and System Models	
• A system can be described in terms of its components and their interactions. (5-ESS2-1, 5-ESS3-1)	**SE/TE:** 159, 206-207, 211 **TE only:** 196, 313a

A Correlation of Interactive Science Grade 5, ©2016, to the Arkansas Grade 5 Science Standards Learning Progressions by Topic

Arkansas Science Standards Learning Progressions by Topic	Interactive Science Grade 5, ©2016
Connections to Nature of Science	
Science Addresses Questions About the Natural and Material World	
• Science findings are limited to questions that can be answered with empirical evidence. (5-ESS3-1)	**SE/TE:** 178-179, 194, 195, 197, 315 **TE only:** 179a, 179b, 179c, 179d
Science and Engineering Practices	
Developing and Using Models Modeling in 3–5 builds on K–2 experiences and progresses to building and revising simple models and using models to represent events and design solutions.	
• Develop a model using an example to describe a scientific principle. (5-ESS2-1)	**SE/TE:** 195, 198, 313, 330 **TE only:** 195a, 195c, 196, 211, 313a
Using Mathematics and Computational Thinking Mathematical and computational thinking in 3–5 builds on K–2 experiences and progresses to extending quantitative measurements to a variety of physical properties and using computation and mathematics to analyze data and compare alternative design solutions.	
• Describe and graph quantities such as area and volume to address scientific questions. (5-ESS2-2)	**SE/TE:** 209, 213 **TE only:** 289a, 313b
Obtaining, Evaluating, and Communicating Information Obtaining, evaluating, and communicating information in 3–5 builds on K–2 experiences and progresses to evaluating the merit and accuracy of ideas and methods.	
• Obtain and combine information from books and/or other reliable media to explain phenomena or solutions to a design problem. (5-ESS3-1)	**SE/TE:** 260, 382 **TE only:** 195d, 196G-196H, 196, 212, 215, 313a, 313b

SE = Student Edition TE = Teacher's Edition

A Correlation of Interactive Science Grade 5, ©2016, to the Arkansas Grade 5 Science Standards Learning Progressions by Topic

Arkansas Science Standards Learning Progressions by Topic	Interactive Science Grade 5, ©2016
Space Systems	
Students who demonstrate understanding can: **5-PS2-1 Support an argument that the gravitational force exerted by Earth on objects is directed down.** [Clarification Statement: "Down" is a local description of the direction that points toward the center of the spherical Earth.] [Assessment Boundary: Assessment does not include mathematical representation of gravitational force.] **5-ESS1-1 Support an argument that differences in the apparent brightness of the sun compared to other stars is due to their relative distances from Earth.** [Assessment Boundary: Assessment is limited to relative distances rather than sizes of stars. Assessment does not include other factors that affect apparent brightness (such as stellar masses, age, or stage).] **5-ESS1-2 Represent data in graphical displays to reveal patterns of daily changes in length and direction of shadows, day and night, and the seasonal appearance of some stars in the night sky.** [Clarification Statement: Examples of patterns could include the position and motion of Earth with respect to the sun and select stars that are visible only in particular months.] [Assessment Boundary: Assessment does not include causes of seasons.]	
The performance expectations above were developed using the following elements from the NRC document *A Framework for K-12 Science Education*:	
Disciplinary Core Ideas	
PS2.B: Types of Interactions	
• The gravitational force of Earth acting on an object near Earth's surface pulls that object toward the planet's center. (5-PS2-1)	**SE/TE:** 61, 64, 218, 238, 239 **TE only:** 99e
ESS1.A: The Universe and its Stars	
• The sun is a star that appears larger and brighter than other stars because it is closer. Stars range greatly in their distance from Earth. (5-ESS1-1)	**SE/TE:** 268, 271, 272, 273, 274, 275, **TE only:** 270B, 275a, 275b, 313c
ESS1.B: Earth and the Solar System	
• The orbits of Earth around the sun and of the moon around Earth, together with the rotation of Earth about an axis between its North and South poles, cause observable patterns. These include day and night; daily changes in the length and direction of shadows; and different positions of the sun, moon, and stars at different times of the day, month, and year. (5-ESS1-2)	**SE/TE:** 264, 265, 266, 267, 268, 269, 278, 299-300, 303, 304, 306 **TE only:** 264B, 269a, 269b, 305a, 305b, 307a, 307b, 313d

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Arkansas Science Standards Learning Progressions by Topic	Interactive Science Grade 5, ©2016
Connections to other DCIs in fifth grade: N/A	
Connections to other DCIs across grade levels: **1.ESS1.A** (5-ESS1-2); **1.ESS1.B** (5-ESS1-2); **3.PS2.A** (5-PS2-1, 5-ESS1-2); **3.PS2.B** (5-PS2-1); **8.PS2.B** (5-PS2-1); **8.ESS1.A** (5-ESS1-1, 5-ESS1-2); **8.ESS1.B** (5-PS2-1, 5-ESS1-1, 5-ESS1-2); **7.ESS2.C** (5-PS2-1)	
Common Core State Standards Connections: ELA/Literacy – **RI.5.1** Quote accurately from a text when explaining what the text says explicitly and when drawing inferences from the text. (5-PS2-1, 5-ESS1-1) **RI.5.7** Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently. (5-ESS1-1) **RI.5.8** Explain how an author uses reasons and evidence to support particular points in a text, identifying which reasons and evidence support which point(s). (5-ESS1-1) **RI.5.9** Integrate information from several texts on the same topic in order to write or speak about the subject knowledgeably. (5-PS2-1, 5-ESS1-1) **W.5.1** Write opinion pieces on topics or texts, supporting a point of view with reasons and information. (5-PS2-1, 5-ESS1-1) **SL.5.5** Include multimedia components (e.g., graphics, sound) and visual displays in presentations when appropriate to enhance the development of main ideas or themes. (5-ESS1-2)	
(Continued) *Mathematics –* **MP.2** Reason abstractly and quantitatively. (5-ESS1-1, 5-ESS1-2) **MP.4** Model with mathematics. (5-ESS1-1, 5-ESS1-2) **5.NBT.A.2** Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole- number exponents to denote powers of 10. (5-ESS1-1) **5.G.A.2** Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation. (5-ESS1-2)	
Crosscutting Concepts	
Patterns	
• Similarities and differences in patterns can be used to sort, classify, communicate and analyze simple rates of change for natural phenomena. (5-ESS1-2)	**SE/TE:** 275, 313 **TE only:** 256, 257, 313a, 313d
Cause and Effect	
• Cause and effect relationships are routinely identified and used to explain change. (5-PS2-1)	**SE/TE:** 293, 312 **TE only:** 313d
Scale, Proportion, and Quantity	
• Natural objects exist from the very small to the immensely large. (5-ESS1-1)	**SE/TE:** 271, 279, 284, 285, 289, 293, 294 **TE only:** 256G-256H

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Science and Engineering Practices	
Analyzing and Interpreting Data Analyzing data in 3–5 builds on K–2 experiences and progresses to introducing quantitative approaches to collecting data and conducting multiple trials of qualitative observations. When possible and feasible, digital tools should be used.	
• Represent data in graphical displays (bar graphs, pictographs and/or pie charts) to reveal patterns that indicate relationships. (5-ESS1-2) •	**SE/TE:** 258, 284, 286, 305 **TE only:** 289a, 313a, 313b, 313d
Engaging in Argument from Evidence Engaging in argument from evidence in 3–5 builds on K–2 experiences and progresses to critiquing the scientific explanations or solutions proposed by peers by citing relevant evidence about the natural and designed world(s).	
• Support an argument with evidence, data, or a model. (5-PS2-1, 5-ESS1-1)	**TE only:** 99e, 257, 313c

A Correlation of Interactive Science Grade 5, ©2016, to the Arkansas Grade 5 Science Standards Learning Progressions by Topic

Arkansas Science Standards Learning Progressions by Topic	Interactive Science Grade 5, ©2016
Structure and Properties of Matter	
Students who demonstrate understanding can: **5-PS1-1 Develop a model to describe that matter is made of particles too small to be seen.** [Clarification Statement: Examples of evidence supporting a model could include adding air to expand a basketball, compressing air in a syringe, dissolving sugar in water, and evaporating salt water.] [Assessment Boundary: Assessment does not include the atomic-scale mechanism of evaporation and condensation or defining the unseen particles.] **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.** [**AR** Clarification Statement: Examples could include chemical reactions that form new substances or physical changes including phase changes, dissolving, and mixing.] [**AR** Assessment Boundary: Assessment does not include distinguishing mass from weight or reactions that involve gases.] **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: Assessment does not include density or distinguishing mass from weight.] **5-PS1-4 Conduct an investigation to determine whether the mixing of two or more substances results in new substances.** [**AR** Clarification Statement: Examples of qualitative evidence could include temperature change, color change, odor change, and the formation of a gas to determine if a new substance has formed.]	
The performance expectations above were developed using the following elements from the NRC document *A Framework for K-12 Science Education*:	
Disciplinary Core Ideas	
PS1.A: Structure and Properties of Matter	
• Matter of any type can be subdivided into particles that are too small to see, but even then the matter still exists and can be detected by other means. A model showing that gases are made from matter particles that are too small to see and are moving freely around in space can explain many observations, including the inflation and shape of a balloon and the effects of air on larger particles or objects. (5-PS1-1)	**SE/TE:** 8, 9, 12-13, 15 **TE only:** 1C, 1D, 1G-1H, 15b, 99a
• The amount (weight) of matter is conserved when it changes form, even in transitions in which it seems to vanish. (5-PS1-2)	**SE/TE:** 2, 9 **TE only:** 1C, 99b

Arkansas Science Standards Learning Progressions by Topic	Interactive Science Grade 5, ©2016
• Measurements of a variety of properties can be used to identify materials. (Boundary: At this grade level, mass and weight are not distinguished, and no attempt is made to define the unseen particles or explain the atomic-scale mechanism of evaporation and condensation.) (5-PS1-3)	**SE/TE:** 2, 17-20, 23-27, 46 **TE only:** 1I, 21b, 99b, 99c
PS1.B: Chemical Reactions	
• When two or more different substances are mixed, a new substance with different properties may be formed. (5-PS1-4)	**SE/TE:** 35, 37-39, 42, 43-46, 47, 49, 50, 99 **TE only:** 1G-1H, 39b, 49b, 51b, 99d
• No matter what reaction or change in properties occurs, the total weight of the substances does not change. (Boundary: Mass and weight are not distinguished at this grade level.) (5-PS1-2)	**SE/TE:** 2, 9 **TE only:** 1C, 99b
Connections to other DCIs in fifth grade: N/A	
Connections to other DCIs across grade levels: **2.PS1.A** (5-PS1-1, 5-PS1-2, 5-PS1-3); **2.PS1.B** (5-PS1-2, 5-PS1-4); **7.PS1.A** (5-PS1-1, 5-PS1-2, 5-PS1-3, 5-PS1-4); **7.PS1.B** (5-PS1-2, 5-PS1-4)	
Common Core State Standards Connections: ELA/Literacy – **RI.5.7** Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently. (5-PS1-1) **W.5.7** Conduct short research projects that use several sources to build knowledge through investigation of different aspects of a topic. (5-PS1-2, 5-PS1-3, 5-PS1-4) **W.5.8** Recall relevant information from experiences or gather relevant information from print and digital sources; summarize or paraphrase information in notes and finished work, and provide a list of sources. (5-PS1-2, 5-PS1-3, 5-PS1-4) **W.5.9** Draw evidence from literary or informational texts to support analysis, reflection, and research. (5-PS1-2, 5-PS1-3, 5-PS1-4)	

Arkansas Science Standards Learning Progressions by Topic	Interactive Science Grade 5, ©2016
(Continued) *Mathematics –* **MP.2** Reason abstractly and quantitatively. (5-PS1-1, 5-PS1-2, 5-PS1-3) **MP.4** Model with mathematics. (5-PS1-1, 5-PS1-2, 5-PS1-3) **MP.5** Use appropriate tools strategically. (5-PS1-2, 5-PS1-3) **5.NBT.A.1** Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole- number exponents to denote powers of 10. (5-PS1-1) **5.NF.B.7** Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions. (5-PS1-1) **5.MD.A.1** Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real-world problems. (5-PS1-2) **5.MD.C.3** Recognize volume as an attribute of solid figures and understand concepts of volume measurement. (5-PS1-1) **5.MD.C.4** Measure volumes by counting unit cubes, using cubic cm., cubic in., cubic ft., and improvised units. (5-PS1-1)	
Crosscutting Concepts	
Cause and Effect	
• Cause and effect relationships are routinely identified, tested, and used to explain change. (5-PS1-4)	**SE/TE:** 16, 22, 34 **TE only:** 21a, 27a, 27b, 32, 52
Scale, Proportion, and Quantity	
• Natural objects exist from the very small to the immensely large. (5-PS1-1)	**SE/TE:** 9, 12-13, 43-46 **TE only:** 1G-1H, 1I, 15b, 99a
• Standard units are used to measure and describe physical quantities such as weight, time, temperature, and volume. (5-PS1-2, 5-PS1-3)	**SE/TE:** 2, 19, 24, 43-46, 336, 339, 397, EM1 **TE only:** 1I, 99a
Connections to Nature of Science	
Scientific Knowledge Assumes an Order and Consistency in Natural Systems	
• Science assumes consistent patterns in natural systems. (5-PS1-2)	**SE/TE:** 2, 20, 22, 25, 26, 27
Science and Engineering Practices	
Developing and Using Models Modeling in 3–5 builds on K–2 experiences and progresses to building and revising simple models and using models to represent events and design solutions.	
• Develop a model to describe phenomena. (5-PS1-1)	**SE/TE:** 4-7 **TE only:** 9, 12, 15, 54, 99a

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Arkansas Science Standards Learning Progressions by Topic	Interactive Science Grade 5, ©2016
Planning and Carrying Out Investigations Planning and carrying out investigations to answer questions or test solutions to problems in 3–5 builds on K–2 experiences and progresses to include investigations that control variables and provide evidence to support explanations or design solutions.	
• 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. (5-PS1-4)	**SE/TE:** 1, 40-41, 53, 315, 328, 348-349 **TE only:** 30, 41a, 41b, 41c, 41d, 51a, 99d, 349d
• Make observations and measurements to produce data to serve as the basis for evidence for an explanation of a phenomenon. (5-PS1-3)	**SE/TE:** 16, 22, 28, 34, 336, 344, 362 **TE only:** 21a, 27a, 99b, 99c, 343a, 347a
Using Mathematics and Computational Thinking Mathematical and computational thinking in 3–5 builds on K–2 experiences and progresses to extending quantitative measurements to a variety of physical properties and using computation and mathematics to analyze data and compare alternative design solutions.	
• Measure and graph quantities such as weight to address scientific and engineering questions and problems. (5-PS1-2)	**SE/TE:** 1, 2, 94-97, 404 **TE only:** 99b

Arkansas Science Standards Learning Progressions by Topic	Interactive Science Grade 5, ©2016
Matter and Energy in Organisms and Ecosystems	
Students who demonstrate understanding can: **5-PS3-1 Use models to describe that energy in animals' food (used for body repair, growth, motion, and to maintain body warmth) was once energy from the sun.** [Clarification Statement: Examples of models could include diagrams and flow charts.] **5-LS1-1 Support an argument that plants get the materials they need for growth chiefly from air and water.** [Clarification Statement: Emphasis is on the idea that plant matter comes mostly from air and water, not from the soil.] **5-LS2-1 Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.** [Clarification Statement: Emphasis is on the idea that matter that is not food (air, water, decomposed materials in soil) is changed by plants into matter that is food. Examples of systems could include organisms, ecosystems, and the Earth.] [Assessment Boundary: Assessment does not include molecular explanations.]	
The performance expectations above were developed using the following elements from the NRC document *A Framework for K-12 Science Education*:	
Disciplinary Core Ideas	
PS3.D: Energy in Chemical Processes and Everyday Life	
• The energy released [from] food was once energy from the sun that was captured by plants in the chemical process that forms plant matter (from air and water). (5-PS3-1)	**SE/TE:** 37, 112, 151, 154-155, 157, 181-184, 185 **TE only:** 142, 157b, 195c
LS1.C: Organization for Matter and Energy Flow in Organisms	
• Food provides animals with the materials they need for body repair and growth and the energy they need to maintain body warmth and for motion. (secondary to 5-PS3-1)	**SE/TE:** 130, 151, 156 **TE only:** 195a
• Plants acquire their material for growth chiefly from air and water. (5-LS1-1)	**SE/TE:** 114-115, 156

Arkansas Science Standards Learning Progressions by Topic	Interactive Science Grade 5, ©2016
LS2.A: Interdependent Relationships in Ecosystems	
• The food of almost any kind of animal can be traced back to plants. Organisms are related in food webs in which some animals eat plants for food and other animals eat the animals that eat plants. Some organisms, such as fungi and bacteria, break down dead organisms (both plants or plants parts and animals) and therefore operate as "decomposers." Decomposition eventually restores (recycles) some materials back to the soil. Organisms can survive only in environments in which their particular needs are met. A healthy ecosystem is one in which multiple species of different types are each able to meet their needs in a relatively stable web of life. Newly introduced species can damage the balance of an ecosystem. (5-LS2-1)	**SE/TE:** 151, 159, 160-164, 181-184, 195 **TE only:** 142, 143, 165b, 187b, 195a
LS2.B: Cycles of Matter and Energy Transfer in Ecosystems	
• Matter cycles between the air and soil and among plants, animals, and microbes as these organisms live and die. Organisms obtain gases, and water, from the environment, and release waste matter (gas, liquid, or solid) back into the environment. (5-LS2-1)	**SE/TE:** 151, 159, 162, 163, 181-184 **TE only:** 142, 143, 165b, 187b, 195a
Connections to other DCIs in fifth grade: **5.PS1.A** (5-LS1-1, 5-LS2-1); **5.ESS2.A** (5-LS2-1)	
Connections to other DCIs across grade levels: **K.LS1.C** (5-PS3-1, 5-LS1-1); **2.PS1.A** (5-LS2-1); **2.LS2.A** (5-PS3-1, 5-LS1-1); **2.LS4.D** (5-LS2-1); **4.PS3.A** (5-PS3-1); **4.PS3.B** (5-PS3-1); **4.PS3.D** (5-PS3-1); **4.ESS2.E** (5-LS2-1); **6.PS3.D** (5-PS3-1, 5-LS2-1); **8.PS4.B** (5-PS3-1); **6.LS1.C** (5-PS3-1, 5-LS1-1, 5-LS2-1); **7.LS2.A** (5-LS2-1); **7.LS2.B** (5-PS3-1, 5-LS2-1)	
Common Core State Standards Connections: ELA/Literacy – **RI.5.1** Quote accurately from a text when explaining what the text says explicitly and when drawing inferences from the text. (5-LS1-1) **RI.5.7** Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently. (5-PS3-1, 5-LS2-1)	

Arkansas Science Standards Learning Progressions by Topic	Interactive Science Grade 5, ©2016
(Continued) **RI.5.9** Integrate information from several texts on the same topic in order to write or speak about the subject knowledgeably. (5-LS1-1) **W.5.1** Write opinion pieces on topics or texts, supporting a point of view with reasons and information. (5-LS1-1) **SL.5.5** Include multimedia components (e.g., graphics, sound) and visual displays in presentations when appropriate to enhance the development of main ideas or themes. (5-PS3-1, 5-LS2-1) *Mathematics –* **MP.2** Reason abstractly and quantitatively. (5-LS1-1, 5-LS2-1) **MP.4** Model with mathematics. (5-LS1-1, 5-LS2-1) **MP.5** Use appropriate tools strategically. (5-LS1-1) **5.MD.A.1** Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems. (5-LS1-1)	
Crosscutting Concepts	
Systems and System Models	
• A system can be described in terms of its components and their interactions. (5-LS2-1)	**SE/TE:** 111, 144, 159-167, 185, 187 **TE only:** 142, 196, 313a
Energy and Matter	
• Matter is transported into, out of, and within systems. (5-LS1-1)	**SE/TE:** 111, 144, 159-167, 185, 187, 211 **TE only:** 142, 196, 256G-256H, 313a
• Energy can be transferred in various ways and between objects. (5-PS3-1)	**SE/TE:** 10, 11, 26, 151, 162 **TE only:** 142, 143, 163
Science and Engineering Practices	
Developing and Using Models Modeling in 3–5 builds on K–2 experiences and progresses to building and revising simple models and using models to represent events and design solutions.	
• Use models to describe phenomena. (5-PS3-1)	**SE/TE:** 120, 195, 224, 282 **TE only:** 125a, 143, 195a, 195c
• Develop a model to describe phenomena. (5-LS2-1)	**SE/TE:** 120, 195, 224, 282 **TE only:** 125a, 143, 195a, 195c

Arkansas Science Standards Learning Progressions by Topic	Interactive Science Grade 5, ©2016
Engaging in Argument from Evidence Engaging in argument from evidence in 3–5 builds on K–2 experiences and progresses to critiquing the scientific explanations or solutions proposed by peers by citing relevant evidence about the natural and designed world(s).	
• Support an argument with evidence, data, or a model. (5-LS1-1)	**TE only:** 101, 195b, 257, 313c
Connections to Nature of Science	
Science Models, Laws, Mechanisms, and Theories Explain Natural Phenomena	
• Science explanations describe the mechanisms for natural events. (5-LS2-1)	**SE/TE:** 116, 122, 126-127, 198, 205-209, 216, 222 **TE only:** 245, 256, 257, 313a, 313d

Arkansas Science Standards Learning Progressions by Topic	Interactive Science Grade 5, ©2016
Engineering, Technology, and Applications of Science	
Students who demonstrate understanding can: **5-ETS1-1 Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.** **5-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.** **5-ETS1-3 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.**	
The performance expectations above were developed using the following elements from the NRC document *A Framework for K-12 Science Education*:	
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. (5-ETS1-1)	**SE/TE:** 4-7, 56-59, 104-107, 146-149, 200-203, 260-263, 318-321, 364-367
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. (5-ETS1-2)	**SE/TE:** 4, 56, 104, 146, 200, 260, 318-319, 364-365, 382
• 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. (5-ETS1-2)	**SE/TE:** 385 **TE only:** 5, 6, 57, 58, 105, 106, 147, 148, 201, 202, 261, 262, 319, 320, 365, 366
• Tests are often designed to identify failure points or difficulties, which suggest the elements of the design that need to be improved. (5-ETS1-3)	**SE/TE:** 6, 59, 106, 148, 202, 262-263, 320, 366, 384

Arkansas Science Standards Learning Progressions by Topic	Interactive Science Grade 5, ©2016
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. (5-ETS1-3)	**SE/TE:** 7, 59, 106-107, 149, 203, 263, 321, 367, 385
Connections to 3-5.ETS1.A: Defining and Delimiting Engineering Problems include: **Fourth Grade:** (4-PS3-4) *Connections to 3-5.ETS1.B: Designing Solutions to Engineering Problems include:* **Fourth Grade:** (4-ESS3-2) *Connections to K-2.ETS1.C: Optimizing the Design Solution include:* **Fourth Grade: (**4-PS4-3)	
Connections to other DCIs across grade levels: **K-2.ETS1.A** (5-ETS1-1, 5-ETS1-2, 5-ETS1-3); **K-2.ETS1.B** (5-ETS1-2); **K-2.ETS1.C** (5-ETS1-2, 5-ETS1-3); **6-8.ETS1.A** (5-ETS1-1); **6-8.ETS1.B** (5-ETS1-1, 5-ETS1-2, 5-ETS1-3); **6-8.ETS1.C** (5-ETS1-2, 5-ETS1-3)	
Common Core State Standards Connections: ELA/Literacy – **RI.5.1** Quote accurately from a text when explaining what the text says explicitly and when drawing inferences from the text. (5-ETS1-2) **RI.5.7** Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently. (5-ETS1-2) **RI.5.9** Integrate information from several texts on the same topic in order to write or speak about the subject knowledgeably. (5-ETS1-2) **W.5.7** Conduct short research projects that use several sources to build knowledge through investigation of different aspects of a topic. (5-ETS1-1, 5-ETS1-3) **W.5.8** Recall relevant information from experiences or gather relevant information from print and digital sources; summarize or paraphrase information in notes and finished work, and provide a list of sources. (5-ETS1-1, 5-ETS1-3) **W.5.9** Draw evidence from literary or informational texts to support analysis, reflection, and research. (5-ETS1-1, 5-ETS1-3) *Mathematics –* 3.0A Operations and Algebraic Thinking (3-ETS1-1, 3-ETS1-2) **MP.2** Reason abstractly and quantitatively. (5-ETS1-1, 5-ETS1-2, 5-ETS1-3) **MP.4** Model with mathematics. (5-ETS1-1, 5-ETS1-2, 5-ETS1-3) **MP.5** Use appropriate tools strategically. (5-ETS1-1, 5-ETS1-2, 5-ETS1-3) **3-5.OA** Operations and Algebraic Thinking (5-ETS1-1, 5-ETS1-2)	

A Correlation of Interactive Science Grade 5, ©2016, to the Arkansas Grade 5 Science Standards Learning Progressions by Topic

Arkansas Science Standards Learning Progressions by Topic	Interactive Science Grade 5, ©2016
Crosscutting Concepts	
Influence of Science, Engineering, and Technology on Society and the Natural World	
• People's needs and wants change over time, as do their demands for new and improved technologies. (5-ETS1-1)	**SE/TE:** 363, 369, 370-371, 372-373, 374, 375-377, 386-87, 388-389, 390, 394
• Engineers improve existing technologies or develop new ones to increase their benefits, decrease known risks, and meet societal demands. (5-ETS1-2)	**SE/TE:** 359, 361, 363, 369, 370-371, 374, 375-377, 378, 379, 381, 382-385, 386-387, 390, 395, 397
Science and Engineering Practices	
Asking Questions and Defining Problems Asking questions and defining problems in 3–5 builds on grades K–2 experiences and progresses to specifying qualitative relationships.	
• 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. (5-ETS1-1)	**SE/TE:** 4, 56, 104, 146, 200, 260, 318, 364, 383
Planning and Carrying Out Investigations Planning and carrying out investigations to answer questions or test solutions to problems in 3–5 builds on K–2 experiences and progresses to include investigations that control variables and provide evidence to support explanations or design solutions.	
• 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. (5-ETS1-3)	**SE/TE:** 40-41, 66, 82-83, 98, 99, 102, 132-133, 178-179, 194, 242-243, 296-297, 328, 348-349, 388-389 **TE only:** 41a, 41b, 41c, 41d, 51a, 73a, 83a, 83b, 83c, 83d, 93a, 99d, 133a, 133b, 133c, 133d, 141a, 179a, 179b, 179c, 179d, 189a, 241a, 243a, 243b, 243c, 243d, 255a, 297a, 297b, 297c, 297d, 307a, 349d, 389d
Constructing Explanations and Designing Solutions Constructing explanations and designing solutions in 3–5 builds on K–2 experiences and progresses to the use of evidence in constructing explanations that specify variables that describe and predict phenomena and in designing multiple solutions to design problems.	
• Generate and compare multiple solutions to a problem based on how well they meet the criteria and constraints of the design problem. (5-ETS1-2)	**SE/TE:** 5-6, 57-58, 105, 147, 201, 261, 319-320, 365, 383