Carolina Biological Science Bits Grade 7

Carolina Biological Science Bits Grade 7 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.

Carolina Biological Science Bits Grade 7

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 the 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 provide scope and sequence for grades 6-8 and pacing guides include how the students use the scientific and engineering practices (SEPs) to investigate grade-level appropriate content concepts with opportunities to repeat the practices throughout the year.
- In the Earth's Internal Processes Unit, Lesson 8, each "E" of the 5e model provides students the opportunity to practice, develop, and demonstrate mastery by reading texts, answering questions, performing tasks (i.e., making a poster, slide 14, that explains plate boundaries in the elaborate section) and solving problems.
- The curriculum provides a suggested pacing guide for grade 7, including the engineering practices in a unit. For example, in Unit 5, Lesson 9, A Perfect Mug, students design, build, and test a device that minimizes thermal energy transfer. Materials provide opportunities to

undertake a design project, engaging in the design cycle to build a solution that meets specific design criteria and constraints, 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 the recurring themes.

- The materials use recurring themes such as identifying and applying patterns, identifying and investigating cause and effect relationships, analyzing how differences affect a system's structure, modeling parts of a system, and analyzing and explaining how factors or conditions impact stability and change systems but do not delve into reflecting this for the students. In the "Before We Begin" or the "Are You Ready," knowledge from previous units helps establish connections for students. Incorporating this into the student's edition helps to jog their memory and leads to excellent prior knowledge recall on their own,
- In Unit 7, Lesson 2, "Water in Motion," students will understand the cycle of water on Earth as it travels from the surface of the planet up to the atmosphere, and back to the surface. In this activity, the processes of evaporation, condensation, and precipitation are presented experimentally. Students will also understand how the composition of water changes while it flows over land, as it dissolves substances of mineral origin. The recurring theme is that physical systems can be modeled and understood by analyzing the functions of their different parts. The goal of Science Bits is not to explicitly state connections for students, the facilitator is given support in the teacher's guide to lead students to make these connections. The materials' pedagogical approach is that each of the 5E units builds on prior knowledge and encourages students to make connections with Teacher Guidance.
- In Unit 11, Lesson 11, "Presenting Nutrition," students create a 3D model or poster of an organ system. Question B, which deals with the proportional size of organs, is particularly relevant if the students work on a 3D model. In any case, it allows students to draw on their mathematical skills and be aware of the actual size of the organs and structures they are dealing with. The recurring theme is to analyze how differences in scale, proportion, or quantity affect a system's structure or performance.

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 each have appropriate learning objectives.
- Components are strategically placed and systematic for the teachers to align the students' development with the TEKs. For example, the scope and sequence, and pacing guide provide teachers with systematic and strategic ways to teach the lessons.
- 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.

Carolina Biological Science Bits Grade 7

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 Evolution unit, the Explore activity, students use a simulator to uncover the mechanism of natural selection and find answers to the question "How Does Evolution Work?" along with many other questions.
- 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.
- For example, in the heat and temperature unit in grade 7, students use prior activities and knowledge to design a mug that will successfully keep drinks warm. These lessons provide opportunities for students to ask questions. They can plan and conduct investigations and make connections across disciplines by applying their newly learned concepts.

Carolina Biological Science Bits Grade 7

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 7 lesson, "What a Glass of Water Can Contain," students consider the phenomena of aqueous solutions 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 can't 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 and other related content are formally presented. 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 it to their prior knowledge. Teacher materials provide them with a Before We Begin page with information on prior knowledge and procedural prerequisites. In Unit 2, Lesson 1, "Water and Salt," an activity for the video begins the lesson. In this video, solutions of common salts in water-such as mineral water or seawater, are compared. The aim is to introduce the idea that the composition of a solution is variable and to ask whether there is a maximum amount of salt that can be dissolved in a given volume of water. The properties of water, salt, and the mixtures of these two substances are reviewed in the video to explore students' ideas and experiences relating to these solutions.
- The materials guide teachers and students to adequately address potential areas of misunderstanding. For example, grade 7 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 grade 7 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, 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 grade 7, in the 5E: Elaborate section of the unit called "Planet Water," students are asked to conduct a water audit for their administration at their school using these six steps: identify the problem, gather

information, and approach the problem, propose an initial design/solution, test the prototype, analyze the data from the test. 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.

- The 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 Solar System" in the 7th-grade TEKs, students analyze and interpret data to develop a scale model of the solar system, both concerning the distances and the dimensions of the planets and the Sun.

Carolina Biological Science Bits Grade 7

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 and designed for students to build and connect their knowledge and skills within and across units and grade levels. 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 7 materials present content in a way that builds complexity within the unit. The Teacher’s Guide provides a learning sequence that shows how individual lessons build and connect across the unit. The Motion unit shows this progression, including increasingly complex student objectives beginning with having a basic knowledge of kinematics based on perception and intuition to understanding the concepts of average speed and the ratios between time, distance, and speed.
- 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 the how the ecosystem is built) that is connected to the original learning objective. The objectives outlined in the Teacher’s Guide are reflected in the learning objectives in the student materials.
- Science Bits uses the 5E model to present content in a way that builds complexity within grade levels. In the Elements or Compounds unit in grade 7, 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. In addition, in the Discussing Contents portion of the Teacher's Guide, student learning is outlined using specific descriptions of concepts that should be included in instruction and concepts that should be left to be covered in a later stage. For example, "This topic will be covered in a later stage once students have developed and worked with atomic models that include electronic distribution."

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 the Solar System unit, the materials provide a progression of concrete concepts that allow for an increase of deeper conceptual understanding. In grade 7, the teacher presents a video called "Cards and Elements." Then, students use several interactive resources to classify elements according to various criteria. Next, 18 different topics in the Explain section are present, where students dive deeper into the topic of elements and compounds. The Elaborate lesson asks students to build a dichotomous key that allows them to determine the atomic structure of five substances through simple lab experiments. The Evaluate lesson is a series of questions pertaining to the lesson, "Elements and Compounds."
- 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 include stars that indicate the difficulty in the index. 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.

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 an 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.
- Science Bits provides a suggested pacing guide for grade 7, 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 7 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.

- In the Ecosystems II unit, the materials present grade-specific core concepts, recurring themes and concepts, and science and engineering practices. In the Teacher's Guide's "Before We Begin" section, the recurring themes and concepts are the procedural prerequisites (i.e., interpreting bar graphs). The learning objective addresses the grade-specific core concepts, how organisms interact with their environment, the effects when organisms' interactions are disrupted, and the concept of biodiversity. The science and engineering practices are a part of the Elaborate section that provides an opportunity for students to investigate and analyze an environmental disaster with the introduction of an invasive species in an ecosystem.
- For all grade levels, 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 are only relying 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 7, students learn that elements combine and form compounds with physical and chemical properties different from those of the elements forming them. They discover that the atoms in pure substances called molecular substances form covalent bonds and are organized in molecules.
- The materials are within the boundaries of the main concept of the grade level based on mastery requirements. In the Earth's Internal Processes unit, the Teacher's Guide learning objective provides target learnings in the "Knowledge Acquired" section (i.e., The increase of temperature with depth in the geosphere is called geothermal gradient; thorough information about the geosphere), then the "Skills Developed" section projects what the student learned (i.e., apply a descriptive model of the geosphere dynamics; identify geological phenomena from scientific tests and reasoning) which in turn demonstrates mastery.
- Science Bits includes specific learning objectives for each unit. In the Diversity of Life unit in grade 7, students are presented with several essential questions: "What evidence shows that different species are related, and how can we use that to classify them? How can we study and classify the huge diversity of species? Students will apply scientific ideas to construct classifications of living organisms by examining their anatomical, physiological, cellular, genetic, and ecological characteristics and by interpreting similarities among organisms as evolutionary

relationships. Students will learn about the different systems of classification that scientists use and how they have evolved over time."

Carolina Biological Science Bits Grade 7

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, in grade 7, the Forces unit begins with lessons in which students watch a video that introduces the idea that forces are interactions between two objects, and the question posed asks about the relationship between forces and motion. Later in the unit, students intuitively explore the graphical representation and addition of forces. At the end of the unit, students must apply the model of forces to the context of road safety regulations such as speed limits, the mandatory use of safety belts, and maintaining a safe distance between vehicles, to design an informative brochure about the science behind these regulations.

- In the Teacher's Guide section, Before We Begin, there are 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 Evolution unit in grade 7, students will apply scientific ideas to construct an explanation for the anatomical similarities and differences among modern organisms and between modern and fossil organisms to unveil evolutionary relationships.
- The Science Bits materials include guiding documents that support teachers in understanding how new learning connects previous and future learning across grade levels. Materials are designed to build knowledge systematically, coherently, and accurately. For example, the grade 7 Motion unit is set up with the 5E model, in which students follow a structured learning sequence that starts with the phenomena (engage) and explores the content with a simulation, texts, and articles for an explanation, application in the elaboration, and evaluation. The scope and sequence provides skills and standards that support teachers' understanding of how learning from the previous grade level, grade 6, in the Organisms and Environment unit, connects to new learning that addresses lessons about ecosystems, human nutrition, human response to the environment, and evolution. These new learnings will support future learning of the grade 8 Organism and Environment unit.
- 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.

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 Biological 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 Aqueous lesson within the Matter and Change unit, the Teacher's Guide entails a prior knowledge section (i.e., can distinguish pure substances from mixtures, and homogeneous mixtures from heterogeneous mixtures), learning objective (i.e., an aqueous solution is a homogeneous mixture made up of one or several substances [the solutes] dissolved in water [the solvent]), misconceptions (i.e., the process of dissolution [sugar]), 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 History of the Earth unit in grade 7, the discussing contents section in the Teacher's Guide describes the aim of the unit for students to understand how scientists go about obtaining information about the past from analyzing landforms, fossils, and other elements that have preserved information. These are the main objectives of the Engage, Explore, and Explain sections.

- The Science Bits materials include support for teachers to develop their own understanding of more advanced, grade-level concepts. These are the main objectives of the Engage, Explore, and Explain sections.

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, ScienceBits provides an explanation for why materials are designed the way they are. Materials highlight key features of the instructional design, like each lesson offering a “learning objective” outlining overarching learning goals for each phenomenon or engineering problem. Materials give an explanation of the phenomenon or engineering problem. The learning objectives are further broken by knowledge acquired, skills developed, and attitudes section.
- 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 why 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 the student learning goal(s) behind each phenomenon or engineering problem in the learning objectives tab under guides. For example, in the unit “The Solar System,” students analyze and interpret data to develop a scale model of the solar system concerning the distances and the dimensions of the planets and the Sun from the grade 7 TEKS. 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 phenomenon or engineering problem. The learning objectives are further broken down by knowledge acquired, skills developed, and attitudes sections.

Carolina Biological Science Bits Grade 7

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 specific 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 each unit within the Teacher's Guide, the materials list a series of

learning objectives categorized by “Knowledge Acquired,” “Skills Developed,” and “Attitudes.” Within these attitudes, the materials outline desirable student attitudes. For example, in grade 7’s Unit 1, “Elements and Compounds,” a learning objective attitude states, “Upon completing this unit, it is desirable for the student to have developed the following attitudes: Using the concepts and strategies of scientific work through experiments and simulations, in order to formulate relevant questions and draw conclusions from the evidence and experimental tests.”

- The Science Bits Curriculum Materials aim to help students make sense of concepts through reading, writing, thinking, and acting like scientists and engineers. For example, in the Elements and Compounds unit in grade 7, students build a dichotomous key that allows them to determine the atomic structure of five unknown substances through simple lab experiments. Another example presents itself in the Forces unit. Within the “Road Safety” lesson, in the Elaborate section, students are given a task to write a brochure presenting scientific explanations about main road safety. Students will follow these steps: approach the problem, look up information (research), design and plan, assemble, evaluate, and then write a report.

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 grade 7’s unit called “Thermal Energy, Heat, and Temperature,” in an activity called “Thermal Equilibrium and Heat,” students study the effects of gaining or losing thermal energy on the temperature, density, and state of aggregation of an object. Students use grade-level interactive texts to gather evidence of what happens to materials when objects gain heat versus loose heat. Grade 7’s materials 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 students engage with grade-level appropriate texts in the Science Bits, with the use of the pacing guide and the grade 7 correlation sheet, and the scope and sequence. In lesson 2, in the History of the Earth unit in grade 7, students discover the origin of a fossilized tooth embedded in the side of a mountain to build an evidence-based scientific explanation on how it is possible to use the information provided by rocks to reconstruct the history of the Earth. Each slide within the lesson provides scientific texts to support this goal.
- Science Bits provides a suggested pacing guide for grade 7, 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. One lesson in the Earth and Space module for grade 7, called “Travelers,” 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.

- The materials provide opportunities for students to communicate thinking on scientific concepts in written and graphic modes. In the Elaborate section of the Human Nutrition unit in grade 7, students are put into groups to design a poster or 3D model of one part of the nutrition process. The materials provide opportunities for students to communicate thinking on scientific concepts in written and graphic modes. In the “Eyes on the Solar” lesson in grade 7, slide 8 asks students to use the simulator to analyze the mission of the Voyager probes and create a timeline of each of the probes. They include a link to https://www.timetoast.com/ to help create an interactive timeline.
- The materials aim to help students make sense of concepts through reading, writing, thinking, and acting like scientists. For example, in the grade 7 unit called “Aqueous Solutions,” and within an activity called “Freshwater Fish,” students apply knowledge of solutions to analyze scientific data and make decisions regarding a social and scientific issue: the installation of a thermal power station located by a river. The first part of the activity presents the context of the study and gives guidance on how to analyze the scientific data. The second part introduces the problem and asks students to write a report with the scientific conclusions from the first part of the activity.

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 “Home to School” lesson in grade 7, slide 1, students examine different paths to school they could take from home and decide which is the best and why. Students collect data for each route, then share it with their peers and ask for feedback to improve their proposed routes. Their final report includes an explanation of how important speed is in making their justification. A guided inquiry-based activity challenges students’ initial knowledge and conceptions and provides opportunities to resolve the puzzlements of the previous phase.
- 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 7

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 7 lesson, "What a Glass of Water Can Contain," students consider the phenomena of aqueous solutions 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 7 unit called "Motion," the Elaborate lesson called "Home to School" includes a rubric. One of the criteria is "Arguments in Favor and Against." In the activity entitled "Home to School," the students draw three different paths to travel from their home to school, put them into practice, and measure the distance covered and

the time taken to travel each of the paths. Next, they are asked to make a critical assessment of each of these paths using objective arguments and subjective arguments.

- For example, on slide 3 in Lesson 2, "A Remote Island," in the Ecosystems II unit in 7th grade, students propose a hypothesis about how four species will evolve after the disappearance of plants, insects, rodents, snakes, and birds. On slide 5, students are instructed to use the simulator to test their hypothesis by representing the impact of a species disappearing on the ecosystem and checking it against their proposed hypotheses from slide 3.

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 present scientific vocabulary using multiple representations. In a grade 7 unit called "Motion," the materials develop the rigorous concept of average speed from the intuitive idea of the speed of an object in motion. 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.
- The materials present scientific vocabulary using multiple representations, for example, in the "Pure Substances" lesson in 7th grade. Slide 1 presents vocabulary such as substance, pure, mixture, chemical composition, and specific properties in bold and includes a video to show the difference between boiling water, a pure substance, and salt water, a mixture.
- The materials present scientific vocabulary using multiple representations. For example, in the Motion unit in 7th grade, the engaging video, "A Race Winner," is used to introduce the concepts of distance, time, and speed with the analysis of the dynamics of different types of races. In the Explore section on slide 11, speed is formally defined in bold and represented as distance traveled per unit of time.

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.
- The materials integrate argumentation and discourse within stages of the learning cycle. For example, in the Motion unit in 7th grade, Lesson 9, within the activity entitled "Home to School," students have to draw three different paths to travel from their home to school, put them into practice, and measure the distance covered and the time taken to travel each of the

paths. They are then asked to make a critical assessment of each of these paths using objective arguments and subjective arguments.

- 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 Earth and Space module for grade 7 called "Travelers," 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 7 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 Motion unit in 7th grade, Lesson 9, in the activity entitled "Home to School," students have to draw three different paths to travel from their home to school, put them into practice, and measure the distance covered and the time taken to travel each of the paths. They are then asked to make a critical assessment of each of these paths using objective arguments and subjective arguments.
- The materials provide criteria for developmentally appropriate arguments to explain a phenomenon or defend a solution to problems using evidence acquired from learning experiences.

Carolina Biological Science Bits Grade 7

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 7 unit called "The Solar System," the Teacher's Guide contains a "Misconceptions" page to anticipate student responses. In the Explore lesson called "A Small-Scale Solar System," the materials ask students to build a scale model of the solar system. The Teacher's Guide on this slide strongly recommends that the teacher perform this activity outdoors and get students to create their own scaled model of the solar system. Thus, their scale should be determined with regard to the space available. Additionally, in this same unit, the learning objectives are in the form of questions. For example, one main question and two sub-questions are posed: (1) What makes up our solar system? (a) What are the scales of the solar system? (b) Why do planets and other objects orbit the Sun?
- 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 “Travelers” lesson in the Solar System unit in grade 7, it is recommended that while watching the video, the teacher intervenes when quantitative data regarding distances and speeds are presented to encourage students to think about the enormous distance that currently separates Earth and the Voyager probes (18.5 billion km) or the speed at which they travel (16 km/s or 58,000km/h).

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 the teacher to demonstrate how to introduce and scaffold students’ development of scientific vocabulary. For example, in the grade 7 unit called “Elements and Compounds,” the Engage lesson offers a video for the teacher to show the class. A few of the objectives include: (1) Mobilize students' knowledge about the model of classifying matter. (2) Explore the degree of internalization of the concept of chemical elements. (3) Show that the periodic table of the elements is a classification system based on more than one criterion through an analogy with the card game solitaire. The Teacher's Guide outlines that this lesson is devised as a group activity in which the whole class watches the video together and works on the related questions. In this way, students can pose their own ideas and assess those of their classmates.
- 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 key concepts and tools to strategically introduce vocabulary words and their definitions. For example, in the grade 7 unit called “Thermal Energy, Heat, and Temperature,” the concept map includes all main ideas such as kinetic energy, thermal energy, radiation, convection, and conduction. The concept map includes arrows and conjoining words such as “particles in motion HAVE kinetic energy” and “thermal energy IS TRANSFERRED as heat” to help students to see connections to main ideas and vocabulary.
- Science Bits curriculum provides a suggested pacing guide for grade 7, 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 eight days to teach a concept strand to ensure mastery. The curriculum provides a suggested pacing guide for grade 7, including the engineering practices in a unit. For example, in the Motion unit in grade 7, the scientific and engineering practice is 7.1A, which asks questions and defines problems based on observations or information from text, phenomena, models, or investigations.

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

- The 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 “Planet Water” lesson in grade 7, the Teacher's Guide provides an overview of focus questions to guide student discussion, including “What happened to all this water? What happened to the rivers and seas on Mars? Why is the temperature on Mars lower than the temperature on Earth? What is the state of the water in the clouds? Why does precipitation occur?” and “Why does liquid water evaporate?” Groups then engage in discourse to answer the questions.
- 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 Earth and Space module for grade 7, called “Travelers,” 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 Earth's Internal Processes unit in grade 7, the “probing plates” activity asks students to locate and classify the largest tectonic plates based on geolocalized geological data: altitude, distribution of active volcanoes, age of the seafloor rock, and the distribution and depth of earthquake hypocenters, and create a poster with the three main types of plate boundaries. Students are grouped into expert groups and use an interactive resource to find evidence, groups share their conclusions and crosscheck the four maps. As a whole class, students work on a blank map to find out how to locate plate boundaries using seismic data.
- 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 page 5, 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 7

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, the grade 7 Cards and Elements unit includes diagnostic checks for understanding students' knowledge 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 Solar System unit, Lesson 2, slide 2 is a pre-assessment of the planets' order from the distance from the sun that assesses students' prior knowledge.
- 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. For example, the materials provide many self-checking activities in each lesson that allow teachers to monitor and access the data and identify students of varying abilities at any time in the lesson grade book. For example, in the Evolution unit in 7th grade, in the "How Does Evolution Work?" activity, students use a simulator to subject a population of small mammals to different environments and observe their evolution throughout many generations. Student groups debate the possible origin of the adaptations by answering questions: "What are the

necessary conditions for adaptations to occur? How do these adaptations come to be?" The simulation and questions allow teachers to learn about the students' prior ideas.

- Materials include summative assessments in a variety of formats. For example, in the Evolution unit in 7th grade, students compile and summarize information about methods and techniques with which humans have controlled the inheritance of certain traits in various species. This activity shows how humans have directed evolution by preparing a presentation about a specific species that humans and an end-of-unit assessment have domesticated to evaluate if students have achieved the unit objectives. In the grade 7 unit, "History of the Earth," Evaluation lesson, students analyze data from graphs to relate the concentration of atmospheric CO to the world's global temperature. Then students respond to questions given geological cross-sections to identify the type of rocks scientists can apply radiometric dating to and rank the geological processes experienced by a stratigraphic column in chronological order. To complete a 5E unit test, students must think critically. It is not just their ability to memorize facts that the materials assess 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.

- The materials assess all student expectations by grade level, as outlined in the TEKS. 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 clearly 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 Bits 6-8 Scope and Sequence provides 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 (Elements and Compounds unit, Lesson 1, slides 1-5) about the periodic table, the self-correcting activities (Lesson 2, slides 2-10), and the Evaluate section (Lesson 7, slides 1-21) assesses the overall student expectation of the unit.
- The materials assess all student expectations by grade level, as outlined in the TEKS. For example, in the Forces unit in 7th grade, the scope and sequence are aligned to TEKS 7.8A, 7.8B, and 7.8C. The TEKS states the student expectation is to investigate methods of thermal energy transfers into and out of systems, including conduction, convection, and radiation, and investigate how thermal energy moves in a predictable pattern from warmer to cooler until all substances with the system reach equilibrium, and explain the relationship between temperature and the kinetic energy of the particles within a substance. The learning objectives for this unit state students will learn the following:
    - forces are always interactions between two objects
    - identify the main forces in our surrounding environment
    - how to represent forces
    - the effects that forces cause
    - forces acting on an object are combined to produce a single effect
    - gravity and how it affects us

  - relationship between forces and motion.
- The authors align evaluation objectives with the program's objectives. Each slide has a separate Teacher's Guide that helps teachers through the evaluation lesson. There are a variety of formats, activities, and exercises that can include reading texts, graphs, charts, interpreting data, proposing solutions, reaching conclusions, and 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.

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 student expectation. For example, in the grade 7 Motion unit, in the Evaluate lesson, students are asked to calculate the driving range of a vehicle knowing the (average) speed and fuel consumption, calculate the time needed to travel a given distance at a given (average) speed and use units of length, time, and speed based on a variety of real-world scenarios.
- Materials include assessments that integrate scientific concepts and science and engineering practices with recurring themes and concepts. For example, in the Forces unit, Lesson 6, slides 1-10, students investigate road safety issues, then create a brochure about the scientific explanation of why road safety rules are important in obeying them. Another example could be found in Evaluation Lesson 6, in the Elements and Compounds unit in 7th grade, which begins with a video that reviews the evaluated concepts and uses them to build a conceptual map. The questions that follow are fully self-correcting so teachers can monitor progress.
- The materials include assessments requiring students to integrate scientific knowledge and science and engineering practices with recurrent themes appropriate to the student expectation. For example, in the Elements and Compounds unit in 7th grade, students build a dichotomous key to determine the atomic structure of five unknown substances through simple lab experiments.

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

- The Science 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 Human Nutrition unit in 7th grade, students use 3D models and posters to support their explanation of the nutrition process in a group project.
- Materials include assessments that require students to apply knowledge and skills to a new phenomenon or problem. In the grade 7 unit, "Thermal Energy, Heat, and Temperature," the Explore lesson invites students to use the scientific approach to answer the question, "Is it a good idea to wrap a coat around the snowman to prevent it from melting?" By studying ice fragments melting and taking the temperature of the air at different points, the students discover thermal equilibrium. Through this inquiry-based activity, students experimentally analyze the problem with the snowman to produce an explanation of the phenomenon based on the corpuscular-kinetic model of matter.

- For example, in the grade 7 unit, "Planet Water," through the "Water in Motion" activity, students will understand the cycle of water on Earth as it travels from the planet's surface up to the atmosphere and back to the surface. This activity presents the processes of evaporation, condensation, and precipitation experimentally. Students will also understand how the composition of water changes while it flows over land, as it dissolves substances of mineral origin. The materials provide another example in the Earth's Internal Processes unit, Lesson 7, slide 14. Students are making a poster about their investigations about plate boundaries on a map. This poster will include the plate boundary theory, types of boundaries, evidence of plate boundaries, and hot spots.

Carolina Biological Science Bits Grade 7

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, in grade 7's Earth's Internal Processes unit, the Teacher's Guide advises teachers first to ask students how they think they could obtain information about the spheres without breaking them open or drilling a hole in them. Next, the guide directs teachers to play students the experimental video showing how the four spheres have different weights. There is a note that, with this knowledge, students should be able to infer that their densities are also different and that their composition differs. 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 teachers rate students as needing improvement, fair, good, or exemplary for each component of the learning objectives. In the Planet Water unit in 7th grade, Lesson 7, students are asked to research the different uses of water in their school. Students and teachers can download the rubric to reflect on their progress throughout the project. Materials also guide teachers to look for specific components when evaluating student responses. For example, in Lesson 2 in the Planet Water unit in 7th grade, the first section of the activity consists of an open-ended and guided self-

correcting question about the many locations of water on our planet. The Teacher's Guidelines for this activity prompt teachers to some less evident responses, like humidity in the air, groundwater, and living organisms.
- For teachers of 6th-8th grade, the Science Bits Curriculum offers rubrics to evaluate the Elaborate stage of projects. Students get printable self-assessment rubrics. The Teacher's Gradebook includes rubrics to assess student projects and automatically integrates grades into the book along with other unit grades. The materials mark projects with assessment rubrics with an icon, and teachers can select students for project evaluation groups using a box. For example, the materials include a rubric for 7th grade in the "Freshwater Fish" 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. The Science Bit 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.
- 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 have this tool located in the document and tool function. Also, teachers can use the Gradebook to assess where the student needs the most assistance based on the self-corrected activity percentage given to students 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 7

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 7, a unit assessment contains items that accurately distinguish between thermal energy and temperature. The materials have another example in the Elements and Compounds unit in 7th grade. The summative assessment item in Lesson 6, slide 4, accurately classifies iodine, helium, sodium chloride, nitrogen, and methane as lattice, molecular, or monatomic structures.
- Assessments contain items that are scientifically accurate. For example, in the Elements and Compounds unit, Lesson 7, slides 2- 4, have a performance task that asks students to classify elements as metals, nonmetals, and metalloids based on their structure by using a periodic table. In the Ecosystems assessment, slide 3, an accurate representation of a food web in Yellowstone National Park is shown.
- Assessment items are free from errors. For instance, in the document and tools section, the periodic table needs to have mislabeling to identify the difference between metals, nonmetals, and metalloids.

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 Solar System unit, Lesson 1 provides images of a satellite probe and planet

Saturn that aid students in understanding how technology gives us information about space. This unit also provides images of solar system objects that students must rank by their size.

- Assessment tools use clear pictures and graphics. For example, in the History of the Earth unit in 7th grade, Lesson 9 includes stratigraphic cross-sections of areas where fossils were found to rank the geological processes chronologically.
- Assessments contain pictures and graphics that are developmentally appropriate. For example, the Thermal Energy, Heat, and Temperature unit in 7th grade includes a video that reviews the distinction between temperature and thermal energy, thermal energy transfer, and the mechanisms of thermal energy transfer via conduction, convection, and radiation 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 integrate 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, the materials include a rubric for 7th grade in the "Freshwater Fish" lesson.
- The materials include detailed information supporting the teacher's understanding of assessment tools and scoring procedures. For example, in the Diversity of Life unit in 7th 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 Forces unit, Lesson 10 provides video clips (review of content) that use a closed-captioning feature to help all students see and hear scientific vocabulary in context. Other 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 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 7

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 students who struggle with easier activities and assistance 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, in the Ecosystems II unit’s Explain section, within the lesson, "What is an Ecosystem?" students use a self-checking activity to practice applying learned knowledge after reading text about an ecosystem on slide 1. 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 Elements and Compounds unit in 7th 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 Lesson 6 of the Ecosystems II unit in 7th grade, students apply their knowledge of ecosystems to investigate and analyze a case of environmental disaster caused by introducing an invasive species. The Explain section in the lesson, "What is the Ecosystem?" allows students to practice self-correcting activities for comprehension and application.
- 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, on the Solar System 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 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.

Carolina Biological Science Bits Grade 7

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 the Elements and Compounds unit in the lesson, "Cards and Elements," Explore section, students play a game of solitaire on slide 1, answer questions based on this activity on slides 2-3, and categorize element cards on slides 4-5. These activities engage students in mastery of content through various instructional approaches. On the unit's home page, on the menu of Lesson 7's bar heading, 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, a general Teacher's Guide provides suggestions; however, no specifications identify suggestions for small group enrichment activities. For instance, on the home page of the Elements and Compounds unit, some symbols indicate how each lesson is structured, i.e., teacher-guided, student-independent, or teamwork (the elaborate section contains teamwork), but do 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.
- We suggest 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 Solar System unit, some symbols indicate how each lesson is structured, i.e., teacher-guided, student-independent, or teamwork (the elaborate section contains teamwork). For example, in the Engage section "Travelers," teachers can synchronize their screen with students to guide them through a lesson.

- 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. For example, in the Solar System unit in 7th grade, slide 10 uses a scale model of the universe as compared to the National Mall in Washington, D.C. Evidence of diversity within communities is present. However, evidence is not consistently seen across units and lessons.
- Materials do not represent a diverse learning community in 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 7th grade Motion unit’s Engage section, "A Race Winner," slide 3 displays diversity (a person of color kayaking), but slides 4-5 do not further the example. 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 Solar System unit in 7th grade, slide 10 uses a scale model of the universe compared to the National Mall in Washington, D.C.

Carolina Biological Science Bits Grade 7

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.
- Materials provide limited guidance for linguistic accommodations for levels of English language proficiency as defined by the ELPs. For example, in the A World of Forces unit, the lesson "The Effects of Forces," slide 1 provides examples of how force affects objects but does not provide

links to resources for translation or support in first languages. It does give a dictionary (Wordsmyth) but has limited access to gain translation for vocabulary words.

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 and 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, nor practical suggestions for teachers who do not speak the student's first language. For example, the key concepts pop-up menu in the "Coral Reef Activity" (Lesson 1) in the Ecosystems II unit in 7th grade includes a list of terms, *abiotic factor*, *adaptations*, *biodiversity*, *biotic factor*, *community*, *consumer*, and *decomposer*, but does not have a glossary, pictures, or text boxes with cognates or definitions in second languages other than Spanish.

Carolina Biological Science Bits Grade 7

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 includes additional examples in an overview of science and engineering practices in easy-to-read language. This caregiver document, along with the video "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.

Carolina Biological Science Bits Grade 7

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.

- The materials provide a color-coded scope and sequence for grade 7 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.
- Within the teacher guide in the Elements and Compound Unit, the learning sequence explains the unit is being taught. The teacher guide provides teachers with the learning objectives, misconceptions, learning sequence, and discussion content that are TEKS aligned.

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 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.
- 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.

- 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.

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.
- 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 7

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 offer 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.
- For example, in Lesson 4 in the Motion Unit, the materials embed 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 curriculums 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 7 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 7, 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.
- For example, 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 the grade level. The 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 home page. The guidance includes an 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.

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 that 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 on 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 7

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 7, 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 7 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 7

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 student 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 7 materials include detailed visuals of the solar system with accurate labels. Visuals also make clear the connections between size and scale. 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. Additionally, Lesson 4 in the Elements and Compounds unit has multiple images representing chemical and physical properties in bonding.

- The Science Bits Curriculum offers materials for 6th-8th grade students, including pictures and graphics suitable for their age, to help them learn better. For instance, in the 7th-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 free of inaccurate content materials. For example, in the Solar System unit, Lesson 4, slides 1-4 have the appropriate visuals and simulations to explain the sun's structure clearly.
- The materials include some digital components that are not free of technical errors. For example, in grade 7, the entire Elaborate section needs to be added to the Elements and Compounds unit.

Carolina Biological Science Bits Grade 7

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, Lesson 2 simulates the water cycle in Planet Water using a model. Lesson 8 provides an interactive online assessment that gives students a video to watch for review, an interactive concept map, and key concepts in the document and tool function.
- 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 7

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 Motion unit in 7th grade, students use simulators to experience phenomena as they analyze the speed of cars.
- In the History of Earth unit, Lesson 8, slides 1-5, students are building a scale model that represents the divisions of geological time and the main events of the Earth's history that engages students in recurring themes and concepts.
- In the Thermal Energy, Heat and Temperature unit, Lesson 9, students develop and design a mug that keeps hot drinks warm; this activity represents science and engineering practices.

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 7

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 structured each unit throughout the Science Bits 6-8 digital program by TEKS clusters. In grade 7, these clusters are Matter and Change, Motion, Forces 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 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.

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.
- In the Teacher's Guidelines in the Elements and Compounds unit in grade 7, Lesson 2, slide 1, it is suggested that students work in pairs with access to tablets or computers as they reconstruct a simplified process similar to the one used by Mendeleev in 1869 to create a periodic table of elements and predict the existence of unknown chemical elements in a five-part activity, then share the results in a class discussion.

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.