Carolina Biological Science Bits Grade 6

Carolina Biological Science Bits Grade 6 Executive Summary

Section 1. Science-Related Texas Essential Knowledge and Skills (TEKS) and English Language Proficiency Standards (ELPS) Alignment

Grade	TEKS Student %	TEKS Teacher %	ELPS Student %	ELPS Teacher %
Grade 6	100%	100%	100%	100%
Grade 7	61.54%	61.54%	100%	100%
Grade 8	95.92%	95.92%	100%	100%

Section 2. Instructional Anchor

- The materials are designed to strategically and systematically integrate scientific and engineering practices, recurring themes and concepts, and grade-level content as outlined in the TEKS.
- The materials anchor the learning in phenomena and problems as the key lever for driving learning and student mastery of disciplinary knowledge and skills.

Section 3. Knowledge Coherence

- The materials are designed to build knowledge systematically, coherently, and accurately.
- The materials provide educative components to support teachers' content and coherence knowledge.

Section 4. Productive Struggle

- The materials provide opportunities for students to engage in productive struggle through sensemaking that involves reading, writing, thinking, and acting as scientists and engineers.

Section 5. Evidence-Based Reasoning and Communicating

- The materials promote students' use of evidence to develop, communicate, and evaluate explanations and solutions.
- The materials provide teacher guidance to support student reasoning and communication skills.

Section 6. Progress Monitoring

- The materials include a variety of TEKS-aligned and developmentally appropriate assessment tools.
- The materials include guidance that explains how to analyze and respond to data from assessment tools.

- The assessments are clear and easy to understand.

Section 7. Supports for All Learners

- The materials provide guidance on fostering connections between home and school.
- The materials include some listening, reading, writing, and speaking supports to help Emergent Bilinguals meet grade-level science content expectations.
- The materials include some research-based instructional methods that appeal to a variety of learning interests and needs.
- The materials include some guidance, scaffolds, supports, and extensions that maximize student learning potential.

Section 8. Implementation Supports

- The materials include year-long plans with practice and review opportunities that support instruction.
- The materials include classroom implementation support for teachers and administrators.
- The materials provide implementation guidance to meet variability in program design and scheduling.

Section 9. Design Features

- The visual design of materials is mostly clear and easy to understand.
- The materials are intentionally designed to engage and support student learning with the integration of digital technology.
- The digital technology or online components are mostly developmentally and grade-level appropriate and provide support for learning.

Section 10. Additional Information

- The publisher submitted the technology, price, professional learning, and additional language supports.

Indicator 2.1

Materials are designed to strategically and systematically integrate scientific and engineering practices, recurring themes and concepts, and grade-level content as outlined in the TEKS.

1	Materials provide multiple opportunities for students to develop, practice, and demonstrate mastery of grade-level appropriate scientific and engineering practices as outlined in the TEKS.	M
2	Materials provide multiple opportunities to make connections between and within overarching concepts using recurring themes.	M
3	Materials strategically and systematically develop students' content knowledge and skills as appropriate for the concept and grade level as outlined in the TEKS.	M
4	Materials include sufficient opportunities, as outlined in the TEKS, for students to ask questions and plan and conduct classroom, laboratory, and field investigations and to engage in problem-solving to make connections across disciplines and develop an understanding of science concepts.	M

Meets | Score 4/4

The materials meet the criteria for this indicator. Materials are designed to strategically and systematically integrate scientific and engineering practices, recurring themes and concepts, and grade-level content as outlined in the TEKS.

Materials provide multiple opportunities for students to develop, practice, and demonstrate mastery of grade-level appropriate scientific and engineering practices as outlined in the TEKS. Materials provide multiple opportunities to make connections between and within overarching concepts using recurring themes. Materials strategically and systematically develop students' content knowledge and skills as appropriate for the concept and grade level as outlined in the TEKS. Materials include sufficient opportunities, as outlined in the TEKS, for students to ask questions and plan and conduct classroom, laboratory, and field investigations and to engage in problem-solving to make connections across disciplines and develop an understanding of science concepts.

Evidence includes but is not limited to:

Materials provide multiple opportunities for students to develop, practice, and demonstrate mastery of grade-level appropriate scientific and engineering practices as outlined in the TEKS.

- The materials' scope and sequence for grades 6-8 and pacing guides include how students use scientific and engineering practices (SEPs), such as asking questions and defining problems based on observations or information from text, phenomena, models, or investigations. For example, the engineering practices are present in Unit 8, Lesson 6, A Machine to Lift Treasures. The materials include learning goals for students to develop, practice, and demonstrate engineering practices. Students apply the knowledge acquired about forces and mechanical machines in order to design and build a scale model mechanical system that can lift heavy objects following the steps of the technological process. The materials provide a dossier and rubric for the project to ensure alignment with SEPs.

- In Lesson 9 of the Cells Unit, each "E" of the 5E model, which is geared towards SEPs, provides students the opportunity to practice, develop, and demonstrate mastery by reading texts, watching videos, using simulations, answering questions, performing tasks, (i.e., creating a PowerPoint, slide 13, that explains the structure and function of cells in the elaborate section) and solving a problem.
- Science Bits curriculum provides a suggested pacing guide for grade 6, including the engineering practices in a unit. For example, in the Elements and Compounds unit in grade 6, the scientific and engineering practice 6.4A covers the impact of past and current research on scientific thought and society, which allows the students to apply grade-level understanding to new, broader subjects.

Materials provide multiple opportunities to make connections between and within overarching concepts using recurring themes.

- The Carolina Science Bits Teacher Guide explains clear guidelines for teachers to lead students to make their own conclusions through the 5E model. As the facilitator, the teacher encourages students to think about the content and make connections. Science Bits includes a Recommended Scope and Sequence document that outlines RTCs for each unit. Critical thinking and deep learning take place within each of the 5E units. The materials include pedagogical support to encourage discussion and debate and incite interest and engagement. It is left to the teacher to identify those themes and to create multiple opportunities to make connections between and within overarching concepts using the recurring themes. Teachers are given advice to: "Encourage students to think actively about the concepts to be treated in a unit, making connections between past and present learning experiences..."
- In Unit 10, Lesson 10, "Astronomical Observations," students apply knowledge of the Sun-Earth-Moon system to account for some striking observations: solstices at the poles and eclipses. Students geometrically interpret the differences in the observation of eclipses from different locations across the globe. The recurring theme is implied to be that students examine and model the parts of a system and their interdependence in the function of the system. This is reinforced in the teachers' guide with support for teachers in how to guide students to make these connections.
- In Unit 13, Lesson 5, "Feeding Relationships," students build a food web to represent the feeding relationships in an ecosystem. The recurring theme is to analyze and explain how energy flows and matter cycles through systems and how energy and matter are conserved through a variety of systems (8.5.E).

Materials strategically and systematically develop students' content knowledge and skills as appropriate for the concept and grade level as outlined in the TEKS.

- The materials strategically and systematically develop students' content knowledge and skills through the consistent use of the 5E Model. Each unit starts with 5E: Engage, a strategic phenomenon meant to spark curiosity and make students think. The learning sequence continues with an Explore, Explain, Elaborate, and Evaluate, which have appropriate learning objectives.
- The materials' components are strategically placed for the teachers to align the students' development with their prospective grade-level TEKs. Two important components, the scope and sequence and pacing guide, provide teachers with systematic and strategic ways to teach the lessons. For example, in grade 6, within the atomic structure of the matter unit, students

begin the lesson by watching a video, "Is Water Pure?" that encourages critical thinking. The extension activity is based on a presentation of how to obtain materials from nature and how to transform them into new substances through chemical changes.

- Additionally, each activity within each unit is indexed and classified by difficulty, with a number of stars representing levels of challenge and type of activity: practice, buildup, enrichment, and review. Each activity is appropriate according to individual grade level TEKs and allows for differentiation for Talented and Gifted (TAG) students and Special Education students.

Materials include sufficient opportunities, as outlined in the TEKS, for students to ask questions and plan and conduct classroom, laboratory, and field investigations and to engage in problem-solving to make connections across disciplines and develop an understanding of science concepts.

- These materials provide multiple opportunities for students to identify questions or define problems, imagine or brainstorm a solution, and plan, create, test, and improve their design using SEPs. For example, in the chemical changes for solving crimes unit in grade 6, students act as forensic scientists and investigate some evidence provided to them using a virtual lab to test for the presence of blood. Students synthesize information to create a report, including goals, theoretical bases, materials and reactives used, justification for each procedure followed, detection of false positives and false negatives, and conclusions.
- The materials utilize the 5E model, where each unit begins by eliciting students' current knowledge, explores to make connections between this current knowledge and new knowledge through inquiry, provides direct instruction on those concepts that students would not be able to discover on their own, and provides students with opportunities to demonstrate their understanding through practice.
- In the Energy unit Elaborate activity, students learn about energy consumption in the household and measures that can be taken to save energy. They are then asked to assess the effect of applying one of these measures, the use of more efficient light sources to lighting in the home. These lessons provide opportunities for students to ask questions. They can plan and conduct investigations and make connections across disciplines.

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Indicator 2.2

Materials anchor the learning in phenomena and problems as the key lever for driving learning and student mastery of disciplinary knowledge and skills.

1	Materials embed phenomena and problems across lessons to support students in constructing, building, and developing knowledge through authentic application and performance of scientific and engineering practices, recurring themes and concepts, and grade-level content as outlined in the TEKS.	M
2	Materials intentionally leverage students' prior knowledge and experiences related to phenomena and engineering problems.	M
3	Materials clearly outline for the teacher the scientific concepts and goals behind each phenomenon and engineering problem.	M

Meets | Score 4/4

The materials meet the criteria for this indicator. Materials anchor the learning in phenomena and problems as the key lever for driving learning and student mastery of disciplinary knowledge and skills.

Materials embed phenomena and problems across lessons to support students in constructing, building, and developing knowledge through authentic application and performance of scientific and engineering practices, recurring themes and concepts, and grade-level content as outlined in the TEKS. Materials intentionally leverage students' prior knowledge and experiences related to phenomena and engineering problems. Materials clearly outline for the teacher the scientific concepts and goals behind each phenomenon and engineering problem.

Evidence includes but is not limited to:

Materials embed phenomena and problems across lessons to support students in constructing, building, and developing knowledge through authentic application and performance of scientific and engineering practices, recurring themes and concepts, and grade-level content as outlined in the TEKS.

- The curriculum provides materials that embed phenomena and problems across lessons to support student learning. For example, in the grade 6 lesson, "Heating and Cooling Substances," students consider the phenomena of changes of state with the effect of heat by engaging in video-based activities, where students have to make predictions before the video and explain and describe what happened in the video using evidence from the video to support their claims.
- The materials embed opportunities for students to investigate phenomena and problems before, during, and after lessons as they construct, build, and develop their knowledge of the grade-level content. To further describe, a video presents an initial situation in a familiar and meaningful context and then exposes a problem or a discrepant event that students cannot explain with their current ideas. Next, an activity about the video activates the student's prior knowledge, who also begin to share their ideas with their classmates. A guided inquiry-based activity challenges students' initial knowledge and conceptions and provides opportunities to resolve the puzzlements of the previous phase. Students investigate phenomena, discuss ideas and make connections.

- The conceptual content developed in the previous phase is formally presented, as well as other related content. The Elaborate phase includes a project-based activity. This activity requires the application of concepts, attitudes, and procedures learned by the students in the unit to solve a new problem in a new context. Finally, a video goes over the main concepts taught in the unit as a final revision, which is summarized in a concept map. A self-correcting test based on the principles of skills assessment evaluates the student's ability to apply the learned knowledge and procedures.

Materials intentionally leverage students' prior knowledge and experiences related to phenomena and engineering problems.

- The program allows for different entry points to the learning phenomena and/or solving problems. Students experience the phenomena through various means, such as teacher demonstrations, hands-on experiences, videos, text, data, and images. In each unit, the index provides differentiated activities designated by difficulty and marked as practice, buildup, enrichment, problem, or assessment.
- The Engage videos get students to think about the content and connect prior knowledge. Teacher materials provide them with a Before We Begin page with information on prior knowledge and procedural prerequisites. For example, in Lesson 1, Same Material, Different State of Unit 3, an activity based on the video entitled "Same Material, Different State," activates prior knowledge concerning changes of state that are activated through everyday phenomena.
- The materials guide teachers and students to adequately address potential areas of misunderstanding. For example, grade 6 materials provide a teacher guidance section at the beginning of each unit, including a "Common Misconceptions" section to help teachers gauge where some students may have inaccurate or inadequate prior knowledge. This section also informs teachers of the necessary prerequisite content and skills students will need to be successful in the unit. Such teacher guidance materials prepare teachers to provide accurate explanations of scientific content and concepts, as well as respond to students who may have gaps or misconceptions in their prior knowledge.

Materials clearly outline for the teacher the scientific concepts and goals behind each phenomenon and engineering problem.

- The materials provide teachers with various teaching materials under the My Classes tab, including units and corresponding lessons. A teacher guide icon is available when selecting a lesson, offering access to teaching aids such as learning objectives, guidelines, discussion topics, and misconceptions. These materials prepare teachers to explain scientific content and concepts accurately and respond to students needing more clarification in their prior knowledge. Students then engage in a variety of disciplines, including science, history, math, and writing, while developing a deeper understanding of the engineering design cycle as they apply grade-level scientific concepts to the design problem.
- The materials also outline student learning goals in the following example. In the unit named "A World of Forces," on slide 4, both teachers and students will discover the dossier and rubric, which outline the objectives of the engineering problem. The materials also lead with a "Background Information" section that outlines overarching learning goals for each phenomenon or engineering problem addressed. The learning objectives are further broken by knowledge acquired, skills developed, and attitudes section.

- In Unit 9, Lesson 2, Two Types of Energy, the Explore stage consists of two exploration activities. In the first one, students formulate the concept of kinetic energy, and they will construct and interpret graphical displays of data to describe the relationships of kinetic energy to an object's mass and speed. In the second one, students will have to draw on the concept of kinetic energy in their exploration and develop a model to describe that when the arrangement of objects interacting at a distance changes, different amounts of gravitational potential energy are stored in the system. In the 6th-grade TEKs, students learn that patterns in natural phenomena can be used to identify cause-and-effect relationships.

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Indicator 3.1

Materials are designed to build knowledge systematically, coherently, and accurately.

1	Materials are vertically aligned and designed for students to build and connect their knowledge and skills within and across units and grade levels.	M
2	Materials are intentionally sequenced to scaffold learning in a way that allows for increasingly deeper conceptual understanding.	M
3	Materials clearly and accurately present grade-level-specific core concepts, recurring themes and concepts, and science and engineering practices.	M
4	Mastery requirements of the materials are within the boundaries of the main concepts of the grade level.	M

Meets | Score 6/6

The materials meet the criteria for this indicator. Materials are designed to build knowledge systematically, coherently, and accurately.

Materials are vertically aligned across grade levels but are designed for students to build and connect their knowledge and skills within and across units. Materials are intentionally sequenced to scaffold learning in a way that allows for an increasingly deeper conceptual understanding. Materials clearly and accurately present grade-level-specific core concepts, recurring themes and concepts, and science and engineering practices. Mastery requirements of the materials are within the boundaries of the main concepts of the grade level.

Evidence includes but is not limited to:

Materials are vertically aligned and designed for students to build and connect their knowledge and skills within and across units and grade levels.

- The grade 6 materials present content in a way that builds complexity within the unit. For example, the Teacher's Guide provides a learning sequence that shows how individual lessons build and connect across the unit. The Ecosystems unit shows progression across the unit by detailing the 5E (Engage, Explore, Explain, Elaborate, Evaluate) learning sequence. Each part of the 5E is explained with a description of the materials students will encounter and the background pedagogy of how the teacher will manage the instruction. Student prior knowledge sections for the Energy unit show this progression by providing a comprehensive list of statements such as, "can use the term energy intuitively to measure the ability of an organism or machine to apply processes and produce changes," to clearly articulate the progression of student learning through the unit. The materials connect new learning to previous and future learning within individual grade levels. For example, in the Teacher's Guide for the Ecosystem unit, the prior knowledge (Before We Begin) and learning objectives address what students should know (i.e., how to interpret bar graphs, organize data, and know that living organisms need food for energy) and future learning (i.e., exploring how the ecosystem is built) that is connected to the original learning objective. In addition, the grade 6 lesson, Minerals and Rocks, lists student learning objective statements such as, "understand the concepts of pure substance, homogeneous mixture, and heterogeneous mixture" and "have some basic notions of the concepts of element and atom" to outline the progression of student learning before instruction begins.

- Science Bits uses the 5E model to present content in a way that builds complexity within grade levels. In the Atomic Structure of Matter unit in grade 6, the teacher guide includes a "Before We Begin" section that outlines several key concepts, such as distinguishing between physical and chemical changes. This extension activity is based on a presentation that shows how to obtain materials from nature and how to transform them into new substances through chemical changes. It uses both concepts and terminology learned throughout the grade-level unit to build a progressively more complex understanding of concepts and skills.

Materials are intentionally sequenced to scaffold learning in a way that allows for increasingly deeper conceptual understanding.

- The Carolina Science Bits includes a progression of concrete then representational before abstract reasoning when presenting concepts that allow for increasingly deeper conceptual understanding. For example, materials ensure students experience a phenomenon or problem before utilizing models as a tool for reasoning. Materials give students opportunities to use models to depict relationships and form explanations. In grade 6, the teacher presents the idea that anyone can become a scientist. Then, the teacher shows a video of a natural phenomenon to differentiate between questioning types. Next, materials include three different lessons for Explain, where students dive deeper into science methodology. The Elaborate lesson is an analysis of a non-scientific practice to consolidate ideas for true science characteristics. The Evaluate lessons are a series of questions pertaining to the lesson, "What is Science?"
- In the Sun-Earth-Moon System unit, the materials provide a progression of concrete concepts that allow for an increase of deeper conceptual understanding. In the guide section, the learning objective addresses how the students learn the scales of the solar system and how to analyze and interpret data to develop a scale model of the universe. The 5E model and concept map sequences and scaffolds the mastery of the students learning the concepts. In the introductory resources for teachers, a video and written explanation describe how each unit is set up in the 5E Model so that students are provided a phenomenon in the Engage, a chance to Explore the content before delving into the content, applying the knowledge learned in Elaborate, and finalizing the unit with an Evaluation.
- Within the "My Classes" tab, Science Bits offers teachers a range of materials to aid their teaching. This includes units and their respective lessons. When selecting a lesson, a menu icon appears, providing access to the unit index and various activities. These activities are designed to reinforce and enhance students' understanding of the concepts presented in the lessons, and they also include stars that indicate the difficulty in the index. This approach ensures that students are able to achieve mastery and retention of key concepts.

Materials clearly and accurately present grade-level-specific core concepts, recurring themes and concepts, and science and engineering practices.

- Science Bits 6-8 program uses the 5E model for sequencing instruction so that students are provided a phenomenon in the Engage, a chance to Explore the content before delving into the content, applying the knowledge learned in Elaborate, and finalizing the unit with an Evaluation. The pacing guide also presents grade-specific core concepts, recurring themes and concepts, and science and engineering practices. Within the pacing guide, there is the specific core unit, the content standards, scientific and engineering practices, and recurring themes and concepts TEKS.

- In the Ecosystem unit, the materials present grade-specific core concepts, recurring themes and concepts, and science and engineering practices. For example, in the Teacher's Guide, "Before We Begin" section, the recurring themes and concepts are the procedural prerequisites (i.e., interpreting bar graphs and use of tables to organize data). The learning objective addresses the grade-specific core concepts, identifying and describing ecosystems; the science and engineering practices are part of the Elaborate section that provides an opportunity for students to design and implement a plan to protect or restore an imbalanced ecosystem.
- Science Bits provides a suggested pacing guide for grade 6, which includes the following: the suggested pacing, unit, content standards, scientific and engineering practices, recurring themes, and concepts throughout the unit. Science Bits also provides a color-coded scope and sequence for grade 6 to represent each concept strand. This tool makes it simple and quick for users to see the TEKs covered in the unit and the scaffolded TEKs included in that concept strand.
- For example, materials use the 5E (Engage, Explore, Explain, Elaborate, Evaluate) instructional model for sequencing science instruction. During the Engage phase, a video provides a science background to capture students' interest in learning. Teachers ask open-ended questions to activate learning and help gauge what students' prior knowledge is about the concept. During the Explore phase, students conduct activities to explore and gather data. Students do not use outside sources for content knowledge; they only rely on their own observations and data. During the Explain phase, students construct explanations based on the evidence of the phenomena. Teachers introduce scientific terms, ideas, and representations to increase student understanding. In the Elaborate phase, students connect the previous three phases to test their new knowledge in different settings. Materials provide activities that help students build on their knowledge to establish a deeper and broader understanding. During the final Evaluate phase, materials allow students to reflect on their new conceptions of science and for teachers to evaluate the accuracy of student ideas and what students have learned.

Mastery requirements of the materials are within the boundaries of the main concepts of the grade level.

- The Carolina Biological Bits materials include specific learning targets for each grade level. The materials clearly define the boundaries of content that students must master for the grade level. For example, in grade 6, students learn that in mixtures, components are present in variable proportions, and they retain their physical properties. They discover that there are different methods for separating the components of a mixture based on the physical properties of the pure substances in the mixture.
- The materials are within the boundaries of the main concept of the grade level based on mastery requirements. In the Matter and Change unit, Mass, Volume and Density lesson, the Teacher's Guide's learning objective provides target learnings in the "Knowledge Acquired" section (i.e., the mass of an object is a measurement of the quantity of matter contained), then in the "Skills Developed" section, it entails what the student learned (i.e., making accurate measuring of the mass and volumes of liquids and gasses), which demonstrates mastery.
- Science Bits 6-8 program includes specific learning objectives for each unit. In the Cells unit in grade 6, Students will conduct an investigation to provide evidence that living things are made of very tiny structures called cells: either one cell or many different numbers and types of cells.

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The materials clearly define the boundaries of content that students must master for each grade level. In the Changes of State unit in grade 6, the related activity marked by a pencil provides formative assessments to gauge readiness in classifying materials according to their state and arranging various substances by temperature. Students will develop and use a model to describe how the different structures of various types of cells contribute to the function that they perform as living entities and as building blocks of bigger organisms. Ultimately connecting that living structures are always related to the function they perform. Finally, students will use their knowledge together with evidence from scientific sources to construct arguments for how the body is a system of interacting subsystems composed of groups of cells.

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Indicator 3.2

Materials provide educational components to support teachers' content and knowledge coherence.

1	Materials support teachers in understanding the horizontal and vertical alignment guiding the development of grade-level content, recurring themes and concepts, and scientific and engineering practices.	M
2	Materials contain explanations and examples of science concepts, including grade-level misconceptions, to support the teacher's subject knowledge and recognition of barriers to student conceptual development as outlined in the TEKS.	M
3	Materials explain the intent and purpose of the instructional design of the program.	M

Meets | Score 6/6

The materials meet the criteria for this indicator. Materials provide educational components to support teachers' content and knowledge coherence.

Materials support teachers in understanding the horizontal and vertical alignment guiding the development of grade-level content, recurring themes and concepts, and scientific and engineering practices. Materials contain explanations and examples of science concepts, including grade-level misconceptions, to support the teacher's subject knowledge and recognition of barriers to student conceptual development as outlined in the TEKS. Materials explain the intent and purpose of the instructional design of the program.

Evidence includes but is not limited to:

Materials support teachers in understanding the horizontal and vertical alignment guiding the development of grade-level content, recurring themes and concepts, and scientific and engineering practices.

- The Carolina Biological Science Bits curriculum offers teachers helpful instructional strategies to aid students in their learning across all concept strands. These strategies include a concept map that visually connects all unit topics and activities designed to reinforce and improve comprehension of the lesson concepts. The activities cover a wide range of topics, such as enrichment, practice, and reinforcement, and are valuable for supporting the review and practice of essential skills throughout the year. Additionally, the curriculum includes a Teacher's Guide to assist educators further. For example, the Energy unit begins with lessons in which students are presented with certain everyday situations and asked to identify the presence of different types of energy. Later in the unit, students construct and interpret graphical displays of data to describe the relationships of kinetic energy to an object's mass and to its speed. At the end of the unit, students learn about energy consumption in the household and measures that can be taken to save energy. They are then asked to assess the effect of applying one of these measures, the use of more efficient light sources, to lighting in the home.
- In the Teacher's Guide section, Before We Begin, there are the learning objectives, misconceptions, learning sequence, and discussing content sections that guide the teacher and explain how content and concepts increase in depth and complexity across lessons and units

within the grade level. In the Rocks and Minerals unit in grade 6, students identify patterns in rocks that allow for an explanation of the processes that have led to their formation. Students develop a model to describe what is known as the rock cycle: the model that integrates all the phenomena involved in the formation and destruction of rocks and describes the cycling of Earth's materials and the flow of energy that drives this process.
- The materials include guiding documents that support teachers in understanding how new learning connects previous and future learning across grade levels. For example, the scope and sequence provides skills and standards that support teachers' understanding of how new learning, such as in the Organisms and Environment unit, addresses cells, ecosystems, and nutrition and supports future learning in 7th and 8th grade.
- Science Bits also provides teachers with various teaching materials under the “My Classes” tab, including units and their corresponding lessons. A Teacher's Guide icon is available when selecting a lesson, offering access to teaching aids such as learning objectives, guidelines, and discussion topics. The Science Bits Teacher's Guide includes information including Before We Begin, Learning Objectives, Misconceptions, Learning Sequence, and discussing content sections that guide the teacher and explain how content and concepts increase in depth and complexity across lessons and units within the grade level.

Materials contain explanations and examples of science concepts, including grade-level misconceptions, to support the teacher's subject knowledge and recognition of barriers to student conceptual development as outlined in the TEKS.

- The Carolina Science Bits materials include background information for teachers that provides explanations and examples of science concepts and identifies common grade-level misconceptions in the Teacher's Guide. For example, in the Matter and Change Unit, Mass, Density, and Volume lesson, the Teacher's Guide entails a prior knowledge section (i.e., know that everything has mass and occupies a volume is matter), learning objective (the purpose of this unit; the mass of an object is a measurement of the quantity of matter contained in it), misconceptions (i.e., the idea that gasses, such as air, have no material is common among students at an early stage), learning sequence (i.e., 5e model), and discussion contents. These materials support the teacher's subject knowledge and students' conceptual development in regard to the TEKS.
- The materials include background information for teachers that provides explanations and examples of science concepts. They identify common grade-level misconceptions students may have about science concepts. The materials also include support for teachers to develop their own understanding of more advanced, grade-level concepts in the "Discussing Contents" section of the Teacher's Guide. In the Sun, Earth, and Moon unit in grade 6, the Engage and Explore sections provide opportunities for students to inquire, reason, and discover that the cause of the seasons does not lie in the distance between the Sun and the Earth.

Materials explain the intent and purpose of the instructional design of the program.

- The Carolina Biological Bits materials provide a purpose or rationale for the instructional design of the program within the “How to Use ScienceBits in the Classroom: Best Practices” PDF. In this document, Science Bits provides an explanation for why materials are designed the way they are. Materials highlight key features of the instructional design. This document also provides a framework explaining the main intent or goals of the program. Materials provide a Teacher's

Guide that thoroughly describes the program's instructional approaches and references the researched-based strategies present in each unit.

- In the Science Bits introductory resources for teachers, a detailed rationale for the use of the 5E instructional method is explained with a heavy emphasis on students constructing explanations rather than teachers giving explanations, and giving the reason behind this design (i.e., Students construct their own understanding of a scientific idea through firsthand observations or models they have developed, which leads to deeper learning than if the teacher just tells them the explanation). The materials provide a framework explaining the intent of the program. For example, materials provide an Introduction to Science Bits Dossier that describes the methodology and pedagogy of the program, instructional approaches, and research-based strategies present in each unit.
- Science Bits curriculum materials clearly outline student learning goal(s) behind each phenomenon or engineering problem in the learning objectives tab under guides. For example, in the unit "The Sun–Earth–Moon System," students learn that patterns in natural phenomena can be used to identify cause-and-effect relationships from the grade 6 TEKS. The materials clearly outline student learning goal(s) behind each phenomenon or engineering problem in the learning objectives tab under guides. Science Bits curriculum provides teachers with the scientific concepts for the materials. Each lesson offers a "learning objective," outlining overarching learning goals for each phenomenon or engineering problem. Materials give an explanation of the phenomena or engineering problem. The learning objectives are further broken by knowledge acquired, skills developed, and attitudes section.

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Indicator 4.1

Materials provide opportunities for students to engage in productive struggle through sensemaking that involves reading, writing, thinking, and acting as scientists and engineers.

1	Materials consistently support students' meaningful sensemaking through reading, writing, thinking, and acting as scientists and engineers.	M
2	Materials provide multiple opportunities for students to engage with grade-level appropriate scientific texts to gather evidence and develop an understanding of concepts.	M
3	Materials provide multiple opportunities for students to engage in various written and graphic modes of communication to support students in developing and displaying an understanding of scientific concepts.	M
4	Materials support students to act as scientists and engineers who can learn from engaging in phenomena and engineering design processes, make sense of concepts, and productively struggle.	M

Meets | Score 4/4

The materials meet the criteria for this indicator. Materials provide opportunities for students to engage in productive struggle through sensemaking that involves reading, writing, thinking, and acting as scientists and engineers.

Materials consistently support students' meaningful sensemaking through reading, writing, thinking, and acting as scientists and engineers. Materials provide multiple opportunities for students to engage with grade-level appropriate scientific texts to gather evidence and develop an understanding of concepts. Materials provide multiple opportunities for students to engage in various written and graphic modes of communication to support students in developing and displaying an understanding of scientific concepts. Materials support students to act as scientists and engineers who can learn from engaging in phenomena and engineering design processes, make sense of concepts, and productively struggle.

Evidence includes but is not limited to:

Materials consistently support students' meaningful sensemaking through reading, writing, thinking, and acting as scientists and engineers.

- The Science Bits materials do not necessarily define sensemaking, but describe sensemaking behaviors of students. For example, in the Professional Development Dossier, materials include an introduction to the 5E instructional model that is based on the theoretical foundations of constructivism. In addition, the annex materials state, "In Science Bits' exams, students are not expected to memorize scientific knowledge, but rather to solve problems by actively applying scientific concepts, procedures, and attitudes."
- The concept behind the 5E model is to begin eliciting students' current knowledge, to make connections between this current knowledge and new knowledge through inquiry, to provide direct instruction of those concepts that students would not be able to discover on their own, and to provide students with opportunities to demonstrate their understanding through practice. The materials consistently provide learning activities that support students' meaningful sensemaking. For example, in the unit "A World of Forces," the lesson "A Machine To Treasures"

has a task in the Elaborate section where students design a mechanical system for lifting weights. Students will follow these steps: approach the problem, look up information (research), design and plan, assemble, evaluate, and then write a report.

- The Science Bits Curriculum Materials aim to help students make sense of concepts through reading, writing, thinking, and acting like scientists. One lesson in the Cells module for grade 6, called “The Size of Life,” begins with a video and a series of questions that students have to discuss with their classmates based on the teacher's manual. The questions start with the basics and gradually become more complex.

Materials provide multiple opportunities for students to engage with grade-level appropriate scientific texts to gather evidence and develop an understanding of concepts.

- The Science Bits materials provide multiple opportunities for students to engage with scientific texts to gather evidence and develop an understanding of concepts. For example, in the grade 6 unit called “The Atomic Structure of Matter,” in an activity called “Atoms,” students study examples of elementary substances whose atoms are arranged into three categories: molecules, network structures, and not arranged. Students use grade-level interactive texts to gather evidence of eight different elements to classify them as either molecules, atoms, or network structures. Grade 6 materials also provide a sidebar called “Documents and Tools” that contains a dictionary, key concepts, and an interactive concept map.
- Materials provide multiple opportunities for teachers to ensure that students engage with grade-level appropriate texts in the Science Bits, with the use of the pacing guide and the grade 6 correlation sheet, and the scope and sequence. For example, in lesson 6 of the Rocks and Minerals unit in grade 6, students seek and synthesize information about a given mineral. They must prepare a presentation that addresses the uneven distribution of that material on Earth, its importance for human activity, and the impact of extracting it on the environment.
- Science Bits provides a suggested pacing guide for grade 6, which includes the following: the suggested pacing, unit, content standards, scientific and engineering practices, recurring themes, and concepts throughout the unit. In addition to this, every unit includes activities that include a reading section in the Explain section.

Materials provide multiple opportunities for students to engage in various written and graphic modes of communication to support students in developing and displaying an understanding of scientific concepts.

- The Science Bits Curriculum materials provide opportunities for students to communicate thinking on scientific concepts in written and graphic modes. For example, in the grade 6 unit, “Mass, Volume, and Density,” in the Elaborate activity entitled, “The King's Crown,” students take on the role of fabled scientist Archimedes. They are asked to plan a procedure to find out whether the goldsmith cheated the king with the crown he made. After watching a video, students use a lab stimulator with various tools represented. They then write a report describing the results and the procedures they followed, as well as the reasons they chose those procedures. The activity consists of two parts of increasing difficulty to cater to all the students in each group.
- The materials provide opportunities for students to communicate thinking on scientific concepts in written and graphic modes. In the “Feeding Under the Sun” activity in lesson 8 of the Nutrition unit in grade 6, students are asked to apply their knowledge of autotrophic and

heterotrophic nutrition to make a slide presentation on the nutrition of symbionts such as coral, lichen, a bivalve mollusk, or gastropods of the genus *Elysia*. Within this lesson, students are watching a video, reading text, and researching information about science to add to their tasks.

- The materials aim to help students make sense of concepts through reading, writing, thinking, and acting like scientists. One lesson in the Cells module for grade 6, called “The Size of Life,” begins with a video and a series of questions that students have to discuss with their classmates based on the teacher's manual. The questions start with the basics and gradually become more complex. In addition to this, each unit includes an interactive graphic organizer to solidify their understanding based on the new information.

Materials support students to act as scientists and engineers who can learn from engaging in phenomena and engineering design processes, make sense of concepts, and productively struggle.

- The Science Bits 6-8 program embeds productive struggle within the Explore section of each unit. A guided inquiry-based activity challenges students’ initial knowledge and conceptions and provides opportunities to resolve the puzzlements of the previous phase.
- The materials support students as “practitioners” while they are figuring out (sensemaking) and productively struggling. In the “A Machine to Lift Treasures” lesson in grade 6, students design a model of a mechanistic system for lifting weights that can raise a heavy object to a certain height by applying a force that is only half the object's weight. The materials give students an outline of how to approach the problem, look up information, design, and plan, assemble, evaluate, and report their designs. Students design a model of a mechanistic system for lifting weights that can raise a heavy object to a certain height by applying a force that is only half the object's weight.
- Science Bits curriculum provides materials that embed phenomena and problems across lessons to support student learning. For example, in grades 6-8, materials embed opportunities for students to investigate phenomena and problems before, during, and after lessons as they construct, build, and develop their knowledge of the grade-level content. An example of this is during the Elaborate lesson of the unit. At the beginning of a lesson sequence on conductivity, the teacher presents students with a real-world problem. Students then participate in a lab investigation in which they collect data and apply their learning to solve the problem.

Carolina Biological Science Bits Grade 6

Indicator 5.1

Materials promote students' use of evidence to develop, communicate, and evaluate explanations and solutions.

1	Materials prompt students to use evidence to support their hypotheses and claims.	M
2	Materials include embedded opportunities to develop and utilize scientific vocabulary in context.	M
3	Materials integrate argumentation and discourse throughout to support students' development of content knowledge and skills as appropriate for the concept and grade level.	M
4	Materials provide opportunities for students to construct and present developmentally appropriate written and verbal arguments that justify explanations to phenomena and/or solutions to problems using evidence acquired from learning experiences.	M

Meets | Score 4/4

The materials meet the criteria for this indicator. Materials promote students' use of evidence to develop, communicate, and evaluate explanations and solutions.

Materials prompt students to use evidence to support their hypotheses and claims. Materials include embedded opportunities to develop and utilize scientific vocabulary in context. Materials integrate argumentation and discourse throughout to support students' development of content knowledge and skills as appropriate for the concept and grade level. Materials provide opportunities for students to construct and present developmentally appropriate written and/or verbal arguments that justify explanations to phenomena and solutions to problems using evidence acquired from learning experiences.

Evidence includes but is not limited to:

Materials prompt students to use evidence to support their hypotheses and claims.

- Science Bits curriculum provides materials that embed phenomena and problems across lessons to support student learning. For example, in grades 6-8, materials embed opportunities for students to investigate phenomena and problems before, during, and after lessons as they construct, build, and develop their knowledge of the grade-level content. An example of this is during the Elaborate lesson of the unit. At the beginning of a lesson sequence on conductivity, the teacher presents students with a real-world problem. Students then participate in a lab investigation in which they collect data and apply their learning to solve the problem. For example, in a grade 6 lesson, "Heating and Cooling Substances," students consider the phenomena of changes of state with the effect of heat by engaging in video-based activities, where students have to make predictions before the video and explain and describe what happened in the video using evidence from the video to support their claims.
- The materials provide opportunities for students to develop how to use evidence to support their hypotheses and claims. For example, in the grade 6 unit called "Changes of State," the Elaborate lesson called "The Invention of the Thermometer" includes a rubric. One of the criteria is "Explaining How the Thermometer Works," and another is "Argumentation About the Posed Questions."

- Materials allow students to use evidence to support their hypotheses and claims. For example, in the Mass, Volume, and Density unit, Lesson, “The Kings Crown,” students plan a procedure that determines if the goldsmith cheated the King by making his crown. Based on their evidence, a report is written to support their findings and explain the chosen procedures to investigate.

Materials include embedded opportunities to develop and utilize scientific vocabulary in context.

- The Science Bits Curriculum allows students to develop their own concept maps using key concepts and vocabulary words. This is made possible through a pre-existing concept map provided by the curriculum. Materials also present scientific vocabulary using multiple representations. In a grade 6 unit called “Mass, Volume, and Density,” the materials aim to create a distinctive concept of mass. There is also a resource available on the student end called Key Concepts, where students have access to a list of vocabulary and their definitions. Additionally, the introductory materials in the Engage lessons specifically ask questions about scientific vocabulary related to the context.
- Materials have opportunities for students to develop and utilize scientific vocabulary in context. For example, in the A World of Particles unit, in the lesson, “Exploring the Corpuscular-Kinetic Theory,” scientific vocabulary words are bolded in black to support students developing the context of the scientific words on slide one and visuals and videos on slides 1-13 that assist with understanding of the word.
- The materials include opportunities to develop and use vocabulary after having a concrete or firsthand experience to which they can contextualize new terms, for example, in the Mass, Volume, and Density unit in 6th grade, students explore the relationships between mass and volume by watching a video, "At the Grocery Store," and answering questions stressing the idea of "concentration" of matter in space.

Materials integrate argumentation and discourse throughout to support students’ development of content knowledge and skills as appropriate for the concept and grade level.

- Science Bits 6-8 program uses the 5E model to integrate argumentation and discourse within stages of the learning cycle. In the Engage section, students share their ideas by answering questions related to a video and express their opinions and ideas with other students. In the Explore section, students engage in classroom discussions to reason, whether that means proposing hypotheses, expressing opinions, drawing conclusions, or answering specific questions. In the Explain section, students pay attention to the teacher's explanations and try to provide their own. In the Elaborate section, students use scientific language in various means of communication to talk about data or express ideas and conclusions and justify them by considering points of view other than their own. In the Evaluate section, students reflect on their understanding of the concepts. Materials do provide opportunities for students to develop how to *engage* in the practice of argumentation and discourse through a digital, interactive format. For example, materials direct students to include reasons or references to evidence and to begin to distinguish evidence from opinion.
- Materials provide opportunities for students to develop practice in argumentation and discourse. The Science Bits 6-8 program uses the 5E model to integrate how students develop content knowledge and skills. This helps develop student’s arguments in the following example: In the Minerals and Rocks unit, in the lesson, “Mineral Deposits,” students synthesize mineral information and prepare presentations that address the importance of human activity and human health. This presentation gives them an opportunity to talk about their findings.

- The Science Bits Curriculum Materials aim to help students make sense of concepts through reading, writing, thinking, and acting like scientists. One lesson in the Cells module for grade 6, called "The Size of Life," begins with a video and a series of questions that students have to discuss with their classmates based on the teacher manual. The questions start with the basics and gradually become more complex. In addition to this, each unit includes an interactive graphic organizer to solidify their understanding based on the new information.

Materials provide opportunities for students to construct and present developmentally appropriate written and verbal arguments that justify explanations to phenomena and/or solutions to problems using evidence acquired from learning experiences.

- Materials provide instruction for how to construct and present a verbal or written argument to problems using evidence. Teachers guide students through a cognitive conflict that creates a desire to learn. In the following lessons, the addition of conversation cards and CER documents is useful. Grade 6 is able to construct and present developmentally appropriate written and/or verbal arguments to justify explanations, materials provide criteria in the form of a rubric.
- Materials provide students opportunities to construct and present developmentally appropriate written and verbal arguments that justify explanations of phenomena and solutions to problems using evidence. For example, in the Mass, Volume, and Density unit, the lesson, “Playing Around With Liquids,” slides 2, 4, and 8, have students making their observations and answering questions based on those observations, but lack expanding on the student’s explanation for the phenomena.
- The materials provide criteria for developmentally appropriate arguments to explain a phenomenon or defend a solution to problems using evidence acquired from learning experiences but do not give adequate guidance to justify phenomena. For example, in the Minerals and Rocks unit in 6th grade, students identify patterns in rocks that allow them to explain the processes that have led to their formation. In the Elaborate section, Lesson 6 on slide 4, students are asked to analyze the credibility and rigor of the sources of information as they synthesize information about mineral resources.

Carolina Biological Science Bits Grade 6

Indicator 5.2

Materials provide teacher guidance to support student reasoning and communication skills.

1	Materials provide teacher guidance on anticipating student responses and the use of questioning to deepen student thinking.	M
2	Materials include teacher guidance on how to scaffold and support students' development and use of scientific vocabulary in context.	M
3	Materials provide teacher guidance on preparing for student discourse and supporting students in using evidence to construct written and verbal claims.	M
4	Materials support and guide teachers in facilitating the sharing of students' thinking and finding solutions.	M

Meets | Score 4/4

The materials meet the criteria for this indicator. Materials provide teacher guidance to support student reasoning and communication skills.

Materials provide teacher guidance on anticipating student responses and the use of questioning to deepen student thinking. Materials include teacher guidance on how to scaffold and support students' development and use of scientific vocabulary in context. Materials provide teacher guidance on preparing for student discourse and supporting students in using evidence to construct written and verbal claims. Materials support and guide teachers in facilitating the sharing of students' thinking and finding solutions.

Evidence includes but is not limited to:

Materials provide teacher guidance on anticipating student responses and the use of questioning to deepen student thinking.

- The materials provide teachers with possible student responses to questions and tasks. In the grade 6 unit called "A World of Particles," the Teacher's Guide contains a "Misconceptions" page to anticipate student responses. In the "Exploring the Corpuscular-Kinetic Theory" section, the materials ask students, "What is the relationship between the temperature of the mixtures and the motion of the particles?" The Teacher's Guide on this slide recommends that the teacher do a whole class analysis of the different diagrams produced by the students to illustrate their corpuscular views of air compression. Additionally, in the grade 6 unit, "Energy," the learning objectives are in the form of questions. For example, one main question and two sub-questions are posed: (1) What exactly is energy? (a) What does it mean for an object to have energy? (b) How can energy be transferred from one object to another?
- Science Bits provides teachers with various teaching materials under the "My Classes" tab, including units and their corresponding lessons. A Teacher's Guide icon is available when selecting a lesson, offering access to teaching aids such as learning objectives, guidelines, and discussion topics. The curriculum offers teachers helpful instructional strategies to aid students in their learning across all concept strands. These strategies include a concept map that visually connects all unit topics and activities designed to reinforce and improve comprehension of the

lesson concepts. The activities cover a wide range of topics, such as enrichment, practice, and reinforcement, and are valuable for supporting the review and practice of essential skills throughout the year. Additionally, the curriculum includes a Teacher's Guide to assist educators further.

- The materials provide teacher responses to possible students' responses, including how to build on students' thinking. For example, in the "Accounting for the Unknown" lesson in the What is Science unit in grade 6, the Teacher's Guide asks the teacher to have students share their explanations and encourage students to propose accounts based on natural causes, as well as fantasy or the supernatural. Next, the teacher classifies the students' accounts into two types of sources.

Materials include teacher guidance on how to scaffold and support students' development and use of scientific vocabulary in context.

- The materials provide embedded support for teachers to demonstrate how to introduce and scaffold students' development of scientific vocabulary. For example, in the grade 6 unit called "The Sun–Earth–Moon System," the Explore lesson in the Teacher's Guide contains a "Discussing Content" section with a section titled "On the Concepts of Latitude and Longitude." This section denotes that not all students will be familiar with the concepts of latitude and longitude; these terms are not used in referring to different locations on the planet. For situations in which it would be appropriate to resort to the concept of latitude, the materials suggest instead using the equator and the poles as points of reference and talking about regions that are either close to or far away from the equator and regions that are close or far away from the poles.
- The materials provide guidance for the teacher on how to support students' use of scientific vocabulary in context, through the use of a concept map that previews the vocabulary that will be used in the unit. The asterisks within each lesson include a key concepts tool to strategically introduce vocabulary words and their definitions. For example, in the grade 6 unit called "Mass, Volume, and Density," the concept map includes all main ideas such as matter, volume, and mass along with kg, density, and m^3. The concept map includes tools like arrows and conjoining words such as "matter HAS volume" and "Mass IS MEASURED IN kg" to help students to see connections to main ideas and vocabulary.
- Science Bits curriculum provides a suggested pacing guide for grade 6, which includes the following: the suggested pacing, unit, content standards, scientific and engineering practices, recurring themes, and concepts throughout the unit. Additionally, Science Bits suggests at least seven days to teach a concept strand to ensure mastery. For example, in the Elements and Compounds unit in grade 6, the scientific and engineering practice is 6.4A, which is about relating the impact of past and current research on scientific thought and society, including the process of science, cost-benefit analysis, and contributions of diverse scientists as related to the content.

Materials provide teacher guidance on preparing for student discourse and supporting students in using evidence to construct written and verbal claims.

- Science Bits 6-8 program uses the 5E model to guide teachers in preparing for student discourse and supporting students in using evidence to construct written and verbal claims. In the Engage section, students share their ideas by answering questions related to a video and expressing their opinions and ideas with other students. In the Explore section, students engage in classroom discussions to reason out their contributions, whether that means proposing hypotheses, expressing opinions, drawing conclusions, or answering specific questions. In the Explain section, students pay attention to the teacher's explanations and try to provide their own. In the Elaborate section, students use scientific language in various means of communication to talk about data or express ideas and conclusions and justify them by considering points of view other than their own. Finally, in the Evaluate section, students reflect on their understanding of the concepts.

- The materials provide guidance that teachers can use to provide feedback to students while engaging in discourse. For example, in the “Seasons” lesson in grade 6, the Teacher's Guide outlines that this activity is devised as a group activity in which the whole class watches the video together and works on the related questions. Guided by the teacher, students are asked to raise the question of the cause of the seasons. Next, the teacher talks about a fact that is directly linked to this misconception but challenges the students: “How is it possible that it is summer in the Northern Hemisphere while it is winter in the Southern Hemisphere, and vice versa?” Groups then engage in discourse to answer the question.
- The materials aim to help students make sense of concepts through reading, writing, thinking, and acting like scientists. One lesson in the Cells module for grade 6, called “The Size of Life,” begins with a video and a series of questions that students have to discuss with their classmates based on the teacher's manual. The questions start with the basics and gradually become more complex. In addition to this, each unit includes an interactive graphic organizer to solidify their understanding based on the new information.

Materials support and guide teachers in facilitating the sharing of students’ thinking and finding solutions.

- Science Bits provides Introductory Resources for teachers. This section includes the “How to use Science Bits in the Classroom - Best practices” link. This PDF guide covers the science behind the 5E lesson model. For example, it breaks down each component of the 5E lesson model by including a Summary, Objectives, and Application for each element of the 5E lesson model. Furthermore, the PDF consists of teacher and student actions to guide teachers in supporting students in making connections across core concepts.
- The materials provide teacher support and guidance to engage students’ thinking in various modes of communication throughout the year. Although there are no examples provided in the teacher guidance for student projects, the materials provide teacher support for facilitating the sharing of students’ finding solutions. For each project in the Elaborate lesson, the materials include a dossier and detailed rubric to guide teachers and students. For example, in the Yellowstone National Park activity (lesson 2) in the Ecosystems unit in grade 6, teacher’s guidelines suggest that students work in pairs or groups to understand the feeding relationships among some organisms that lived in Yellowstone before wolves were introduced. Students will graphically represent these relationships after reading the files describing how each of the five organisms feeds using the interactive resource embedded within the activity. The activities include interactive resources to edit food chains and food webs.
- Materials provide support and guidance in facilitating the sharing of students' thinking and finding solutions. For example, the “Introduction to Science Bits” PDF provides teachers with a generic way to guide students in conceptualizing the content by creating a T-chart of teacher actions versus student actions based on the 5E model. For instance, in the Explore section of the 5E model T-chart, the teacher action states to provide guidance for student responses, clarify

the interpretation of open-ended questions, solve student doubt, and guide students' reflections, stressing those ideas or inferences that are correct and can lead them to draw the appropriate conclusions, and helping students to reach a consensus regarding their answers and draw the conclusions for each of the steps in the section.

Carolina Biological Science Bits Grade 6

Indicator 6.1

Materials include a variety of TEKS-aligned and developmentally appropriate assessment tools.

1	Materials include a range of diagnostic, formative, and summative assessments to assess student learning in a variety of formats.	M
2	Materials assess all student expectations over the breadth of the course and indicate which student expectations are being assessed in each assessment.	M
3	Materials include assessments that integrate scientific concepts and science and engineering practices with recurring themes and concepts.	M
4	Materials include assessments that require students to apply knowledge and skills to novel contexts.	M

Meets | Score 2/2

The materials meet the criteria for this indicator. Materials include a variety of TEKS-aligned and developmentally appropriate assessment tools.

Materials include a range of diagnostic, formative, and summative assessments that include formal and informal opportunities to assess student learning in a variety of formats. Materials assess all student expectations and indicate which student expectations are assessed. Materials include assessments that integrate scientific concepts and science and engineering practices with recurring themes and concepts. Materials include assessments that require students to apply knowledge and skills to novel contexts.

Evidence includes but is not limited to:

Materials include a range of diagnostic, formative, and summative assessments to assess student learning in a variety of formats.

- Science Bits Curriculum includes a range of diagnostic, formative, and summative assessments. For example, in 6th grade, the What Is Science? unit includes diagnostic checks for understanding what students know to inform teaching practices. In addition, Science Bits Live allows teachers (located in documents and tools) to use it to assess students' level of understanding, warm-ups, cold calling, and exit tickets. The 5E model, the Evaluate section, is another tool teachers use to assess students' learning. In the Mass, Density, and Volume unit, Lesson 1, each slide assesses a student's prior knowledge of mass and volume and how to measure them. These slides are an informal way for teachers to assess students' knowledge of mass, volume, and measurements.
- Materials include formative assessments in various formats to measure student learning and determine the next steps for instruction. Materials include opportunities for teachers to collect information about what students are learning from the materials and use it to plan future lessons.
- Materials include summative assessments in a variety of formats. For example, in the Nutrition unit in 6th grade, students are asked to apply their knowledge of autotrophic and heterotrophic nutrition to make a slide presentation on the nutrient symbionts, such as coral, lichen, the bivalve mollusk Tridacna gigas, or the gastropods of Genus Elysia and an End-of-Unit Assessment

to evaluate if students have achieved unit objectives. In addition, in the 6th-grade unit, "Ecosystems," Evaluate lesson, students read about a scenario with a baby orca. Materials prompt students to draw information from scientific texts, distinguish between ecosystem, population, community, and physical environment, and differentiate between natural and artificial ecosystems. Then, the materials present students with the task of building a food web of the orca's ecosystem. To complete a 5E unit test, students must think critically. It is not just their ability to memorize assessed facts but also their ability to apply them and thus demonstrate understanding.

Materials assess all student expectations over the breadth of the course and indicate which student expectations are being assessed in each assessment.

- As the TEKS outlines, the materials assess all student expectations by grade level. The materials contain a cohesive scope and sequence that maps out and outlines what teachers will teach in a specific course or grade level. In the Teacher's Gradebook, the materials indicate how the materials align with the curriculum for the grade level and are divided by each lesson in the 5E model. In the Gradebook, the authors separate each activity by the title of each sub-activity and list each question along with the student response, their grade, and an option to leave a teacher comment.
- The Science Bit 6-8 Scope and Sequence provides the student expectations aligned with the TEKS standards that teachers can use to teach specific concepts and skills, and then assess for mastery of the concept. This tool makes it simple and quick for users to see the TEKS covered in the unit and the scaffolded TEKS included in that concept strand. The activities in the 5E model provide various ways to assess student expectations. For example, the Engage section assesses students' prior knowledge (Mass, Density, Volume unit, Lesson 1, slides 1-8), the self-correcting activities (Lesson 3, slides 2-3), and the Evaluate section (Lesson 9, slides 1-12) assesses the overall student expectation of the unit.
- As the TEKS outlines, the materials assess all student expectations by grade level. The materials contain a cohesive scope and sequence that maps out and outlines what teachers will teach in a specific course or grade level. For example, in the Mass, Volume, and Density unit in 6th grade, the scope and sequence is aligned to TEKS 6D, which states the expectation is for students to compare the density of substances relative to various fluids. The learning objectives for this unit state that students will learn that matter is characterized by having mass and by occupying space, measure the mass and volume of solids, liquids, and gasses, learn what the density of a material is, experimentally calculate the density of materials, and use the concept of density to predict the degree of buoyancy of materials. Each slide has a separate Teacher Guide that helps teachers through the Evaluation lesson. There are a variety of formats, activities, and exercises that can include reading texts, graphs, and charts, interpreting data, proposing solutions, and reaching conclusions. Science Bits offers activities that align with the new STAAR standards. Materials provide paraphrased learning objectives for each evaluation within each unit. Teachers can find the TEKS correlation in the scope and sequence to verify learning objective is TEKS correlated.

Carolina Biological Science Bits Grade 6

Materials include assessments that integrate scientific concepts and science and engineering practices with recurring themes and concepts.

- The materials include assessments requiring students to integrate scientific knowledge and science and engineering practices with recurrent themes appropriate to the students' expectations. For example, in the grade 6 Nutrition unit, in the Evaluate lesson, students use a simulator to relate cellular respiration to 02 consumption and CO2 production. Materials also ask students to identify starch as the main food reserve substance in plants, interpret experiments that test theoretical models, and draw information from graphs.
- Materials include assessments that require students to apply knowledge and skills to novel contexts. For example, in the What is Science unit, Lesson 6, slides 2-5, students prepare a slide show presentation explaining why the scientific community considers astrology a pseudoscience. The materials contain another example in the Mass, Volume, and Density unit in 6th grade. Students take on the role of Archimedes and consider the phenomenon of floating or sinking by using online simulators to investigate if the King's crown is genuinely made of gold.
- The materials include assessments requiring students to integrate scientific knowledge and science and engineering practices with recurrent themes appropriate to the student's expectations. For example, in the Nature Science unit in 6th grade, students test the new concepts they have learned regarding the basic nature of science. The materials present the concept of pseudoscience with astrology as an example. Students examine the characteristics of astrology to compare these with features of evidence-based science by carrying out some literature research and presenting the results in groups.

Materials include assessments that require students to apply knowledge and skills to novel contexts.

- Materials include assessments that require students to apply knowledge and skills to a new phenomenon or problem. In the grade 6 unit, "Energy," the Explore lesson invites students to formulate the concept of kinetic energy. Students construct and interpret graphical displays of data to describe the relationships of kinetic energy to an object's mass and speed. In the second one, students draw on the concept of kinetic energy in their exploration and develop a model to describe that when the arrangement of objects interacting at a distance changes, different amounts of gravitational potential energy are stored in the system.
- The Science Bits 6-8 program uses the Elaborate section to include assessments that require students to apply knowledge and skills to a new phenomenon or problem. In this section, students further their learning and put into practice the knowledge, skills, and attitude learned with a real-life challenge. Each Elaborate section can include research, writing an article, creating an informative webpage, poster, etc., and interacting with data to actively propose engineering solutions. For example, in the Cells unit in 6th grade, students read information about digestive, respiratory, circulatory, and excretory systems as they are involved in nutrition and create a slide presentation showing evidence of cellular structures, evidence of how the cells of each type are organized and specialized, evidence of how different tissues are grouped forming organs, evidence of how different organs interact, and evidence of how different systems interact to make the nutrition of the whole organism possible.
- Science Bits Curriculum includes a range of diagnostic, formative, and summative assessments. For example, the 6th-grade unit, "Energy," has formal and informal opportunities to assess student learning in various formats in their activities for the whole unit. In the grade 6 unit, "Cells," students first investigate with an activity called "Under the Microscope." The materials

explain the operation of a light microscope and provide simulations of its use to examine some samples of both living organisms and nonliving forms. Then, the Elaborate activity asks students to read about the structures of the human body that participate in the process of nutrition, from the cellular level to the systems level, and build an explanation based on evidence about the organization of the human body as a model of a multicellular organism.

Indicator 6.2

Materials include guidance that explains how to analyze and respond to data from assessment tools.

1	Materials include information and/or resources that provide guidance for evaluating student responses.	M
2	Materials support teachers' analysis of assessment data with guidance and direction to respond to individual students' needs, in all areas of science, based on measures of student progress appropriate for the developmental level.	M
3	Assessment tools yield relevant information for teachers to use when planning instruction, intervention, and extension.	M
4	Materials provide a variety of resources and teacher guidance on how to leverage different activities to respond to student data.	M

Meets | Score 2/2

The materials meet the criteria for this indicator. Materials include guidance that explains how to analyze and respond to data from assessment tools.

Materials include information and/or resources that provide guidance for evaluating student responses. Materials support teachers' analysis of assessment data with guidance and direction to respond to individual students' needs, in all areas of science, based on measures of student progress appropriate for the developmental level. Assessment tools yield relevant information for teachers to use when planning instruction, intervention, and extension. Materials provide resources and teacher guidance on how to leverage different activities to respond to student data.

Evidence includes but is not limited to:

Materials include information and/or resources that provide guidance for evaluating student responses.

- Materials guide teachers to look for specific components when evaluating student responses. For example, the grade 6 unit, "Minerals and Rocks," includes guidelines for teachers to help students link the different characteristics of each rock to a different mineral composition. Guidelines also suggest how students should be encouraged to think of other possible aspects relating to the rocks' origin and the changes they are subject to. Additionally, each Teacher's Guide includes Misconceptions where the materials publish suggestions for teachers and resources that guide teachers in evaluating student responses.
- Materials provide a generalized rubric teachers can use to evaluate whether to rate students as needing improvement, fair, good, or exemplary for each component of the learning objectives. In the Minerals and Rocks unit in 6th grade, students create slide presentations based on mineral ores seen in an introductory video, and materials provide a rubric to evaluate concepts at each project stage.
- For teachers of 6th-8th grade, the Science Bits Curriculum offers rubrics to evaluate the Elaborate stage of projects. Materials also include printable self-assessment rubrics for students. The Teacher's Gradebook includes rubrics to assess student projects, automatically integrating grades into the book and other unit grades. The authors marked projects with assessment

rubrics with an icon, and teachers can select students for project evaluation groups using a box. For example, the teachers can find a rubric for 6th grade in the “Waste Water Treatment” lesson. A "help" section also guides teachers on using the LIVE mode. This section includes previewing a student's answer and selecting "Show" to project it onto the computer screen for the rest of the group to see. It's important to note that student responses will remain anonymous.

Materials support teachers' analysis of assessment data with guidance and direction to respond to individual students’ needs, in all areas of science, based on measures of student progress appropriate for the developmental level.

- The Science Bits 6-8 program provides tools to support teachers in responding to data to inform instruction. For example, teachers can customize the weight of each lesson to the overall average grade. The report also generates results and attempts to analyze class data based on individual units, lessons, activities, and even individual questions. The tools and customization are certainly present so that teachers can search specifically for activities related to the content area with which students are struggling.
- Materials support the analysis of student assessment data with the self-correcting activities (Mass, Density, and Volume unit, menu section), which display how a student performs on each assignment. Since the teachers can view customized progress reports by skill and student, the materials provide guidance and tools to support teachers in responding to data in the form of comments.
- Materials support the analysis of student assessment data based on the: Real-time formative assessment tools with Science Bits LIVE, which makes it easy to gauge student understanding during a lesson. Teachers can use it for exit tickets, cold calling, etc. Teachers can create Evaluative lessons using all the materials in Science Bits. Teachers can develop auto-grading tests and exams aligned to the STAAR standards.

Assessment tools yield relevant information for teachers to use when planning instruction, intervention, and extension.

- Within the "My Classes" tab, Science Bits offers teachers a range of materials to aid their teaching. These materials include units and their respective lessons. When selecting a lesson, a menu icon appears, providing access to the unit index and various activities. The authors designed these activities to reinforce and enhance students' understanding of the concepts presented in the lessons. They cover different topics, including enrichment, practice, and reinforcement, and help support the review and practice of essential skills throughout the year. This approach ensures that students can achieve mastery and retention of key concepts.
- Science Bits provides a curriculum that includes a tool that allows teachers to create their custom sequence by hiding and skipping lessons, thus allowing the materials to be flexible and completed within a school year.
- The Synchronous Live aids teachers in monitoring all students' progress in mastering the science concept by following the 5E model. The teacher can link her screen to the student's screen and use it to do formal assessments to determine how to group students if there is a need for small-group instruction. The materials contain a tool located in the document and a tool function. Also, teachers can use the Gradebook to assess where the student needs the most assistance based on the self-corrected activity percentage that students get based on how the 5E model

categorizes the Gradebook. The Gradebook function has percentages in green for students making proficient progress, while percentages in red denote below-proficient students.

Materials provide a variety of resources and teacher guidance on how to leverage different activities to respond to student data.

- Materials provide resources for teachers to use in responding to performance data. For example, the weight of the grade for any lesson can be adjusted to be a specific portion of the overall grade. This option gives teachers the ability to emphasize or deemphasize lessons based on student performance and misconceptions.
- The materials provide assessments designed to be used to impact instruction. For example, the evaluation article in the professional dossier states, "The first test taken with Science Bits are used as learning tools, not only as evaluation tools.” Materials have information and resources for guiding teachers on how to respond to students' responses. For example, in the Energy unit, the Teacher's Guide, the Misconceptions section provides teachers with an idea of students' comprehension of the concept.
- Materials provide various student resources for teachers to respond to performance data. These lessons are marked with stars to indicate the difficulty level. The lesson levels help teachers make decisions about appropriate assignments for students based on prior assessment performance.

Carolina Biological Science Bits Grade 6

Indicator 6.3

Assessments are clear and easy to understand.

1	Assessments contain items that are scientifically accurate, avoid bias, and are free from errors.	M
2	Assessment tools use clear pictures and graphics that are developmentally appropriate.	M
3	Materials provide guidance to ensure consistent and accurate administration of assessment tools.	M
4	Materials include guidance to offer accommodations for assessment tools that allow students to demonstrate mastery of knowledge and skills aligned to learning goals.	M

Meets | Score 2/2

The materials meet the criteria for this indicator. Assessments are clear and easy to understand.

Assessments contain items that are scientifically accurate, avoid bias, and are free from errors. Assessment tools use clear pictures and graphics that are developmentally appropriate. Materials provide guidance to ensure consistent and accurate administration of assessment tools. Materials include guidance to offer accommodations for assessment tools that allow students to demonstrate mastery of knowledge and skills aligned to learning goals.

Evidence includes but is not limited to:

Assessments contain items that are scientifically accurate, avoid bias, and are free from errors.

- Formative and summative assessments include assessment items that align with taught objectives and present grade-level content and concepts, science and engineering practices, and recurring themes and concepts in a scientifically accurate way. For example, in grade 6, a unit assessment contains items that accurately distinguish between renewable and nonrenewable energy sources. The materials have another example in the Atomic Structure of Matter unit in Lesson 7’s Evaluation section, where the summative assessment items accurately categorize visuals of compounds and elements.
- Assessments contain items that are scientifically accurate. For example, in the Change of State unit, Lesson 6, slide 3 includes a performance task that asks students to identify substances as liquid, solid, or gas based on their temperature. In the Ecosystems assessment, slide 11 shows an orca's accurate scale ratio compared to mountains.
- Assessment items are free from errors. For instance, there is no mislabeling of units in measurements between Celsius and Fahrenheit in analyzing what happens to a substance during the state of change in the Change of State unit, Lesson 3, slides 2-3.

Assessment tools use clear pictures and graphics that are developmentally appropriate.

- Assessment tools use clear pictures and graphics that are developmentally appropriate. For example, in the Sun-Earth-Moon System unit, Lesson 1 accurately represents winter and

summer with images of a woman in winter clothes vs. a man in a tank top drinking water outside.
- Assessment tools use clear pictures and graphics. For example, in the Sun-Earth-Moon System unit, Lesson 11 slides include pictures, diagrams, and graphs to help students interpret a tide forecast, explain the phenomena of low tides, high tides, spring tides, and neap tides, and link the different lunar phases to the relative positions of the Earth, Moon, and Sun.
- Assessments contain pictures and graphics that are developmentally appropriate. For example, in the Energy unit in 6th grade, Lesson 12 includes a video that reviews kinetic energy, gravitational potential energy, and energy sources and uses them to build a conceptual map.

Materials provide guidance to ensure consistent and accurate administration of assessment tools.

- The materials include detailed information supporting the teacher's understanding of assessment tools and scoring procedures. A Teacher's Guide on assessment includes an overview of the assessment, scoring procedures, answer key, and legend. It also includes an individualized Gradebook detailed by questions of a scored performance assessment with an explanation for each component.
- For teachers of 6th-8th grade, the Science Bits Curriculum offers rubrics to evaluate the Elaborate stage of projects. Students also get printable self-assessment rubrics for students. The Teacher's Gradebook includes rubrics to assess student projects and automatically integrates grades into the book along with other unit grades. Authors marked projects with assessment rubrics with an icon, and teachers can select students for project evaluation groups using a box. For example, materials have the rubric in 6th grade in the "Waste Water Treatment" lesson.
- The materials include detailed information supporting the teacher's understanding of assessment tools and scoring procedures. For example, in the Cells unit in 6th grade, the Teacher Guidelines for slides 1-23 state this activity is fully self-correctable, and recommend the teacher check the students' notes and calculations as an additional source of information regarding evaluation. Additionally, they recommend reflecting on the irresponsible use of antibiotics in treating everyday illnesses of nonbacterial origin, like the cold or flu, and informing the students of the severe consequences of this harmful practice.

Materials include guidance to offer accommodations for assessment tools that allow students to demonstrate mastery of knowledge and skills aligned to learning goals.

- Materials offer accommodations for assessment tools that allow students to demonstrate mastery. For example, in the Mass, Density, and Volume unit, Lesson 9 provides video clips (review of content) that use a closed-captioning feature to help all students see and hear scientific vocabulary in context. Additional examples include the self-correcting activities, the document and tools function, and the synchronized live that teachers can use to modify students' assignments. Additionally, teachers can edit the lesson as a whole for mastery.
- The Science Bits 6-8 program materials include guidance to offer accommodations for assessment tools so that students of all abilities can demonstrate mastery of learning goals. For example, teachers can edit the order of the units, delete units or add additional content, remove content, and assign different kinds of activities based on difficulty, type, open-ended, self-correctable, and create their self-correcting exams.
- Within the "My Classes" tab, Science Bits offers teachers a range of materials to aid their teaching. The Science Bits includes units and their respective lessons. When selecting a lesson, a menu icon appears, providing access to the unit index and various activities. The authors

Carolina Biological Science Bits Grade 6

designed these activities to reinforce and enhance students' understanding of the concepts presented in the lessons. They cover different topics, including enrichment, practice, and reinforcement, and help support the review and practice of essential skills throughout the year. This approach ensures that students can achieve mastery and retention of key concepts.

Carolina Biological Science Bits Grade 6

Indicator 7.1

Materials include guidance, scaffolds, supports, and extensions that maximize student learning potential.

1	Materials provide recommended targeted instruction and activities to scaffold learning for students who have not yet achieved grade-level mastery.	M
2	Materials provide enrichment activities for all levels of learners.	M
3	Materials provide scaffolds and guidance for just-in-time learning acceleration for all students.	M

Meets | Score 2/2

The materials meet the criteria for this indicator. Materials include guidance, scaffolds, supports, and extensions that maximize student learning potential.

Materials provide recommended targeted instruction and activities to scaffold learning for students who have not yet achieved mastery. Materials provide enrichment activities for all levels of learners. Materials provide scaffolds and guidance for just-in-time learning acceleration for all students.

Evidence includes but is not limited to:

Materials provide recommended targeted instruction and activities to scaffold learning for students who have not yet achieved grade-level mastery.

- Science Bits naturally scaffolds learning through contextualization and encourages students to connect the dots. The Teacher's Guide suggests best practices to do this most effectively. For example, each unit and lesson is fully customizable. Teachers can reorder, add, or remove content from the predefined unit sequence. Materials provide easier activities and assistance for students who struggle while the teacher keeps students on task with engaging work.
- Materials have a variety of student activities, including self-correcting exercises, that assess students' knowledge of the states of matter using checkpoints. For example, the Changes of State unit's Explain section, within the lesson, "Changes of State and Temperature," is a self-checking activity that students use to practice applying learned knowledge after reading text about the states of matter on slides 1-7. Under the documents and tools, teachers can add notes or use guiding questions to help students who have not mastered the concept.
- The Teacher's Guide provides teachers with the prior knowledge that students should have, the learning objectives, the misconceptions, the learning sequence for the unit, and suggested ways to discuss the content to enhance the learning for all students. For example, in the index of activities in the Mass, Volume, and Density unit in 6th grade, lessons are designated as reinforcement, enrichment, practice, or buildup. They can be assigned as students progress through the self-correcting activities.

Materials provide enrichment activities for all levels of learners.

- The materials provide enrichment activities that account for learner variability. Teachers can configure the weights for each of the 5Es. There are different kinds of activities on varying difficulty designated by stars (One star, two stars, three stars, enrichment), type (Competency, Reading, Math), open-ended (text answers the teacher grades manually), and self-correctable (no grading is required). Science Bits allows teachers to create their self-correcting exams. In addition, teachers can add their content by editing the unit and inserting a custom lesson with their materials and links.

- The materials provide enrichment activities that account for learner variability. For example, in the Cells unit in 6th grade, a suggested reading on tissue and organ donation is included to enhance students' understanding of how cells are organized into tissues, organs, and systems in multicellular organisms.
- Within the "My Classes" tab, Science Bits offers teachers a range of materials to aid their teaching. For example, the Teacher’s Guide embeds suggestions for engaging enrichment activities (e.g., virtual field trips, game-based concept review games, service learning projects, problem-solving exercises, simulations, real-world scenarios, etc.) to encourage further exploration of science concepts. These enrichment activities vary for all levels of learning.

Materials provide scaffolds and guidance for just-in-time learning acceleration for all students.

- Carolina Bits materials provide scaffolds and guidance for just-in-time learning for all students. For example, in the A World of Force unit home page, teachers can utilize the eye symbol to hide lessons from students, edit lessons to fit a student's IEP, and provide feedback using the note tool option on activities that teachers see as an academic deficiency.
- The Science Bits 6-8 program provides support and resources for students ready to accelerate their learning. For example, the online materials also support students ready to accelerate their learning using the 5E model to create an acceleration plan. The teacher can assign various student activities based on the achievement of students’ grade-level mastery of scientific knowledge and skills. Materials include advanced resources such as texts, online resources, and other materials that provide a deeper understanding of science concepts for each lesson to support self-paced learning, allowing students to spend more time on topics they find challenging and less time on topics they are already familiar with using the self-correcting feature within each lesson.
- The materials contain slides with separate Teacher's Guides that help the teacher facilitate the lesson. There are a variety of formats, activities, and exercises that can include reading texts, graphs, charts, interpreting data, proposing solutions, and reaching conclusions. Science Bits offers activities that align with the new STAAR standards.

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Indicator 7.2

Materials include a variety of research-based instructional methods that appeal to a variety of learning interests and needs.

1	Materials include a variety of developmentally appropriate instructional approaches to engage students in the mastery of the content.	M
2	Materials consistently support flexible grouping (e.g., whole group, small group, partners, one-on-one).	PM
3	Materials consistently support multiple types of practices (e.g., modeled, guided, collaborative, independent) and provide guidance and structures to achieve effective implementation.	M
4	Materials represent a diversity of communities in the images and information about people and places.	PM

Partial Meets | Score 1/2

The materials partially meet the criteria for this indicator. Materials include some research-based instructional methods that appeal to a variety of learning interests and needs.

Materials include a variety of developmentally appropriate instructional approaches to engage students in the mastery of the content. Materials consistently support some flexible grouping (e.g., whole group, small group, partners, one-on-one). Materials consistently support multiple types of practices (e.g., modeled, guided, collaborative, independent) and provide guidance and structures to achieve effective implementation. Materials somewhat represent a diversity of communities in the images and information about people and places.

Evidence includes but is not limited to:

Materials include a variety of developmentally appropriate instructional approaches to engage students in the mastery of the content.

- Science Bits materials engage students in the mastery of the content through various developmentally appropriate instructional approaches. For example, materials include opportunities for students to engage in inquiry-based learning activities in collaborative and cooperative learning activities, such as concept maps and lab reporting.
- Materials engage students in the mastery of content through various developmental instructional approaches. For example, in grade 6, in the lesson "Playing Around With Liquids," students measure and compare different objects on slides 1-9 in the Explore section, watch a video on slide 3, and answer questions based on their observations. In the Elaborate section, the "King's Crown" lesson, students investigate object measurements on slide 3 to gather evidence to write a report. Also, in the Mass, Volume, and Density unit home page, within the Lesson 9 bar heading in the menu, the activities listed are ranked by difficulty level based on how many stars each activity receives. This indicator contributes to students developing the concept for mastery.
- Within the "My Classes" tab, Science Bits offers teachers a range of materials to aid their teaching. Science Bits includes units and their respective lessons. When selecting a lesson, a

menu icon appears, providing access to the unit index and various activities. The authors designed these activities to reinforce and enhance students' understanding of the concepts presented in the lessons. They cover different topics, including enrichment, practice, and reinforcement, and help support the review and practice of essential skills throughout the year. This approach ensures that students can achieve mastery and retention of key concepts.

Materials consistently support flexible grouping (e.g., whole group, small group, partners, one-on-one).

- Science Bits allows for flexibility for teachers to have students act individually, in pairs, in small groups, or in large groups. The 5E model also provides guidance for each section on when to facilitate groups or work one-on-one. A legend specifying the icons and how to create small groups based on progress data would improve the teacher guidance aspect, but there is no evidence of such. For example, in the Chemistry unit lesson, "Making Science Popular," there is no guidance on student grouping. Additionally, within the unit "Earth and Space Sciences," the Elaborate lesson, "Astronomical Observations," is missing guidance on student grouping.
- The materials do not support a variety of instructional groupings. The materials do not provide guidance or indicators to teachers on when to use specific grouping structures based on the needs of students and based on the data. For example, materials offer suggestions in a general Teacher’s Guide; however, no specifications identify suggestions for small group enrichment activities. For instance, on the home page of A World of Forces unit, some symbols indicate how each lesson is structured, i.e., teacher-guided, student-independent, or teamwork (the Elaborate section contains teamwork), but does not indicate how the students are grouped based on their academic needs or data after completion of materials.
- The Science Bits Curriculum provides teachers with a guide on how the teachers can execute the lesson in the unit; under the "eye" symbol, the picture depicts the suggested teacher presentation.
- The materials could use a guide to help teachers understand the legend and how to create small groups based on data, as well as a reminder of icons for each activity, such as hovering over and having a pop-up explanation.

Materials consistently support multiple types of practices (e.g., modeled, guided, collaborative, independent) and provide guidance and structures to achieve effective implementation.

- The Carolina Science Bits materials provide teacher guidance and structures for effectively implementing multiple types of practices. This can be seen in the introductory resources’ "Best Practice Document" for teachers on the home page. A guidance document on instructional strategies shares information on the importance of providing multiple opportunities for students to work collaboratively in groups to resolve a problem using the concepts and procedures of the unit, helping their peers to overcome whatever difficulties they may encounter.
- The materials provide multiple types of practices, such as modeled, guided, collaborative, and independent. Lessons include opportunities for students to examine recent scientific case studies and independently complete a reflection, argument, summary, or justification assignment. Materials recommend frequent and varied learning assessments to ensure that multiple types of practices lead to student mastery. For instance, on the homepage of the Sun-Earth-Moon System unit, some symbols indicate how each lesson is structured, i.e., teacher-guided, student-independent, or teamwork (the Elaborate section contains teamwork). In the Explain section, on slides 1-5, students make observations and answer questions based on their

observations independently. The materials include another example in the Elaborate section of "Chemical Changes for Solving Crimes." Students use simulations to analyze blood and write a report on their findings, and slides 1-9 have a virtual lab used to help write the report (with a rubric).

- The Science Bits Curriculum provides teachers with a guide on how the teachers can execute the lesson in the unit; under the "eye" symbol, the picture depicts the suggested teacher presentation.

Materials represent a diversity of communities in the images and information about people and places.

- Some images show diversity in communities. Materials represent a diversity of communities and places, including rural, urban, and suburban communities, cities and states across the U.S., and countries around the world. Depictions of places are respectful and inclusive, with emphasis on community strengths, resources, and unique characteristics. This evidence is not consistently seen across units and lessons.
- Materials do not represent a diverse learning community per the images and text information in the What is Science unit, in the lesson's Engage section, slide 2 (Great Personalities of Science). Images do not reflect the diversity of people in school communities. The images' characteristics do not consistently vary to include race and ethnicity, skin tone, gender identity and expression, age, disability status, body size and shape, and hair texture. For example, in the "Seasons" lesson in the Sun-Earth-Moon unit in 6th grade, slide 2 includes a picture of a light-skinned male and female. There is a small percentage of inclusivity of differently abled bodies and darker skin tones and hair texture/type.
- Materials do, however, represent diverse communities and places, including rural, urban, and suburban communities, cities, and states across the U.S. and worldwide. Depictions of places are respectful and inclusive, emphasizing community strengths, resources, and unique characteristics. For example, in the Cells unit in 6th grade, the Engage video, "The Size of Life," shows how the microscopic scale of life is developed using ants, the human eye, bacteria from a pond, and observational tools such as a magnifying glass and microscope.

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Indicator 7.3

Materials include listening, speaking, reading, and writing support to assist emergent bilingual students in meeting grade-level science content expectations.

1	Materials include guidance for linguistic accommodations (communicated, sequenced, and scaffolded) commensurate with various levels of English language proficiency as defined by the ELPS.	PM
2	Materials encourage strategic use of students' first language as a means to linguistic, affective, cognitive, and academic development in English.	PM

Partial Meets | Score 1/2

The materials partially meet the criteria for this indicator. Materials include some listening, speaking, reading, and writing support to assist emergent bilingual students in meeting grade-level science content expectations.

Materials include some guidance for linguistic accommodations (communicated, sequenced, and scaffolded) commensurate with various levels of English language proficiency as defined by the ELPS. Materials encourage some strategic use of students' first language as a means to linguistic, affective, cognitive, and academic development in English.

Evidence includes but is not limited to:

Materials include guidance for linguistic accommodations (communicated, sequenced, and scaffolded) commensurate with various levels of English language proficiency as defined by the ELPS.

- The Science Bits 6-8 program allows teachers to manage content for different students. Teachers can segment content by class or student according to student abilities. However, materials are available only in English and Spanish. The materials do not include suggestions for linguistic accommodations at critical points in the main lesson, particularly for students at the beginning and intermediate levels, within the teachers' guides and guidelines within each lesson. These accommodations are not provided in a variety of languages to serve all ELL (English Language Learners) students. An online dictionary tool allows the user to click on any word on the page to hear it being pronounced and read its definition. However, within the "Key Concepts" component, which has the unit's limited vocabulary, no pictures accompany the text on each slide in the tools component. Visuals for vocabulary words with labels are provided, but no scaffolding is presented at the lesson level. In Texas, there is a large population of students who speak languages other than English.
- The educational resources provided offer some assistance to teachers regarding the importance of allowing students to express themselves in their native language, and provide some practical advice for teachers who don't speak their students' first language. Moreover, the lessons only cater to Spanish-speaking cultures, which limits their cultural responsiveness.
- The teacher's guidance for Lesson 1 in the "At the Grocery Store" lesson engages in the Mass, Volume, and Density unit in 6th grade, including advice on scaffolding the term *density*. Content provided in the introductory video includes items at a grocery store to draw students' attention

to the fact that mass and volume measurements allow them to refer to the amount of matter. There are no concrete definitions for the vocabulary words *mass*, *volume*, and *matter*.

Materials encourage strategic use of students' first language as a means to linguistic, affective, cognitive, and academic development in English.

- Science Bits curriculum allows for Spanish translation for all 6th-8th grade materials. However, this is only helpful for students at an English beginning level. The curriculum does not provide materials for students who are at an intermediate or advanced acquisition level. The educational resources provided offer some assistance to teachers regarding the importance of allowing students to express themselves in their native language, but they do not provide practical advice for teachers who do not speak their students' first language at the lesson level. Moreover, the lessons only cater to Spanish-speaking cultures, which leaves students who speak languages other than English or Spanish with little to no resources.
- The Teacher's Manual does not suggest scaffolds for emergent bilingual (EB) students in lessons, such as gestures, sentence stems, graphic organizers, anchor charts, and manipulatives. There is, however, an option to change the language of the materials from English to Spanish. This option still excludes other students whose first language is not English or Spanish. While materials within the Science Bits 6-8 program can be translated into Spanish, materials do not include textbooks or audio/video clips explaining concepts in languages other than English. The materials do not include sideboard or footnote references that demonstrate ELPS connections by referencing the language of the ELPS or their specific outline location administrative code and how the lesson supports any given ELPS in the Teacher's Guide. Strategic encouragement of the use of students' first language as a means of linguistic, affective, cognitive, and academic development in English is not prevalent.
- Materials do not encourage strategically using a student's first language for academic development. For example, in the Professional Development Dossier, the introduction guide does not provide tips for teachers about the importance of allowing students to use their first language, nor practical suggestions on how to communicate with students whose first language is not English. Although the materials suggest concrete experiences and explicit modeling as linguistic accommodations when delivering direct instruction, there is little more the materials do to include teacher guidance for communication with EB students to create comprehensible input.
- Materials do not include tips for teachers about the importance of allowing students to express their understanding in their first language and practical suggestions for teachers who do not speak the student's first language. For example, the Key Concepts pop-up menu in the "At the Grocery Store" activity (Lesson 1) in the Mass, Density, and Volume unit in 6th grade includes a list of terms density, extensive property, intensive property, mass, matter, specific property, and volume with definitions, but does not include a glossary, pictures, or text boxes with cognates or definitions in second languages other than Spanish.

Carolina Biological Science Bits Grade 6

Indicator 7.4

Materials provide guidance on fostering connections between home and school.

1	Materials provide information to be shared with students and caregivers about the design of the program.	M
2	Materials provide information to be shared with caregivers for how they can help reinforce student learning and development.	M
3	Materials include information to guide teacher communications with caregivers.	DNM

Partial Meets | Score 1/2

The materials partially meet the criteria for this indicator. Materials provide some guidance on fostering connections between home and school.

Materials provide information to be shared with students and caregivers about the design of the program. Materials provide information to be shared with caregivers for how they can help reinforce student learning and development. Materials do not include information to guide teacher communications with caregivers.

Evidence includes but is not limited to:

Materials provide information to be shared with students and caregivers about the design of the program.

- Materials include "The Adventure of Science" PDF article to answer the question, "Why do we learn science at school?" The authors wrote the article for students, but the article translates easily to caregivers. The materials also include a caregiver document that is a one-page overview of science and engineering practices in easy-to-read language. This caregiver document, along with the video explaining that everybody can learn, encourages students to become better critical thinkers and problem solvers.
- Materials provide information on how the authors designed the program. For example, on the home page of Science Bits, there is a slide show that shows snippets of each general science concept, and the Introductory Resources underneath the "for students" tab have videos about the purpose of science, "Lab Safety Do's and Don'ts," and the adventure of science.
- As part of the Science Bits curriculum, students can find an introductory video under the "for students" section. The video, titled "This is how you will learn science with Science Bits," explains the 5 phases of the 5E Model designed to help students understand new concepts. This student information is enhanced by the caregiver document and embedded videos.

Materials provide information to be shared with caregivers for how they can help reinforce student learning and development.

- Materials provide caregivers with resources and strategies to help reinforce student learning and development. An "Introduction to Science Bits for Caregivers" gives families extension activities and best practices, such as setting up a daily family routine, allocating an area at home for homework, and knowing the assignments your child has to do. This letter to caregivers is an excellent addition to the materials. For example, in the Science Bits Reviewer Guide, the guide provides only information on how teachers and students are to navigate through this program. It provides a lens for implementing the 5E model, activities where students can practice what was learned (self-correcting activities), ways teachers can edit the lessons based on student's needs, and teacher guides for best practices.

- Materials support caregivers on how to help reinforce student learning and development. There is information specifically for caregivers that aids in supporting their students in the "Introduction to Science Bits for Caregivers" article. This guide for caregivers includes tips on how the caregiver can support the student's needs, such as encouraging curiosity by asking questions about what they are learning and helping them find additional resources.
- The Science 6-8 program materials are accessible online and include embedded texts, interactive activities, and website resources to reinforce students' scientific vocabulary learning. The "Introduction to Science Bits for Caregivers" article provides guidance for caregivers to utilize these tools.

Materials include information to guide teacher communications with caregivers.

- Materials do not include teacher guidance for communicating with caregivers. It would be an excellent addition if the publishers included Teacher Guidance materials such as information on preparing for and facilitating different types of conferences with caregivers based on student needs (e.g., data-driven, student-led, virtual, in-person). Additionally, it would be helpful if publishers included templates for sharing updates on student progress toward benchmark goals for science knowledge and skills and recommendations for sending updates at specific intervals. Intention to add these ideas to the materials at a future date cannot be considered as evidence.
- Teacher guidance materials, such as student-led conferences and translation tools, do not include resources and tips for communicating with families representing diverse languages and cultures. Additionally, materials provide letters and videos for students and teachers on how to use the resources best; however, materials do not include templates in multiple languages or in a format that can be downloaded and translated with support for caregivers. For example, in the introductory resources, underneath the teacher's tab, the "How to use Science Bits in the Classroom" PDF only entails best practices information.
- With the Science Bits program, teachers can utilize the progress made on self-correcting activities to communicate with caregivers. However, teacher guidance materials do not include information to guide teacher communications for caregivers to communicate concerns or insights regarding a student's level of understanding, such as forms attached to at-home practice activities, space for input on progress reports, or a message box in the online platform. For example, in the Mass, Volume, and Density unit home page, the teacher guide does not provide information about caregiver communication, but provides details of best practices of the 5E model. The guide entails Before We Begin (prior knowledge), Learning Objectives, Misconceptions, Learning Sequence (5E Model), and Discussing Content, but ineffective ways to communicate this program to them.

Carolina Biological Science Bits Grade 6

Indicator 8.1

Materials include year-long plans with practice and review opportunities that support instruction.

1	Materials are accompanied by a TEKS-aligned scope and sequence outlining the order in which knowledge and skills are taught and built in the course materials.	M
2	Materials provide clear teacher guidance for facilitating student-made connections across core concepts, scientific and engineering practices, and recurring themes and concepts.	M
3	Materials provide review and practice of knowledge and skills spiraled throughout the year to support mastery and retention.	M

Meets | Score 2/2

The materials meet the criteria for this indicator. Materials include year-long plans with practice and review opportunities that support instruction.

Materials are accompanied by a TEKS-aligned scope and sequence outlining the order in which knowledge and skills are taught and built into the course materials. Materials provide clear teacher guidance for facilitating student-made connections across core concepts, scientific and engineering practices, and recurring themes and concepts. Materials provide review and practice of knowledge and skills spiraled throughout the year to support mastery and retention but appear to lack built-in spiral review and limited teacher facilitation methods.

Evidence includes but is not limited to:

Materials are accompanied by a TEKS-aligned scope and sequence outlining the order in which knowledge and skills are taught and built in the course materials.

- According to the Teacher Resources section of the text, materials include a TEKS-aligned scope and sequence for each grade level located in the components list. This scope and sequence shows clear alignment to the TEKS, including a vertical alignment of the content.
- The 6th Grade Science pacing guide is provided within the scope and sequence, outlining the order in which knowledge and skills are taught and built in the course materials.
- The materials provide a color-coded scope and sequence for grade 6 to represent each concept strand. This tool makes it simple and quick for users to see the TEKs covered in the unit and the scaffolded TEKs included in that concept strand.

Materials provide clear teacher guidance for facilitating student-made connections across core concepts, scientific and engineering practices, and recurring themes and concepts.

- Teacher guidance materials explain teacher and student actions for how to execute the 5Es (Engage, Explore, Explain, Elaborate, Evaluate). The pacing guide organizes this information by grade level and a comprehensive list of varying engineering practices in the TEKs Correlation Page. According to the materials, the 5Es are built within the unit and include the RTCs and the SEPs. This information is pertinent to teachers and helps to guide the lesson.
- The Introduction to Science Bits provides clear teacher guidance for facilitating student-made connections across core concepts using the 5E method. For example, in grade 6, the A World of

Forces Unit contains a Teacher Guide for the entire unit. The Teacher Guide provides teachers with the prior knowledge that students should have, the learning objectives, the misconceptions, and the learning sequence for the unit. In addition, it provides suggested ways to discuss the content.

- Teacher guidance materials explain teacher and student actions for how to execute the 5Es (Engage, Explore, Explain, Elaborate, Evaluate). The pacing guide organizes this information by grade level and a comprehensive list of varying engineering practices in the TEKs Correlation Page. According to Science Bits, the 5Es are built within the unit and include the RTCs and the SEPs. This information is pertinent to teachers and helps to guide the lesson. One suggestion that we might add would be to still list these explicitly and possibly color-coded with a key for the Teacher's edition. This would be very beneficial to teachers to ensure that they are meeting their goals and able to articulate in their lesson plans and required documentation exactly what RTCs and SEPs are being met.

Materials provide review and practice of knowledge and skills spiraled throughout the year to support mastery and retention.

- The materials provide a suggested pacing guide for 6th-8th grade, which includes the following: the suggested pacing, unit, content standards, scientific and engineering practices, recurring themes, and concepts throughout the unit. This tool makes it simple and quick for users to see the TEKs covered in the unit and the scaffolded TEKs included in that concept strand. Additionally, one can see that the materials are spiraled and reinforced throughout the year by activities. When looking at the materials in the lessons, the activities are labeled as enrichment, practice, and reinforcement, which support the retention of material.
- In the materials, activities are designed to reinforce and enhance students' understanding of the concepts presented in the lessons. They cover a range of topics, including enrichment, practice, and reinforcement, and help support the review and practice of important skills throughout the year. This approach ensures that students can achieve mastery and retention of key concepts.
- Within the My Classes tab, the materials offer teachers a range of materials to aid their teaching. This includes units and their respective lessons. When selecting a lesson, a menu icon appears, providing access to the unit index and various activities. These activities are designed to reinforce and enhance students' understanding of the concepts presented in the lessons. They cover a range of topics, including enrichment, practice, and reinforcement, and help support the review and practice of important skills throughout the year. This approach ensures that students are able to achieve mastery and retention of key concepts. Additionally, the Are You Ready activities contain a method of accessing previous learning content that teachers can use as remediation and also lesson extensions or enrichment.

Carolina Biological Science Bits Grade 6

Indicator 8.2

Materials include classroom implementation support for teachers and administrators.

1	Materials provide teacher guidance and recommendations for use of all materials, including text, embedded technology, enrichment activities, research-based instructional strategies, and scaffolds to support and enhance student learning.	M
2	Materials include standards correlations, including cross-content standards, that explain the standards within the context of the grade level.	M
3	Materials include a comprehensive list of all equipment and supplies needed to support instructional activities.	M
4	Materials include guidance for safety practices, including the grade-appropriate use of safety equipment during investigations.	M

Meets | Score 2/2

The materials meet the criteria for this indicator. Materials include classroom implementation support for teachers and administrators.

Materials provide teacher guidance and recommendations for use of all materials, including text, embedded technology, enrichment activities, research-based instructional strategies, and scaffolds to support and enhance student learning. Materials include standards correlations, including cross-content standards, that explain the standards within the context of the grade level. Materials include a comprehensive list of all equipment and supplies needed to support instructional activities. Materials include guidance for safety practices, including the grade-appropriate use of safety equipment during investigations.

Evidence includes but is not limited to:

Materials provide teacher guidance and recommendations for use of all materials, including text, embedded technology, enrichment activities, research-based instructional strategies, and scaffolds to support and enhance student learning.

- The materials include a comprehensive teacher guide for each unit. The guide includes prior knowledge and procedure prerequisites, learning objectives divided into three categories, knowledge, skills and attitudes, misconceptions, learning sequences with time recommendations for each lesson, and a content discussion where teachers can reference background information and clarification for the topic.
- In addition to the teacher guide, the materials provide teachers with helpful instructional strategies to aid students in their learning across all concept strands. These strategies include a concept map that visually connects all unit topics and activities designed to reinforce and improve comprehension of the lesson concepts. The activities cover a wide range of topics, such as enrichment, practice, and reinforcement, and are valuable for supporting the review and practice of essential skills throughout the year.
- For example, Lesson 1 in the Module Sun-Earth-Moon Unit embeds technology, reading passages, and activities that explain the reason for seasons. In the explore section, there is a drop-down menu box that explicitly explains how the 5E model is used as a guide to help

teachers with the flow of teaching the lesson. The menu toggle list displays activities for the engage, explore, explain, elaborate, and evaluate.

Materials include standards correlations, including cross-content standards, that explain the standards within the context of the grade level.

- In the Carolina Biological Science Resource Section, the scope and sequence includes both the correlation of standards and cross-content standards of grade levels. In the scope and sequence, each grade level consists of science TEKS that define the fundamental knowledge of skills that students should obtain by the end of the unit.
- The pacing guide includes the standards correlation and cross-content standards of each grade level. It outlines the unit, content standards, and scientific and engineering practices with recurring themes and concepts noted.
- An example of content reflected across curricula is that while reading and research are part of the English Language Arts and Reading standards, some of the lessons require students to research science content to provide evidence for a claim. In addition, the lesson "Density" for grade 6 students in TEKS involves applying mathematical process standards to solve density-related problems using division.

Materials include a comprehensive list of all equipment and supplies needed to support instructional activities.

- For grade 6, materials include appropriate virtual simulations that feature a list of materials. The Elaborate phase of the lessons includes a project-based activity. This activity requires the application of concepts, attitudes, and procedures learned by the students in the unit to solve a new problem in a new context.
- An example is in Unit 6, The Solar System, students download a simulation to experiment with multiple variables. Screenshots and videos are included, along with a step-by-step guide with comprehension questions. Students use this information to construct a timeline.
- Virtual labs and simulations are embedded in student lessons in each unit to include materials needed to support students, teachers, and administrators during investigations per grade level. Human Responses to the Environment unit also includes a lab and the materials used. Moreover, the lab lesson specifies the materials needed.

Materials include guidance for safety practices, including the grade-appropriate use of safety equipment during investigations.

- The materials provide teacher guidance for safety practices on the Introductory Resources for Teachers on the home page. The guidance includes Infographic: Lab Safety Rules, Lab Safety Worksheets, and Lab Safety: Teacher Responsibilities.
- There are resources for students that include a Student Laboratory Safety Agreement with a list of General Rules and Personal Safety. Some videos help demonstrate the practices for the students.
- The materials also provide teacher guidance for safety practices and grade-appropriate use of safety equipment during investigations, following Texas Education Agency Science Safety Standards.

Carolina Biological Science Bits Grade 6

Indicator 8.3

Materials provide implementation guidance to meet variability in program design and scheduling.

1	Materials support scheduling considerations and include guidance and recommendations on required time for lessons and activities.	M
2	Materials guide strategic implementation without disrupting the sequence of content that must be taught in a specific order following a developmental progression.	M
3	Materials designated for the course are flexible and can be completed in one school year.	M

Meets | Score 2/2

The materials meet the criteria for this indicator. Materials provide implementation guidance to meet variability in program design and scheduling.

Materials support scheduling considerations and include guidance and recommendations on required time for lessons and activities. Materials guide strategic implementation without disrupting the sequence of content that must be taught in a specific order following a developmental progression. Materials designated for the course are flexible and can be completed in one school year.

Evidence includes but is not limited to:

Materials support scheduling considerations and include guidance and recommendations on required time for lessons and activities.

- The teacher guide for each unit contains a learning sequence that provides the estimated time that will be required for each of the 5E lessons. For example, in the teacher guide, the Learning Sequence tab includes each of the parts of the 5Es with the number of hours listed. For this unit, it will take one hour for the Engage, one hour for the Explore, three to four hours for the Explain, one hour for the Elaborate, and one hour for the Evaluate.
- The materials suggest a pacing guide for each unit within the displayed scope and sequence for each grade band. These guides provide a side-by-side table showing the concept strand, the total number of days suggested for each unit, content standards, scientific and engineering practice standards, and recurring themes and concepts. There is also a My Units feature which allows teachers to build a unique lesson using search criteria. Both of these components allow teachers to customize units and lessons due to time constraints.
- The curriculum provides teachers with guidance on the individual lessons and the time stamps suggested for them in the unit. For example, the lesson called "What is Science?" provides the teacher with guidance found in the learning sequence. Teachers and districts can create custom sequences by hiding and skipping lessons and creating classes with their choice of lessons and units.

Carolina Biological Science Bits Grade 6

Materials guide strategic implementation without disrupting the sequence of content that must be taught in a specific order following a developmental progression.

- The materials provide a suggested guide for grade 6, which includes the following: the suggested pacing, unit, content standards, scientific and engineering practices, recurring themes, and concepts throughout the unit.
- One example that demonstrates that the material is strategic and follows a developmental progression is that the materials purposely group lessons together that have similar recurring themes and ideas, making it easier for students to connect scientific knowledge. Each lesson within the unit can be viewed at a glance through the index of activities where the number of stars symbolizes the difficulty of the lesson, and teachers can view the sequence of practice, build-up, reinforcement, and assessment activities.
- The materials include a unit grade book complete with tracking tools to identify the developmental progression of content and skills through each lesson to ensure that students are supported with instruction organized to optimize their learning. For example, the materials clearly delineate the order of units to ensure students learn about precursor concepts first. And In the teacher guide, there is a Before We Begin section that identifies the prior knowledge of students and procedural prerequisites that students will need.

Materials designated for the course are flexible and can be completed in one school year.

- The lesson sequence guidelines for grade 6 provide teachers with the unit, the unit title, the number of lessons in the unit, enrichment units highlighted in yellow, the suggested time for each lesson, the total hours for each Unit, and the sum of these hours over a school year. Each grade equates to 160 course hours (one school year). The content is organized into an appropriate developmental progression. However, teachers or districts can reorganize materials to leverage student prior knowledge or to reflect a specific district pacing plan or scope and sequence.
- Within each lesson, teachers have the flexibility to hide or skip lessons and add specific units or lessons to their classes. Teachers can use this tool to differentiate between enrichment lessons and lessons that push the TEKs to follow the aforementioned developmental progression.

Carolina Biological Science Bits Grade 6

Indicator 9.1

The visual design of materials is clear and easy to understand.

1	Materials include an appropriate amount of white space and a design that supports and does not distract from student learning.	Yes
2	Materials embed age-appropriate pictures and graphics that support student learning and engagement without being visually distracting.	Yes
3	Materials include digital components that are free of technical errors.	No

Not Scored

The visual design of materials is somewhat clear and easy to understand.

Materials include an appropriate amount of white space and a design that supports and does not distract from student learning. Materials embed age-appropriate pictures and graphics that support student learning and engagement without being visually distracting. Materials include digital components that are somewhat free of technical errors.

Evidence includes but is not limited to:

Materials include an appropriate amount of white space and a design that supports and does not distract from student learning.

- The digital materials include appropriate white space and an overall design that does not distract from student learning. Authors appropriately designed student materials to support learning. Student materials include the following: a clear main topic, titles and headings that are prominent and clear, slides that are clearly marked with subheadings, subheadings that have a clear, relevant hierarchy, content that is organized in a logical progression, and tools students can use to annotate the text. The overall design and layout of digital components included in the materials adhere to the TRR Digital Design Guide guidelines.
- The subheadings have a clear, relevant hierarchy as they follow the 5E model. The authors organized the content logically, marking each lesson as Engage, Explore, Explain, Elaborate, or Evaluate. Ancillary student materials, such as glossaries and tools, are easy to find and access.

Materials embed age-appropriate pictures and graphics that support student learning and engagement without being visually distracting.

- The materials embed age-appropriate pictures and graphics that support student learning and engagement without being visually distracting. For example, grade 6 materials include detailed cell structure and function visuals with accurate labels. Visuals also clarify the connections between the types of cells, tissues, and body parts in which they are found and how they work together. The materials include many examples of vocabulary words in animations, simulations, diagrams, and videos.
- For instance, the lab safety worksheet contains graphics of students behaving inappropriately in a lab. Students have to identify the broken lab safety rule and discuss with their peers a solution

to the inappropriate behavior. The materials contain another example in the "At the Grocery Store" lesson in the Mass, Volume, Density unit in grade 6. There is a visual tile of a picture of food items for this lesson. Within the lesson, slides 1-8 contain graphics of bottles from the grocery store and other items to elicit students' prior knowledge of mass and volume.

- The Science Bits Curriculum offers materials for 6th-8th grade students, including pictures and graphics suitable for their age and help them learn better. For instance, in the 6th-grade unit's lesson on how mass is conserved, the video provides a brief description appropriate for students at that grade level.

Materials include digital components that are free of technical errors.

- There are errors regarding the consistency of digital teacher components, such as the Teacher's Guides, in various units. As a result, the digital components are not completed.
- The materials include some digital components that are not free of technical errors. For example, in grade 6, the World of Forces unit has a Teacher's Guide with a section labeled "Attention to Diversity" that authors do not consistently include in other Teacher's Guides throughout the program. Another example is grade 6's Substances Change unit, which is missing a unit Teacher's Guide.

Carolina Biological Science Bits Grade 6

Indicator 9.2

Materials are intentionally designed to engage and support student learning with the integration of digital technology.

1	Materials integrate digital technology and tools that support student learning and engagement.	Yes
2	Materials integrate digital technology in ways that support student engagement with the science and engineering practices, recurring themes and concepts, and grade-level content.	Yes
3	Materials integrate digital technology that provides opportunities for teachers and/or students to collaborate.	Yes
4	Materials integrate digital technology that is compatible with a variety of learning management systems.	Yes

Not Scored

Materials are intentionally designed to engage and support student learning with the integration of digital technology.

Materials integrate digital technology and tools that support student learning and engagement. Materials integrate digital technology in ways that support student engagement with the science and engineering practices, recurring themes and concepts, and grade-level content. Materials integrate digital technology that provides opportunities for teachers and/or students to collaborate. Materials integrate digital technology that is compatible with a variety of learning management systems.

Evidence includes but is not limited to:

Materials integrate digital technology and tools that support student learning and engagement.

- Materials integrate digital technology and tools that support student learning and engagement. For example, each activity is self-correcting and self-paced. Science Bits also includes simulations to allow students to manipulate variables to make sense of content. Student digital components include embedded tools, such as note-taking and a dictionary.
- Materials integrate digital technology and tools that support student learning and engagement, embedded with interactives, simulations, and online assessments. For example, in the Atomic Structure of Matter unit, Lesson 2 has an interactive activity in which students count atoms of chemical equations. In Lesson 8, students classify elements and compounds by doing a drag and drop.
- The Science Bits Curriculum, designed for students in 6th-8th grade, includes a "help" section that guides teachers on how to use the LIVE mode. When activated, the LIVE mode enables teachers to monitor student's progress during lessons by highlighting their names. Additionally, teachers can provide instant feedback to their students through the eye icon, which includes corrections and ratings.

Carolina Biological Science Bits Grade 6

Materials integrate digital technology in ways that support student engagement with the science and engineering practices, recurring themes and concepts, and grade-level content.

- Materials integrate digital technology in ways that support student engagement with the science and engineering practices, recurring themes and concepts, and grade-level content. For example, in the Mass, Volume, and Density unit in 6th grade, students take on the role of Archimedes and consider the phenomenon of floating or sinking by using online simulators to investigate if the King's crown is genuinely made of gold.
- In the Substance Change unit, Lesson 6, students will analyze and interpret the properties of a substance to determine whether a chemical reaction has occurred by doing a virtual lab which aids in understanding chemical reactions.
- In the Minerals and Rock unit, Lesson 6, students will gather and synthesize information to provide evidence of how uneven distributions of Earth's mineral resources result from past and current geoscience processes and then create a presentation based on their findings.

Materials integrate digital technology that provides opportunities for teachers and/or students to collaborate.

- Materials integrate digital technology that provides opportunities for teachers and/or students to collaborate. For example, teachers can generate competitions or projects with the included Forum, update absent students via Messenger, and schedule work with student notifications.
- The materials provide an online forum for teachers to manage to encourage collaboration via discussion questions. Peers can review one another's responses and give feedback. Materials provide interactive activities students can complete collaboratively in pairs or teams.
- Another example is the synchronized live and note-taking component that aids in collaboration. Science Bits LIVE delivers a digital platform for teachers for real-time formative assessments for exit tickets, cold calling, etc. Teachers can then use the messenger function to collaborate with students on a one-to-one basis.

Materials integrate digital technology that is compatible with a variety of learning management systems.

- Materials integrate digital technology that is compatible with a variety of learning management systems. Each slide has a separate URL, so if teachers wanted to direct students to a specific curriculum area, they could embed that within their own LMS as a link. Login options also include Google and Microsoft options.

Carolina Biological Science Bits Grade 6

Indicator 9.3

Digital technology and online components are developmentally and grade-level appropriate and provide support for learning.

1	Digital technology and online components are developmentally appropriate for the grade level and align with the scope and approach to science knowledge and skills progression.	Yes
2	Materials provide teacher guidance for the use of embedded technology to support and enhance student learning.	Yes
3	Materials are available to parents and caregivers to support student engagement with digital technology and online components.	No

Not Scored

Digital technology and online components are somewhat developmentally and grade-level appropriate and provide support for learning.

Digital technology and online components are developmentally appropriate for the grade level and align with the scope and approach to science knowledge and skills progression. Materials provide teacher guidance for the use of embedded technology to support and enhance student learning. Materials are not available to parents and caregivers to support student engagement with digital technology and online components.

Evidence includes but is not limited to:

Digital technology and online components are developmentally appropriate for the grade level and align with the scope and approach to science knowledge and skills progression.

- Science Bits provides a suggested pacing guide for grade 6, which includes the following: the suggested pacing, unit, content standards, scientific and engineering practices, recurring themes, and concepts throughout the unit.
- The authors aligned the digital technology and online components with the grade-level scope and approach to science knowledge and skills progression. For example, the authors organized each unit throughout the Science Bits 6-8 digital program by TEKS clusters. In grade 6, the authors organized the units into the Nature of Science, Matter and Change, Forces, Motion and Energy, Earth and Space, and Organisms and Environment. Within each cluster, the labels for the lessons within units are Engage, Explore, Explain, Elaborate, and Evaluate (the 5Es).
- The digital technology and online components are developmentally appropriate for the grade level. The Science Bits 6-8 program explains and justifies interactive games, simulators, multimedia, digital text, videos, and multimedia tools embedded in each 5E section in the best practices document for teachers.

Carolina Biological Science Bits Grade 6

Materials provide teacher guidance for the use of embedded technology to support and enhance student learning.

- The Professional Development Dossier guide provides teachers with guidance in the teacher actions of how to use embedded technology to support and enhance student learning with the 5E model structure.
- The materials provide teacher guidance for the use of embedded technology to support and enhance student learning. For example, the materials support teachers to successfully integrate the technology within the program through a supporting document called "Reviewer's Guide." This document includes screen grabs and step-by-step instructions for the digital platform. Additionally, materials include a "Help" button embedded in the digital platform that has pre-determined Q&A directions regarding the technology.
- The Teacher's Guidelines in the World of Particles unit in grade 6, Lesson 4, states that the interactive resource shows the effect of change in temperature on the motion of particles in a substance in a solid, liquid, and gas state and provides guiding questions for the teacher once students have explored the resource.

Materials are available to parents and caregivers to support student engagement with digital technology and online components.

- The materials meet some aspects of parent and caregiver support of student engagement. However, the materials do not fully explain how parents and caregivers can support digital technology and online components. The documents have general suggestions about good study habits and how parents and caregivers can support those habits, but lack specific support for student engagement.
- The materials do not provide online parents and caregivers webinars on relevant topics, such as educational materials and resources that they can use to support learning at home.