

**A Correlation of**  
**Virginia Elevate Science**  
**Grade 6, ©2021**



**To the**  
**Loudoun County Public Schools**  
**Grade 6 Rubric**

**Science Textbook Correlation to LCPS Science Office Criteria and  
2018 Grade Six Science Standards of Learning and Curriculum Framework**

**LCPS Grade Six Science Rubric**

**Publisher: Savvas Learning Company, LLC**

**Text: Virginia Elevate Science, Grade 6**

**Copyright date: 2021**

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In sixth grade, students are transitioning from elementary to middle school. The science standards support that transition as students examine more abstract concepts, providing a foundation in the disciplines of science. They explore the characteristics of their world, from the Earth’s placement in the solar system to the interactions of water, energy, air, and ecosystems on the Earth. As students examine the use of resources, they also consider how their actions and choices affect future habitability on Earth. Students continue to develop scientific skills and processes as they pose questions and predict outcomes, plan and conduct investigations, collect and analyze data, construct explanations, and communicate information about the natural world. Technologies and scientific tools, including graphing calculators, computers, and probeware are used when appropriate and feasible. Mathematics and computational thinking gain importance as students advance in their scientific thinking. Students continue to use the engineering design process to apply their scientific knowledge to solve problems.

**Resources Meet the LCPS Science Philosophy and Practice**

<b>Criteria</b>	<b>Correlation: Must address the identified need. When appropriate, provide examples in the resource. Use page number and ATE for Annotated Teacher Edition or CT for Core Technology. (Identify no more than 8 correlations.)</b>
Instructional resources should develop students’ ability to know, use, and interpret scientific explanations of the natural world; including developing and using models.	<p><i>Virginia Elevate Science</i> requires students to engage in scientific inquiry as they engage, think, investigate, and interact with natural phenomena through the variety of investigations designed to integrate elements of three-dimensional learning, such as developing and using models, interpreting and analyzing data, research activities, problem-based exercises and more. Organized by thematic topics, students ‘experience’ science through a variety of scaffolded hands-on, inquiry activities (uConnect, uInvestigate, uDemonstrate) designed to build their understanding of science concepts as they create explanations to explain phenomena about their natural world.</p> <p><b>For examples, please see the following:</b>  <b>ATE:</b>  uConnect Lab: What Is at the Center?, 4-5  uDemonstrate Lab: An Ocean of a Problem, 416-419  Model It!: Solar Cells, 486</p>

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<p>Instructional resources should develop students' ability to generate and evaluate scientific evidence and explanations; including developing and using models.</p>	<p><i>Virginia Elevate Science</i> is designed to facilitate the development of the students' ability to generate and evaluate scientific evidence and explanations through activities that integrate elements of three-dimensional learning, such as analyzing and interpreting data, constructing explanations, designing solutions, developing and using models, and more. The Quest problem-based learning scenario provides a context for student learning and affords them the opportunity to develop models, generate data, and gather evidence to support their explanations of scientific phenomena.</p> <p><b>For examples, please see the following:</b>  <b>ATE:</b>  uDemonstrate Lab: An Ocean of a Problem, 416-419  uDemonstrate Lab: To Drink or Not to Drink the Water, 464-467</p>
<p>Instructional resources should develop students' ability to understand the nature and development of scientific knowledge; When appropriate, instructional resources present multiple scientific perspectives and interpretations of scientific ideas as a representation of how science develops understanding of the natural world.</p>	<p>A variety of student-centered activities are incorporated in each topic that provide students with multiple perspectives on a theme. Science is presented as a 'quest' to discover knowledge and uncover new ideas, and not presented as a collection of facts to memorize. Students are encouraged to be active participants in their learning as they find solutions to real-world problems and participate in their learning 'adventure'. The <i>Virginia Elevate Science</i> program empowers students to ask questions, consider alternative ideas, evaluate evidence and engage in discourse to argue from evidence.</p>
<p>Instructional resources should develop students' ability to participate productively in scientific practices and discourse.</p>	<p>The program puts students on a path toward success in science learning and connects performance expectations within and across grades, creating a balanced and coherent sequence designed to deepen student understanding and develop their ability to participate productively in scientific practices and discourse. The investigations, including the Quest Finding (their solution ideas to the topic's Quest challenge) requires students to engage in the practice of 'arguing from evidence' as they present and defend their solution ideas or explain their data. Teacher Edition prompts help guide the classroom discourse and facilitate student conversations.</p> <p><b>For examples, please see the following:</b>  <b>ATE:</b>  Connect to the Real World: Global Warming, 186  Spark a Discussion, 395  Focus on Mastery!: 423</p>

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<p>Instructional resources reflect current best practices in the field of science instruction (pedagogy).</p>	<ul style="list-style-type: none"> <li>▪ Students and teachers will benefit from Savvas (formerly Pearson) experience in developing instructional materials informed by a strong research base. Savvas is the only major publisher that consistently invests in outside validation studies that meet the rigorous criteria of the What Works Clearinghouse. A research team, including educational research methodologists, has been working with Savvas to integrate scientific research practices into the development of our curricula.</li> </ul> <p>In <i>Virginia Elevate Science</i>, that research is represented in the following features:</p> <ul style="list-style-type: none"> <li>▪ Topics introduced with a phenomenon to engage students in the learning and encourages discourse and discovery.</li> <li>▪ Topic organization which is built around problem-based learning scenarios called Quests. These PBLs provide context for student learning and actively engages the learner in finding solutions to the presented real-world topic challenge.</li> <li>▪ To support engagement and address multiple learning modalities, the digital platform hosts a variety of interactive multimedia resources (video, simulations, interactivities, virtual labs) that further student understanding of the core science concepts. These resources reflect the best practices in teaching science to adolescents, utilizing a blend of print and digital media for student learning.</li> </ul>
<p>Materials consistently provide development and application of concepts and scientific practices through the exploration and use of appropriate technologies.</p>	<p>Flexible classroom management tools within the digital platform provide freedom and control to use a digital, print, or blended format. The inquiry activities in <i>Virginia Elevate Science</i> are designed to engage students in hands-on science—making observations, planning investigations, designing solutions and analyzing evidence. Students work like scientists and engineers to understand authentic, real-world phenomena through a variety of lab experiences designed for to meet the specific learning objectives of the SOLs. The digital platform provides powerful data gathering interactive experiences to engage students in the exploration of the science concepts. These resources can be used for personalizing learning through data-driven instruction. The assessment resources include technology-enhanced items that allow students to develop and apply concepts and scientific practices and experience next generation assessment formats.</p>

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<p>Resource provides opportunities to engage in a meaningful scientific investigation of a watershed (stream or bay) as defined by the Virginia Department of Education (<a href="#">MWEE</a>)</p>	<p><i>Virginia Elevate Science</i> provides opportunities for students to engage in the types of investigative essential experiences as described by the Chesapeake MWEE. The student investigations promote active, student-focused questioning, the collection and analysis of self-generated data, and gets them involved in going out-of-doors to explore the natural environment. In several topics in each grade, the Quest real-world problem reflects an environmental theme and encourages students to be active in the promotion of community-based solutions. These student experiences can be found in the topics where the concepts of ecosystems, habitat diversity and human impact on the environment are explored. See Fresh Water as an example.</p> <p><b>For examples, please see the following:</b>  <b>ATE:</b>  uDemonstrate Lab: Modeling a Watershed, 158-161  Quest Kickoff, 422-423  Quest Check-In, 459</p>
<p>Resource provides opportunities for students to engage in computational thinking by solving problems that logically organize and classify data and use a series of steps (algorithms).</p>	<p>The program puts students on a path toward success in science learning by making science relevant and meaningful for today’s students and teaching them to work similarly to that of actual scientists and engineers. Scientific inquiry, investigating phenomena, computational thinking, problem-solving and analysis and application of core concepts are emphasized as a goal for all students. In many of the investigations and intext response prompts, students are gathering and generating data, engaging in grade appropriate computational thinking exercises, and applying mathematical algorithms as a way to interpret and analyze the data they have generated. The <i>Virginia Elevate Science</i> program also includes correlations to grade level mathematics standards.</p> <p><b>For examples, please see the following:</b>  <b>ATE:</b>  Math Toolbox, 54  uDemonstrate Lab: Water from Trees, 370-373  Case Study: The Carbon Cycle, 400-401</p>

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<p>Resources provide opportunities for students to use technology to learn science content and science process skills.</p>	<p>Virtual labs, interactive simulations and videos, along with an interactive student e-text all provide opportunities for students to use technology to learn and practice science concepts and skills. Our innovative technology-enhanced items, performance-based assessments, and adaptive learning programs help measure and build key 21st-century skills in learners of all abilities—including the elements of conceptual understanding, basic and procedural skills, and problem solving.</p> <p><b>For examples, please see the following:</b>  <b>ATE:</b>          My Discovery, 191          uConnect Lab: Find Your Water Footprint, 424-425          uDemonstrate Lab: To Drink or Not to Drink the Water, 464-467</p>
<p>Resources provide opportunities for students to explore advances in technology and scientific discovery that have occurred since your last publication date.</p>	<p>The intuitive digital path is more than an ancillary to the program; it is a vital component of our approach to learning that places the student at the center of the process of discovery. The digital path enables students to explore science in a way that emphasizes their own quest for knowledge and creativity. By organizing the material in topics, students can explore advances in technology and scientific discovery that develop beyond publication of printed materials. The uEngineer It! investigations and STEM activities encourage students to research and make use of current advances in science and apply those to their Quest solutions. The <b>Engineering Design Notebook</b> promotes research into current technologies as students design and devise their own innovation solutions to the engineering challenge of the topic.</p>

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<b>Resources Support the LCPS Mission, Core Beliefs and Strategic Goals</b> <a href="https://bit.ly/2VV3IDB">https://bit.ly/2VV3IDB</a>	
<b>Criteria</b>	<b>Correlation: Must address the identified need. When appropriate, provide examples in the resource. Use page number and ATE for Annotated Teacher Edition or CT for Core Technology. (Identify no more than 8 correlations.)</b>
Instructional resources support the potential for integration into Project-Based Learning (PBL).	<p><b>Phenomena-Based Quests:</b> Each topic engages students with a phenomena-based learning scenario called a ‘Quest’. The Quest contains a real-world problem for them to solve as they explore the science concept and develop the necessary science inquiry skills. A topic opening phenomenon and Essential Question open the topic and puts students on that path toward experiencing the topic content and skills. Students investigate the phenomena and use their experiences, the e-text photos, diagrams, and other visual elements to apply them to the concepts they are learning. The scaffolded labs throughout the topic introduce core ideas in context as students ‘experience’ science while they gain new knowledge in the hands-on setting.</p> <p><b>For examples, please see the following:</b>  <b>ATE:</b>            The Essential Question, 105            Quest Kickoff, 106-107            Case Study: The Case of the Shrinking Sea, 140-141</p>
Instructional resources provide opportunities for Personalized Learning and the exercise of student voice and choice.	Teachers can individualize the instruction by assigning different resources to either individual students or group of students. Many of the uInvestigate activities give students the opportunity to develop their own plans to conduct the investigation. The program Teacher Edition offers comprehensive differentiation instruction and intervention support to address the needs of all learners—whether they are struggling, on-level, or advanced learners. This support provides system-driven opportunities to personalize learning for students and a library of resources to support the teacher in personalizing instruction and allowing students to exercise their voice and choice.

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<p>Instructional resources include grade level performance assessments that are formative and summative.</p>	<p>Learning outcomes are at the heart of each assessment we create, including those in our science worktexts. There are two types of performance assessments at the end of each topic- the Evidence-based assessment and the uDemonstrate investigation lab. Both of these assessments require students to demonstrate their understating of topic concepts through its application in a new setting.</p> <p>Our innovative technology-enhanced items, performance-based formative and summative assessments, and adaptive learning programs help measure and build key 21st-century skills in learners of all abilities—including the elements of conceptual understanding, basic and procedural skills, and problem solving. In print assessments includes lesson checks, investigation checks, and end-of-topic assessments.</p>
<p>Instructional resources support individual, small group, and whole class learning opportunities and collaboration.</p>	<p><i>Virginia Elevate Science</i> provides opportunities for students to work individually, in small, cooperative groups and engage in science and engineering practices as a whole class. Teacher Edition provides suggested grouping guidelines for the different hands-on activities, and other student interactions. The digital platform allows for group collaboration and the sharing of ideas through the Google integration tools. Teachers are able to group and assign students into learning cohorts based on ability, need and class preferences.</p>



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<p>Instructional resources consistently include content promoting use of critical thinking skills and problem-solving approaches and provide opportunities for students to use critical thinking skills and problem solving through a process of sustained inquiry.</p>	<p><i>Virginia Elevate Science</i> includes a variety of opportunities for students to practice and demonstrate critical-thinking and problem-solving skills. The uEngineer It activities highlight open-ended problem solving. The digital interactives encourage critical-thinking and analysis. The performance-based tasks, research projects, inquiry investigations, labs, open-ended response questions, multiple choice questions, drag-and-drop questions, and other content that provides opportunities for students to use critical thinking and problem solving through a process of sustained inquiry.</p>
<p>Materials consistently promote the introduction of concepts through concrete experiences.</p>	<p><i>Virginia Elevate Science</i> is designed for students to ‘experience’ science and not just read about it. Every lesson begins with the hands-on activity called uInvestigate, giving them concrete experiences to engage their minds and make science real. Up-to-date, accurate, themed topics are used to build knowledge in each unit, emphasizing the common characteristics of a unifying, relevant concept and promoting in-depth understanding through daily lessons. The Quest challenge uses real-world challenges to set a context for student learning. Visual analogies connect difficult concepts to real world issues to help students better understand the concepts presented.</p> <p><b>For examples, please see the following:</b>  <b>ATE:</b>          Quest Kickoff, 222-223          Model It!, 236          Case Study: Dissolving into Beauty, 250-251</p>

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<p>Instructional resources provide opportunities for students to apply learning in real-world situations.</p>	<p>Up-to-date, accurate, themed topics are used to build knowledge in each unit, emphasizing the common characteristics of a unifying, relevant concept and promoting in-depth understanding through daily lessons. The Quest challenge uses real-world challenges to set a context for student learning. Visual analogies connect difficult concepts to real world issues to help students better understand the concepts presented.</p> <p><b>For examples, please see the following:</b>  <b>ATE:</b>          Connect to the Real World: Create It!, 170          Connect to the Real World: Fossil Fuels, 239          Connect to the Real World: Waste Disposal and Recycling, 520</p>
<p>Materials consistently provide the appropriate level of abstraction and appropriate practical/real-life examples.</p>	<p>A rigorous curriculum offers students equal opportunities to develop understanding, practice key concepts and skills, and apply these concepts and skills in real-world or abstract situations. <i>Virginia Elevate Science</i> includes engaging real-life visuals, a write-in student text with practical examples and a consistent organization that aids student learning.</p>
<p>Materials consistently provide sufficient, grade-level appropriate examples of applications of concepts to promote depth of understanding.</p>	<p>Materials present current, scientifically accurate, and grade-appropriate scientific information, phenomena, and representations. Outside fact-checkers verify data used and authenticity of identified facts. A full research bibliography is available showing the research reviewed and sources cited that informed development of the program.</p>

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<b>Resources are Inclusive, Accessible, Culturally Responsive, and Free of Bias</b>	
<b>Criteria</b>	<b>Correlation: Must address the identified need. When appropriate, provide examples in the resource. Use page number and ATE for Annotated Teacher Edition or CT for Core Technology. (Identify no more than 8 correlations.)</b>
<p>Instructional resources represent women, people of different ages, religious, ethnic and racial minorities and persons with disabilities in many different environments and occupations, and in the roles of current science career fields.</p>	<p>Savvas systematically develops its educational products and vets its partnership products by implementing criteria and standards that reflect multiethnic, multiracial, and multicultural perspectives. Over the years, we have worked with numerous experts and consultants from universities and other educational institutions to provide a broad perspective in our educational materials.</p> <p>While creating high-quality educational content, our standards are aimed at the following:</p> <ul style="list-style-type: none"> <li>▪ Integrating multicultural experiences into program content so students see themselves as part of what is valued in the school’s curriculum</li> <li>▪ Fostering self-esteem for greater academic achievement</li> <li>▪ Empowering students to act effectively in a democratic society and reach their full potential</li> <li>▪ Reducing prejudice by showing multicultural friendships and people from different backgrounds, working, playing, and living together</li> </ul> <p>Our educational materials consider the needs of all students and are designed to provide a fair, balanced representation of various cultural groups and members, including racial, ethnic and religious groups; males and females; older people; and people with disabilities.</p>
<p>Instructional resources are free from stereotypes which assign a rigid set of characteristics to all members of a group.</p>	<p>Educational materials consider the needs of all students, are free from stereotypes, and are designed to provide a fair, balanced representation of various cultural groups and members, including racial, ethnic and religious groups; males and females; older people; and people with disabilities.</p>

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<p>Instructional resources provide teachers with strategies for meeting the needs of Advanced Learners, English Learners and Special Education students.</p>	<p>Instructional materials provide LCPS teachers with research-based social and emotional learning curriculum and materials for all learners, including students who receive special education services and students who receive gifted and talented services. Instructional materials also provide differentiating instruction based on diverse learners (i.e., sections provide scaffolds for ELLs and students with disabilities, teacher guidance in the introductory section, etc.) and scaffolded tools for remediation (for example, appendix resources for writing and editing, teacher guidance for assigning reading, etc.). The Savvas Realize platform include multiple resources that teachers can assign to support individual student learning goals.</p>
<p>Instructional resources include accessibility features and tools for Advanced Learners, English Learners and Special Education students.</p>	<p>Instructional materials provide LCPS students with compliant, accessible resources. Our digital development team ensures that the online resources have embedded tools and features designed to make sure all students can access the activities, text and assessments.</p> <p><b>For examples, please see the following:</b>  <b>ATE:</b>            ELD Support, 7            Differentiated Instruction, 343</p>
<p>Instructional resources include Tier 2 and Tier 3 vocabulary necessary to support English Learners and Special Education students.</p>	<p>LCPS can be confident in high-quality instructional materials and services that are developed for quality, efficacy, and usability, and are based on critical foundational research and proven classroom results. The offered product was developed to meet the needs of a diverse, high-need student population, including economically disadvantaged students, underrepresented racial/ethnic groups, and large populations of ELLs.</p> <p><b>For examples, please see the following:</b>  <b>ATE:</b>            ELD Support, 481            Differentiated Instruction, 343</p>

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<b>STANDARD</b>	<b>Correlation: Must address both the standards and the curriculum framework. Use page number and ATE for Annotated Teacher Edition or CT for Core Technology. (Identify no more than 8 correlations.)</b>
<p>6.2 The student will investigate and understand that the solar system is organized and the various bodies in the solar system interact. Key ideas include</p>	
<p>a) matter is distributed throughout the solar system;</p>	<p><b>ATE:</b>  <b>Topic 2: Solar System and the Universe</b>            uConnect Lab, pp. 50-51            Connect It!, p. 52            Understanding the Solar System, pp. 53-56            Smaller Solar System Objects, p. 56            Figure 7: The Solar System, pp. 60-61            Lesson 1 Check: Compare and Contrast, p. 63            Quest Check-In, p. 63            Extraordinary Science: Traveling Through the Milky Way, p. 95</p>
<p>b) planets have different sizes and orbit at different distances from the sun;</p>	<p><b>ATE:</b>  <b>Topic 1: Earth-Sun-Moon System</b>            Case Study: The Ptolemaic Model, pp. 16-17</p> <p><b>Topic 2: Solar System and the Universe</b>            uConnect Lab: Planetary Measures, pp. 50-51            Reading Check: Summarize Text, p. 55            Figure 7: The Solar System, pp. 60-61            Lesson 1 Check, #3, p. 63</p>

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<p>c) gravity contributes to orbital motion; and</p>	<p><b>ATE:</b>  <b>Topic 1: Earth-Sun-Moon System</b>  Gravity and Orbits, pp. 23-25</p> <p><b>Topic 2: Solar System and the Universe</b>  Understanding the Solar System, p. 53  Solar System Formation, p. 62  Lesson 1 Check: Apply Scientific Reasoning, p. 63  Extraordinary Science: Traveling Through the Milky Way, p. 95  Topic 2 Evidence-Based Assessment, pp. 98-99</p>
<p>d) the understanding of the solar system has developed over time.</p>	<p><b>ATE:</b>  <b>Topic 1: Earth-Sun-Moon System</b>  Models of the Solar System, pp. 12-14  Figure 6: Heliocentric Timeline, p. 13  Case Study: The Ptolemaic Model: Explaining the Unexplained, pp. 16-17  It's All Connect: Tracking Time in the Sky, p. 27</p> <p><b>Topic 2: Solar System and the Universe</b>  Quest Kickoff: How do we look for things that can't be seen?, pp. 48-49  Collecting Space Data, pp. 67-69  History of Space Exploration, pp. 70-73  Lesson 2 Check: Connect to Technology, p. 74</p>

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<p>6.3 The student will investigate and understand that there is a relationship between the sun, Earth, and the moon. Key ideas include</p>	
<p>a) Earth has unique properties;</p>	<p><b>ATE:</b>  <b>Topic 2: Solar System and the Universe</b>            Understanding the Solar System, p. 53            Case Study: Earth Is “Just Right” for Life, pp. 64-65</p> <p><b>Topic 3: Introduction to Earth’s Systems</b>            The Earth System, pp. 111-113            Exploring Earth’s Surface, pp. 122-123            Distribution of Earth’s Water, p. 133            Exploring the Ocean, pp. 137-138            Earth’s Layers, pp. 145-149</p> <p><b>Topic 9: Fresh Water</b>            Locations Water is Found, pp. 428-429</p>
<p>b) the rotation of Earth in relationship to the sun causes day and night;</p>	<p><b>ATE:</b>  <b>Topic 1: Earth-Sun-Moon System</b>            Rotation, p. 19            Design It!, p. 20            Figure 2: Earth’s Axis, p. 20            Lesson 2 Check, #2, p. 26            Topic 1 SOL Review, #8, p. 38</p>

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<p>c) the movement of Earth and the moon in relationship to the sun causes phases of the moon;</p>	<p><b>ATE:</b>  <b>Topic 1: Earth-Sun-Moon System</b>            Connect It!, p. 28            Reflect, p. 29            The Appearance of the Moon, pp. 29-31            Lesson 3 Check, #1-2 p. 36            Topic 1 SOL Review, #16, 19, p. 39            Topic 1 Evidence-Based Assessment, pp. 40-41            uDemonstrate Lab, pp. 42-45</p>
<p>d) Earth’s tilt as it revolves around the sun causes the seasons; and</p>	<p><b>ATE:</b>  <b>Topic 1: Earth-Sun-Moon System</b>            Literacy Connection: Cite Textual Evidence, p. 21            Figure 3: Seasons, p. 21            The Seasons, pp. 21-22            Lesson 2 Check, #2, p. 26            Topic 1 SOL Review, #9, p. 38            Topic 1 Evidence-Based Assessment, pp. 40-41</p>
<p>e) the relationship between Earth and the moon is the primary cause of tides.</p>	<p><b>ATE:</b>  <b>Topic 1: Earth-Sun-Moon System</b>            Quest Kickoff, pp. 2-3            Math Toolbox, p. 34            Tides, pp. 34-35            Lesson 3 Check: Draw Conclusions, p. 36            Quest Check-In, p. 36            uEngineer It! STEM: Power from the Tides, p. 37            Topic 1 SOL Review, #14, p. 39            Quest Findings, p. 41</p>



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6.4 The student will investigate and understand that there are basic sources of energy and that energy can be transformed. Key ideas include	
a) the sun is important in the formation of most energy sources on Earth;	<b>ATE:</b> <b>Topic 4: Energy in the Atmosphere and Ocean</b> uConnect Lab: Does a Plastic Bag Trap Heat?, pp. 166-167 Energy from the Sun, pp. 183-186 Figure 2: Layers of Atmosphere, p. 184 Reading Check: Determine Central Ideas, p. 185 The Greenhouse Effect, pp. 186 Lesson 3 Check, Summarize, p. 190 Global Winds, p. 196 Model It!, p. 196
b) Earth’s energy budget relates to living systems and Earth’s processes;	<b>ATE:</b> <b>Topic 4: Energy in the Atmosphere and Ocean</b> Earth’s Energy Budget, p. 185 The Greenhouse Effect, p. 186 Figure 4: Earth as a Greenhouse, p. 186 Lesson 3 Check: Summarize, p. 190 Extraordinary Science: Measure Radiation with a Cube, p. 191 uDemonstrate Lab: Not All Heating Is Equal, pp. 216-219

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<p>c) radiation, conduction, and convection distribute energy; and</p>	<p><b>ATE:</b>  <b>Topic 3: Introduction to Earth’s Systems</b>  Movement in Earth’s Mantle, pp. 150-151</p> <p><b>Topic 4: Energy in the Atmosphere and Ocean</b>  uConnect Lab: Does a Plastic Bag Trap Heat?, pp. 166-167  Heat Transfer in the Atmosphere, pp. 187-189  Figure 5: Things are Heating Up, p. 188  Topic SOL Review, #7, p. 212</p> <p><b>Topic 7: Weather in the Atmosphere</b>  Energy in the Atmosphere, pp. 325-326  Lesson 1 Check, Develop Models, p. 327</p>
<p>d) energy transformations are important in energy usage.</p>	<p><b>ATE:</b>  <b>Topic 4: Energy in the Atmosphere and Ocean</b>  Electrical Engineer: Wire Up Energy, p. 175  Energy Is Conserved During a Transformation, pp. 178-180  Reading Check: Translate Information, p. 179  Figure 5: Transforming Stored Energy, p. 180  Lesson 2 Check, p. 181  Quest Check-In, p. 181  Topic 4 SOL Review, #2-3, p. 212</p>

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<b>2018 Kindergarten Science Standards of Learning</b>	
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6.5 The student will investigate and understand that all matter is composed of atoms. Key ideas include	
a) atoms consist of particles, including electrons, protons, and neutrons;	<b>ATE:</b> <b>Topic 5: Survey of Chemistry</b> Atoms, p. 227 Protons, Neutrons, and Electrons, p. 228 Figure 3: Protons, Neutrons, and Electrons, p. 228 Lesson 1 Check: Compare and Contrast, Model, p. 231 Topic 5 SOL Review: Interpret Diagrams, p. 252
b) atoms of a particular element are similar but differ from atoms of other elements;	<b>ATE:</b> <b>Topic 5: Survey of Chemistry</b> Atoms, 227 Protons, Neutrons, and Electrons, p. 228 Atoms and Molecules, 229 Lesson 1 Check: Compare and Contrast, p. 231  <b>CT:</b> <b>Realize™ Digital Resources:</b> Connect Activity Lab: Atomic Structures

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<p>c) elements may be represented by chemical symbols;</p>	<p><b>ATE:</b>  <b>Topic 5: Survey of Chemistry</b>  Elements, p. 227  Figure 2, p. 227  Reading Check: Compare and Contrast, p. 231  Lesson 1 Check: p. 231  Chemical Equations, pp. 237  Case Study: Dissolving into Beauty, pp. 250-251  Topic 5 SOL Review, #2, p. 252</p>
<p>d) two or more atoms interact to form new substances, which are held together by electrical forces (bonds);</p>	<p><b>ATE:</b>  <b>Topic 5: Survey of Chemistry</b>  Molecules, p. 229  Compounds, p. 230  Lesson 1 Check: Construct Explanations, p. 231  uEngineer It!: The Strength of Chemical Bonds, p. 241  Case Study: Dissolving into Beauty, pp. 250-251  Topic 5 SOL Review, #3, #5, p. 252</p>
<p>e) compounds may be represented by chemical formulas;</p>	<p><b>ATE:</b>  <b>Topic 5: Survey of Chemistry</b>  Compounds, p. 230  Compounds, Figure 5, Infer, p. 230  Lesson 1 Check: Model, p. 231  Quest Check-In, p. 231  Chemical Equations Are a Model for Chemical Reactions, p. 237  Math Toolbox, p. 237  Lesson 2 Check: Review; Identify, p. 240  Case Study: Dissolving into Beauty, pp. 250-251</p>

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<p>f) chemical equations can be used to model chemical changes; and</p>	<p><b>ATE:</b>  <b>Topic 5: Survey of Chemistry</b>            Chemical Equations Are a Model for Chemical Reactions, pp. 237-237            Math Toolbox, p. 237            Chemical Reactions Can Cause Motion, p. 239            Lesson 2 Check: Summarize, p. 240            Case Study: Dissolving into Beauty, pp. 250-251</p>
<p>g) a few elements comprise the largest portion of the solid Earth, living matter, the oceans, and the atmosphere.</p>	<p><b>ATE:</b>  <b>Topic 3: Introduction to Earth's Systems</b>            Earth's Spheres, p. 112            The Crust, p. 146</p> <p><b>Topic 5: Survey of Chemistry</b>            Elements, p. 227            Investigate: Building Blocks of Matter, Teach Key Concepts, p. 227</p> <p><b>CT:</b>  <b>Realize™ Digital Resources:</b>            Topic 3, Lesson 1 Lab Activity: What's It Made Of?</p>

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6.6 The student will investigate and understand that water has unique physical properties and has a role in the natural and human-made environment. Key ideas include	
a) water is referred to as the universal solvent;	<b>ATE:</b> <b>Topic 5: Survey of Chemistry</b> uConnect Lab: What Substances Will Dissolve in Water?, pp. 224-225 Structure of Water, p. 243 Universal Solvent, p. 245 Plan It!, p. 245 Case Study: Dissolving into Beauty, pp. 250-251 Topic 5 SOL Review: Apply Concepts, p. 253 Topic 5 Evidence-Based Assessment, pp. 254-255
b) water has specific properties;	<b>ATE:</b> Structure of Water, p. 243 Capillary Action, 244 The Three States of Water, p. 246-248 Lesson 3 Check: #1, 3, 4 p. 249  <b>CT:</b> <b>Realize™ Digital Resources:</b> Topic 5, Lesson 3 uInvestigate Lab: Capillary Action Quest Check-In Lab: States of Matter

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<p>c) thermal energy has a role in phase changes;</p>	<p><b>ATE:</b>  <b>Topic 3: Introduction to Earth’s Systems</b>  The Water Cycle, pp. 131-132</p> <p><b>Topic 4: Energy in the Atmosphere and Ocean</b>  Heat Transfer in the Atmosphere, p. 187</p> <p><b>Topic 5: Survey of Chemistry</b>  The Three States of Water, pp. 246-248  Lesson 3 Check: Explain, p. 249  Topic 5 SOL Review: #12, p. 253</p> <p><b>Topic 9: Fresh Water</b>  The Water Cycle, pp. 430-431  Lesson 1 Check: Sequence, p. 432</p>
<p>d) water has a role in weathering;</p>	<p><b>Topic 6: Earth’s Surface Systems</b>  Weathering Earth’s Surface, pp. 268-270  Groundwater Changes Earth’s Surface, pp. 291-292  Waves Change Earth’s Surface, pp. 302-303</p> <p><b>CT:</b>  <b>Realize™ Digital Resources:</b>  Topic 6 Quest Check-In Lab: Breaking It Down  Topic 6, Lesson 1 uInvestigate Lab: Freezing and Thawing.  Topic 6, Lesson 3 uInvestigate Lab: Raindrops Falling  Topic 6, Lesson 3 Interactivity: Karst Topography  Topic 6, Lesson 4 Connect Activity Lab: Glacier in a Cup</p>

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<p>e) large bodies of water moderate climate; and</p>	<p><b>ATE:</b> <b>Topic 3: Introduction to Earth’s Systems</b> Model It!: Sea Ice and Climate, p. 114</p> <p><b>Topic 8: Climate</b> Distance from Large Bodies of Water, p. 383 Lesson 1 Check: Use Models, p. 388</p> <p><b>CT:</b> <b>Realize™ Digital Resources:</b> Topic 5, Lesson 1 Interactivity: Properties of Water Topic 7, Lesson 4 uInvestigate Lab: Tracking Weather Topic 8 Lesson 1 Video: How Ocean Currents Help Regulate Climate</p>
<p>f) water is important for agriculture, power generation, and public health.</p>	<p><b>ATE:</b> <b>Topic 3: Introduction to Earth’s Systems</b> Connect It!, p. 130 Case Study: The Case of the Shrinking Sea, pp. 140-141 Modeling a Watershed, pp. 158-161</p> <p><b>Topic 9: Fresh Water</b> Water is Important for Life, p. 427 Math Toolbox: Uses of Water, p. 449 uDemonstrate Lab: To Drink or Not to Drink the Water, pp. 464-467</p> <p><b>Topic 10: Distribution of Natural Resources</b> Hydroelectric Resources, p. 487 uEngineer It!: Micro-Hydro Power, p. 491</p>



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6.7 The student will investigate and understand that air has properties and that Earth’s atmosphere has structure and is dynamic. Key ideas include	
a) air is a mixture of gaseous elements and compounds;	<b>ATE:</b> <b>Topic 7: Weather in the Atmosphere</b> Composition of the Atmosphere, p. 322 Math Toolbox, p. 322 Figure 5: Identifying the Atmosphere’s Layers, p. 324 Lesson 1 Check: Identify, p. 327 Topic 7 SOL Review, #1, p. 366
b) the atmosphere has physical characteristics;	<b>ATE:</b> <b>Topic 7: Weather in the Atmosphere</b> Earth’s Insulator, pp. 321-325 Model It!, p. 323 Figure 5: Identifying the Atmosphere’s Layers, p. 324 Energy in the Atmosphere, pp. 325-326 Lesson 1 Check: #2, #5, p. 327 Water Enters the Atmosphere, pp. 329-331 Water Leaves the Atmosphere, pp. 332-334 Topic 7 SOL Review, #2-#7, p. 366

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<p>c) properties of the atmosphere change with altitude;</p>	<p><b>ATE:</b>  <b>Topic 7: Weather in the Atmosphere</b>            Model It!, p. 323            Air Pressure, p. 323            Reading Check: Summarize, p. 323            Figure 5: Identifying the Atmosphere’s Layers, p. 324            Lesson 1 Check: #2-#3, p. 327</p>
<p>d) there is a relationship between air movement, thermal energy, and weather conditions;</p>	<p><b>ATE:</b>  <b>Topic 4: Energy in the Atmosphere and Ocean</b>            Quest Kickoff, pp. 164-165            Winds, pp. 193-194            Local Winds and Global Winds, pp. 195-197            Global Wind Patterns, pp. 198-199            Surface Currents, pp. 203-206            Hurricanes in the Making, pp. 210-211            Evidence-Based Assessment, pp. 214-215</p> <p><b>Topic 7: Weather in the Atmosphere</b>            Types of Air Masses, pp. 339-340</p>
<p>e) atmospheric measures are used to predict weather conditions; and</p>	<p><b>ATE:</b>  <b>Topic 7: Weather in the Atmosphere</b>            Quest Kickoff, pp. 316-317            Water Enters the Atmosphere, pp. 329-331            Lesson 2 Check: Construct Explanations, p. 336            How to Predict Weather, pp. 347-349            Lesson 4 Check, #2, p. 352            Careers: Meteorologist, p. 353            Case Study: The Case of the Runaway Hurricane, pp. 364-365            Topic 7 Evidence-Based Assessment, pp. 368-369</p>

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f) weather maps give basic information about fronts, systems, and weather measurements.

**ATE:**

**Topic 7: Weather in the Atmosphere**

Learning from Weather Maps, pp. 350-351

Lesson 4 Check, #2, p. 352

Lake-Effect Snow, Figure 2, p. 356

Topic 7 SOL Review, #11, #13, p. 367

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6.8 The student will investigate and understand that land and water have roles in watershed systems. Key ideas include	
a) a watershed is composed of the land that drains into a body of water;	<p><b>ATE:</b>  <b>Topic 3: Introduction to Earth’s Systems</b>                      Watersheds, p. 134                      Divides, p. 134                      Reading Check: Summarize, p. 135                      Lesson 3 Check, #2, p. 139                      uDemonstrate Lab: Modeling a Watershed, pp. 158-161</p> <p><b>Topic 9: Fresh Water</b>                      Parts of a River, pp. 435-436                      Topic 9 SOL Review, #6-#7, p. 460                      Topic 9 Evidence-Based Assessment, pp. 462-463</p>
b) Virginia is composed of multiple watershed systems which have specific features;	<p><b>ATE:</b>  <b>Topic 9: Fresh Water</b>                      Virginia Watersheds, 437</p> <p><b>CT:</b>  <b>Realize™ Digital Resources:</b>                      Topic 9, Lesson 2 Interactivity: Watersheds                      Topic 9, Lesson 2 uInvestigate Lab: Mapping Surface Water                      Topic 9, Lesson 2 Quest Check-in Lab: What Is a Watershed?</p>

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<p>c) the Chesapeake Bay is an estuary that has many important functions; and</p>	<p><b>ATE:</b>  <b>Topic 9: Fresh Water</b>          Virginia Watersheds, p. 437          Figure 4: Chesapeake Bay, p. 438</p> <p><b>CT:</b>  <b>Realize™ Digital Resources:</b>          Topic 9, Lesson 2 Case Study: Nitrogen Pollution          Topic 9, Lesson 2 Research Activity: Chesapeake Bay—An Important Estuary</p>
<p>d) natural processes, human activities, and biotic and abiotic factors influence the health of a watershed system.</p>	<p><b>ATE:</b>  <b>Topic 9: Fresh Water</b>          Watersheds, p. 436          Pollution of Watersheds, p. 437          Watershed Conservation, p. 438          Case Study: Nitrogen Pollution, pp. 444-445</p> <p><b>CT:</b>  <b>Realize™ Digital Resources:</b>          Topic 9, Lesson 2 Interactivity: Watersheds          Topic 9, Lesson 2 Interactivity: Eutrophication          Topic 9, Lesson 2 Research Activity: Chesapeake Bay -- An Important Estuary</p>

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6.9 The student will investigate and understand that humans impact the environment and individuals can influence public policy decisions related to energy and the environment. Key ideas include	
a) natural resources are important to protect and maintain;	<p><b>ATE:</b>  <b>Topic 10 Distribution of Natural Resources</b>            Quest Kickoff: How could natural resources have saved a ghost town?, pp. 470-471            Natural Resources, p. 475            Case Study: Phosphorus Fiasco, pp. 500-501            Water on Earth, pp. 503-505</p> <p><b>Topic 11: Human Impacts on the Environment</b>            Using Natural Resources, pp. 528-529            Importance of Soil Management, pp. 545-548            uEngineer It!: From Wastewater to Tap Water, p. 565            uDemonstrate Lab: Washing Away, pp. 570-573</p>

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<p>b) renewable and nonrenewable resources can be managed;</p>	<p><b>ATE:</b>  <b>Topic 10: Distribution of Natural Resources</b>  Reducing Fossil Fuel Usage, p. 485  Alternative Sources of Energy, pp. 486-489  Case Study: Phosphorus Fiasco, pp. 500-501  Topic 10 SOL Review: Evidence-Based Assessment,  pp. 512-513</p> <p><b>Topic 11: Human Impacts on the Environment</b>  uConnect Lab, pp. 522-523  Importance of Soil Management, pp. 545-548  Case Study: Nothing Goes to Waste, pp. 554-555  uEngineer It; From Wastewater to Tap Water, p. 565</p>
<p>c) major health and safety issues are associated with air and water quality;</p>	<p><b>ATE:</b>  <b>Topic 10: Distribution of Natural Resources</b>  Natural Gas, p. 480  Human Impacts, pp. 506-507</p> <p><b>Topic 11: Human Impacts on the Environment</b>  Causes of Pollution, p. 533  Outdoor Air Pollution, pp. 534-536  Indoor Air Pollution, p. 537  Global to Local: Working Together to Reduce Air Pollution,  p. 541  Sources of Freshwater Pollution, pp. 558-559  uEngineer It!: From Wastewater to Tap Water, p. 565</p>

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<p>d) major health and safety issues are related to different forms of energy;</p>	<p><b>ATE:</b>  <b>Topic 8: Climate</b>  Impact of Rising Temperatures, pp. 403-407  Lesson 3 Check: Describe, p. 410</p> <p><b>Topic 10: Distribution of Natural Resources</b>  Oil, p. 478  Natural Gas, p. 480  Using Energy Resources, p. 482  Lesson 1 Check: Engage in Argument, p. 483</p> <p><b>Topic 11: Human Impacts on the Environment</b>  Outdoor Air Pollution, pp. 534-536  Lesson 2 Check: #3-#4, p. 540</p>
<p>e) preventive measures can protect land-use and reduce environmental hazards; and</p>	<p><b>ATE:</b>  <b>Topic 10: Distribution of Natural Resources</b>  Reducing Fossil Fuel Usage, p. 485</p> <p><b>Topic 11: Human Impacts on the Environment</b>  Quest Kickoff, pp. 520-521, 540, 569  Controlling Air Pollution, p. 538-539  Land Reclamation, p. 548  Sustainable Forest Management, pp. 550-552  Case Study: Nothing Goes to Waste, pp. 554-555  Reducing Water Pollution, pp. 562-563  uDemonstrate Lab: Washing Away, pp. 570-573</p>



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<p>f) there are cost/benefit tradeoffs in conservation policies.</p>	<p><b>ATE:</b> <b>Topic 10: Distribution of Natural Resources</b> Reducing Fossil Fuel Usage, p. 485 Alternative Sources of Energy, pp. 486-489 Lesson 2 Check: Engage in Argument, p. 490</p> <p><b>Topic 11: Human Impacts on the Environment</b> Balancing Needs, p. 530 Logging Methods, p. 551 uDemonstrate Lab: Washing Away, pp. 570-573</p>
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