McGraw Hill Texas Chemistry

McGraw Hill Texas Chemistry Executive Summary

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

TEKS Student %	TEKS Teacher %	ELPS Student %	ELPS Teacher %
100%	100%	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 somewhat clear and easy to understand.

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Section 7. Supports for All Learners

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

Section 8. Implementation Supports

- The materials include year-long plans with some 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 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.

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Indicator 2.1

Materials are designed to strategically and systematically integrate scientific and engineering practices and course-level content as outlined in the TEKS.

1	Materials provide multiple opportunities for students to develop, practice, and demonstrate mastery of appropriate scientific and engineering practices as outlined in the TEKS.	M
2	Materials strategically and systematically develop students' content knowledge and skills as appropriate for the concept and grade level or course as outlined in the TEKS.	M
3	Materials include sufficient opportunities, as outlined in the TEKS, for students to ask questions and plan and conduct classroom, laboratory, and field investigations, and engage in problem-solving to 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 and course-level content as outlined in the TEKS.

Materials provide multiple opportunities for students to develop, practice, and demonstrate mastery of appropriate scientific and engineering practices as outlined in the TEKS. Materials strategically and systematically develop students' content knowledge and skills as appropriate for the concept and grade level or course 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 engage in problem-solving to 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 appropriate scientific and engineering practices as outlined in the TEKS.

- The materials provide multiple opportunities to develop, practice and show mastery of grade-level appropriate scientific and engineering practices, as outlined in the TEKS through the use of Applying Practices in the Lab Supports and Projects portion of the materials. A rubric is provided to show mastery of the SEP. For example, in the Design a Solution activity, students use the engineering design loop to design a solution for a complex real-world problem.
- Rubrics are provided to measure mastery, and multiple opportunities exist for students to develop, practice, and demonstrate mastery of SEPs aligned to the TEKS. Opportunities to ask questions, plan and carry out the procedures, collect and analyze data using math skills, and communicate conclusions are provided throughout the materials in the Lab Library (in Additional Resources), as well as the Lab Supports and Projects in the course menu, Applying Practices sections.
- Chapter 13, Lesson 1, directs students to plan and carry out an investigation to determine if salt water and pure water melt at the same rate. Later in the same lesson, students research and engage in an argument on the positive and negative factors of using rock salt on roadways in the winter. "How Much is Really Aspirin" in the Student Lab Library in Additional Resources

provides an opportunity for students to ask questions, plan and carry out the procedures, collect and analyze data using math skills, and communicate conclusions to determine the mass perfect of aspirin in a tablet.

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

- Materials strategically and systematically develop students' content knowledge and skills as appropriate for the concept and grade level as outlined in the TEKS and ELPS. Concepts and skills are introduced in the book as foundational concepts, such as modeling, and built upon throughout the resource. Teachers are guided in facilitating the systematic and strategic development of concept mastery and skill acquisition through the lesson blueprint and teacher guidance cues throughout each chapter and lesson. Grade-level appropriate phenomena are incorporated throughout the materials, and lab investigations are sequenced to support the proper development of skills and techniques as the course progresses.
- Materials frontload foundational skills early in the resource and refer back to and build upon these skills as the year progresses. For example, modeling is introduced in Chapter 2, Lesson 2: Lesson Blueprint, and is referenced again in Chapter 5, Lesson 1.
- The Teacher eBook guides teachers through the systematic and strategic development of content concepts and skills with resources and cues at varying points in lessons. In Chapter 13, Lesson 3, teachers are guided to activate previous knowledge throughout the lesson about the definition of solutes and solvents and the factors that affect solvation. Later in the lesson, teachers are guided to use a laundry detergent example to explain the mechanisms of solvation. Even later, teachers are guided to use the analogy of seats in the classroom versus the number of students seated to explain unsaturated, saturated, and supersaturated solutions.
- The materials are also systematically designed to develop and build student skills and content knowledge using phenomena appropriate to the grade level as outlined in the TEKS. For example, the TEKS Correlations: Chemistry in Additional Resources shows the TEKS and references the page numbers each TEKS is used. ELPS correlations are also provided in the TEKS Correlations resource.
- The Lab Library lists the investigations, which progress in complexity and allow students to build on prior knowledge. Initial lab investigation topics include lab techniques, lab safety, graphing, and quantitative and qualitative observations. Later, labs include topics such as constructing models of isotopes and atoms, analyzing line spectra, and observing properties of elements and compounds. For example, Chapter 8 contains the first design of your own experiment, "How Thick is the Coating on a Galvanized Nail," which requires students to ask questions, plan and conduct the experiment, collect and analyze data using math skills, and present conclusions.

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

- Materials provide ample opportunities for students to conduct experiments and problem-solve in the lab investigations throughout each unit, as well as in the Additional Resource Lab Library, including four Design Your Own investigations. For example, materials include opportunities for students to conduct prewritten classroom investigations. The Applying Practices activities allow

students to approach a unique situation that requires them to ask questions, define problems, and design solutions.

- The materials include multiple students conducting lab investigations and opportunities for problem-solving in each chapter. The materials also include four Design Your Own laboratory investigations, allowing students to ask questions and develop a plan, such as "What's in the Mixture?" found in the Student Lab Library. In this investigation, students use the given materials and equipment to research and ask questions to design a testable hypothesis, plan and conduct the investigation, collect and analyze data using math skills, and communicate the conclusions in finding the mass perfect of two hydrates in a mixture. Additionally, Chapter 8 includes a Small Scale Lab: Develop an Activity Series, where students observe single-replacement reactions and develop an activity series of selected metals and predict when reactions will occur.
- The materials include STEM Projects that provide an opportunity for students to design their own science and engineering projects. For example, STEM Project: Evaluate Stoichiometry for a Favorite Recipe provides guidance for teachers to "Have the students write down questions they think they should be answering as they conduct research" and offers guiding questions for the teacher to use with students if they need scaffolding.

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Indicator 2.2

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

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

- The materials embed phenomena and real-world problems across lessons to engage students in developing knowledge and understanding through authentic applications of scientific and engineering practices and content knowledge as outlined by the TEKS. Each chapter includes a driving question with a phenomenon or authentic problem in the introduction, with guidance for the teacher throughout the lessons and chapters, as well as beyond in subsequent lessons, to help students construct knowledge and skills as they explore the content and related phenomena.
- The materials contain a TEKS at a Glance section in the Chapter Overview connecting TEKS to each lesson. Each chapter begins with the presentation of a phenomenon and a driving question. An answer is constructed at the beginning of the chapter, revisited in the lessons, and new explanations are presented after each chapter. For example, the introduction to Chapter 7 of the Student eBook presents the question, "How does the bonding in water help support an insect's weight?" In Lesson 4, the driving question is revisited after learning about water's polarity. In Lesson 5, the driving question is revisited after learning about water's intermolecular forces.

- In Chapter 9, The Mole, the question is, "How is counting nuts and bolts similar to counting atoms?" Then in the Chapter Overview, it states, "The answer is related to the use of counting units and mass to measure large numbers of objects. The lessons in this chapter each provide part of the answer to this question." There is also a photo provided at the beginning of the chapter to support the driving question in the Student Edition. The Teacher Edition explains the photo and how it relates to the answer to the driving question.
- The Teacher eBook contains a blueprint for each lesson highlighting how and where scientific and engineering practices are applied. These STEM projects support students in the application of SEPs and connect them to real-world scenarios. For example, Chapter 11 on gasses has several SEP activities that invite students to design an experiment to compare rates of diffusion of substances found in perfumes, research how marine animals can withstand huge underwater pressures, and find a relationship after logging daily barometer pressures and weather conditions.
- Chapter 2 of the Chapter Planning and Support in the Teacher eBook includes, "Design a Rainwater Harvest System," where "Students will use project-based learning to investigate real-world issues. Students will account for properties of matter in constructing a rainwater harvesting system for homes."

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

- Materials leverage students' prior knowledge and experiences related to phenomena and engineering problems in each chapter and lesson through the 5E Framework. Preconceptions are uncovered and clarified, phenomena are introduced to demonstrate content, and scientific and engineering practices are utilized to support students in exploring more complex concepts and phenomena to make deeper connections.
- Within the 5E Lesson framework, students build on prior knowledge and experiences through clarifying preconceptions, uncovering preconceptions, demonstrating the concept, and assessing new knowledge while students experience phenomena and scientific and engineering practices through various means. For example, in Chapter 2, Lesson 1, simulations, quick demos, discussions, and interactive visual literacy resources are provided to students by the teacher.
- Materials guide teachers to uncover and clarify preconceptions in Chapter 5 of the Teacher eBook; students create a list of phenomena or cycles, which are periodic in the Explain section of Lesson 1. Then a game of “Twenty Questions'' using properties of an element from the periodic table is suggested. Guidance is provided to help students connect how the elements demonstrate periodicity.
- Students' prior knowledge and experience are leveraged in the Explore section in Lesson 2 of Chapter 13: Mixtures and Solutions; students are asked to recall the meaning of a percentage score on a test. After students’ foundation of proportion of parts and whole, students are engaged with an illustration of two concentrations of tea. They are prompted to predict which concentration of tea contains a higher amount of solute, and, therefore higher concentration.
- Chapter 16 in the Teacher eBook invites students to explore the driving question, "Why is the ocean becoming acidic?" Throughout the chapter, students are prompted to activate prior knowledge about the combustion of fossil fuels, the ionization equation for carbonic acid, and how to relate acid-base reactions to double replacement reactions, which they learned previously. Students also participate in a carbonic acid demo where the carbon dioxide from their breath assists in neutralizing a solution of sodium hydroxide. After using the knowledge

gained in the chapter to answer the driving question, students can develop a plan to prevent ocean acidification as an engineering project.

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

- Materials outline the scientific concepts behind phenomena used in the resources. Each Chapter Overview provides the driving question and the goal of the chapter. Each Lesson Overview page provides the objective of the lesson objective or goal of the particular lesson as well as the scientific concepts behind the phenomenon. A Driving Question is provided at the beginning of each unit, which correlates to a related phenomenon. Throughout the lesson, the teacher is guided in helping students make connections between the content and the phenomena.
- Within the Teacher eBook lesson framework, teacher guidance is provided to assist students in connecting the driving question to the phenomenon in a section titled Driving Question Connection. Background information is also provided to the teacher in this section, identified by pink text. For example, Chapter 5, Lesson 1, the Driving Question Connection connects the phenomena of modern-day cell phones and the elements used to make them to the properties of elements on the modern-day periodic table. Teachers are provided guidance to lead the discussion, as well as details on which elements are in the phones.
- The materials in the Teacher eBook also support teachers by indicating checkpoints within the chapter to revisit the Driving Question and phenomenon as concepts are taught. For example, the Chapter 11 opener on gas laws asks, "How do hot-air balloons fly?" After learning about the ideal gas law, molar mass, and density, teachers are guided to revisit the driving question, and questions prompts and expected answers are provided to guide the class discussions.

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Indicator 3.1

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

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

Evidence includes but is not limited to:

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

- The materials provide students with opportunities to build and connect their knowledge and skills within units. For example, in Chapter 3, lesson 1 focuses on how the understanding of the atom has changed over time, Lesson 2 gives the modern definition of the atom, and Lesson 3 explores how atoms are different. Following suit, in Chapter 4, the connection is made to the arrangement of electrons in atoms.
- For example, Unit 4 begins with the driving question, "What do neon lights have in common with the Sun?" followed by an initial lesson reviewing TEKS 8.8A related to waves and the electromagnetic spectrum. Next, these concepts are applied to the speed of light equation and later to Planck's equation after learning about the quantization of energy. The next lesson builds on this knowledge by showing how the emission spectrum of a hydrogen atom leads to Bohr's model. This knowledge of wave-particle duality is followed by the quantum theory of the atom, models of electron arrangements in electron configuration, noble-gas notation, orbital diagrams, and finally, electron-dot structures showing the valence electrons. The materials guide teachers to revisit the driving question in the first and third lessons to help students understand how the question relates to how electrons produce or absorb light as they move between energy levels. Later in the book, in Chapter 6, students will continue to use Chapter 4 topics to learn how ionic compounds form and the role of electrons in that process.

- For example, in Chapter 8, students interpret, write, and balance chemical equations and learn about the five types (TEKS 9.A). They also learn about precipitation and acid-base reactions (TEKS 9.B). In Chapter 9, they learn TEKS 8.A-8.D related to the mole before learning TEKS 9.C and 9.D relating to stoichiometry and limiting reactants in Chapter 10. In Chapter 10, Lesson 2, students are introduced to the simplest stoichiometric calculations with mole-to-mole conversions, then move to mole-to-mass and then mass-to-mass calculations. Stoichiometry TEKS are applied to gases in Chapter 11, and the final part of TEK 9.B related to oxidation-reduction reactions is covered in Chapter 18.

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

- The material is intentionally sequenced to allow for a deeper understanding of the content being presented For example, in Chapter 8, Lesson 1, students learn that chemical reactions involve rearranging atoms to form new substances, then in Lesson 2, they learn about the classifications of reactions.
- For example, Chapter 10, lesson 3, presents a cookie recipe and guides teachers to ask how many cookies can be made with only one egg, only one-half cup of butter, etc, to introduce how one ingredient can limit the number of cookies. Later in the lesson, students discover limiting and excess reactants by exploring an analogy of assembling a tool kit. Tools are shown, and sets are made from them with leftovers. Then, they apply this knowledge to chemical reactions. Both of these activities set the stage for teachers to use explicit teaching of limiting reactant problems using stoichiometry.
- For example, Lesson 3 of Chapter 7 provides guidance for teachers to use manipulatives such as snap-together blocks and felt circles to represent how atoms fit together, meeting the octet rule. Later in the lesson, students can use a PhET simulation to explore molecular modeling. This sets the stage for teachers to explicitly teach a systematic approach for drawing Lewis structures of molecules. Students are then given a notecard with a covalent formula on the front and must use abstract reasoning to draw the appropriate Lewis structure on the back.

Materials clearly and accurately present course-specific core concepts and science and engineering practices.

- Materials always clearly and accurately present course-specific core concepts and science and engineering practices. Every chapter includes labs and STEM projects to practice science and engineering practices, and under “Chemistry: Lab Support and Projects, Applying Practices,” it lists a series of projects that can be done by students that leverage Science and Engineering Practices. For example, in Chapter 9, lesson 1, Explore, teachers are guided to collect quantitative data using the International System of Units (SI) by measuring 27.0 g of aluminum foil (one mole). Then they discuss with students if the amount remains the same by crumpling it and finally by tearing it in half.
- In Chapter 2, Lesson 2, in the Engage phase, students are asked to make their initial claims to answer the essential question, "How is melting different from burning?" After watching a video and a demonstration by the teacher, the teacher leads a discussion with students on mercury poisoning of humans. During the Explore phase, the teacher performs a demonstration in order that students can observe atomic motion and the formation of a brass alloy. In the Explain phase, the teacher addresses any preconceptions and demonstrates the concept of physical and chemical changes. It is also in that phase that the teacher has the students come back to the

driving question of the chapter. In the Elaborate phase, the SEP of obtaining, evaluating, and communicating information is addressed through quick demo activity. Lastly, within the Evaluate phase of the lesson, students are given three questions to answer as Exit Ticket activities.

- Every chapter of the materials includes labs and STEM projects to practice science and engineering practices. For example, Chapter 11 on gasses uses the 5E learning model in each lesson and provides hands-on labs which allow students to discover the mathematical relationship between temperature, volume, and pressure prior to learning the mathematical formulas. The chapter also includes SEP activities, such as designing an experiment to compare diffusion rates of compounds in various perfumes. The materials also provide teacher ideas for differentiation, such as leading a discussion about predicting answers prior to calculation and allowing students to manipulate index cards with variables on them to discover the combined gas law themselves.

Mastery requirements of the materials are within the boundaries of the main concepts of the course.

- The mastery requirements of the materials are within the boundaries of the main concepts of the course. Student materials use “Driving Questions” to focus student understanding throughout the material. “Driving Questions” are revisited by students to assess mastery of the core concepts at the conclusion of the chapter. For example, Chapter 17 includes many ways for students to demonstrate mastery, including Chapter Pre-Assessment, Science-Probe assessments, and the “Driving Question” closing discussion.
- The materials use the Essential Questions, Lesson Objectives, and TEKS Progression to set the bounds of what students should know and be able to do as a result of each lesson. For example, in Chapter 4, lesson quizzes, vocabulary tests, and chapter tests are provided for the teacher to use to assess students. In this same chapter in the student edition, "Look Closer" and "Ask Yourself" questions are provided for students to be able to assess themselves on their mastery of the objectives.
- For example, Chapter 6, Lesson 3 has this paragraph: "Students use their understanding of charge and the formation of ionic bonds to write formulas for binary ionic compounds and for ionic compounds with polyatomic ions. Additionally, students apply IUPAC naming conventions to name ionic compounds using their formulas."

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Indicator 3.2

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

1	Materials support teachers in understanding the vertical alignment of course-appropriate prior knowledge and skills, guiding the development of course-level content and scientific and engineering practices.	M
2	Materials contain explanations and examples of science concepts, including course-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 educative components to support teachers' content and knowledge coherence.

Materials support teachers in understanding the vertical alignment of course-appropriate prior knowledge and skills guiding the development of course-level content and scientific and engineering practices. Materials contain explanations and examples of science concepts, including course-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 program's instructional design.

Evidence includes but is not limited to:

Materials support teachers in understanding the vertical alignment of course-appropriate prior knowledge and skills, guiding the development of course-level content and scientific and engineering practices.

- Materials support teachers in understanding the vertical alignment of course-appropriate prior Texas Essential Knowledge and Skills in each lesson's "TEKS Progression." For example, the "TEKS Progression" section in "Chapter 7: Covalent Bonding, Lesson 1: The Covalent Bond" states that in Grade 7, students learned how to "compare and contrast elements and compounds in terms of atoms, molecule, chemical symbols, and chemical formulas" in TEKS 7.6A.
    - This prior knowledge connects to current TEKS 6E, "construct models to express the arrangement of electrons in atoms of representative elements using electron configurations and Lewis dot structures," as well as TEKS 7D, "analyze the properties of ionic, covalent, and metallic substances in terms of intramolecular forces and intermolecular forces."
- The "Unpack the TEKS" section located before each lesson in the "Teacher eBook - Chemistry" explains how content and concepts increase in depth and complexity. This section gives explanations on what concepts are covered and what concepts will be covered in future lessons. For example, in "Chapter 11: Gases, Lesson 2: The Gas Laws," it states, "In this lesson, students continue to develop their understanding of the gas laws that describe and calculate the

relationships among volume, pressure, and temperature. Students will add the concept of moles in the next lesson, completing their coverage of TEKS 10.B."

- The materials provide a "Vertical and Horizontal Alignment" document that includes a "K-12 SEP and RTC" section. This section details the vertical and horizontal alignment of the Science and Engineering Practices across grade levels and with course-specific prior knowledge. For example, students begin collecting "observations and measurements as evidence" in kindergarten and continue the practice through grade 5 before moving on to collecting "quantitative data using the International System of Units (SI) and qualitative data as evidence" in grades 6 through the high school courses.

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

- The materials contain explanations and examples of science concepts, including course-level misconceptions, by providing teachers with a “Chapter Pre-Test” and a “Science Probe” at the beginning of each chapter in the “Teacher eBook - Chemistry."
    - For example, “Chapter 11: Gases” includes a pre-test that “uncovers prior student knowledge about gases and gas laws.” The section states that “If students need support on prior TEKS or background knowledge, refer to your reteaching library for resources or assigned LearnSmart review assignments.”
    - The “Science Probe” assessment explores the questions “How do gases respond to changes in pressure, volume, and temperature?” to uncover common student preconceptions such as “different gases will respond differently and that the size of the gas-particle makes a significant contribution to the volume of a gas.”
- Materials contain explanations and examples of concepts to support the teacher's subject knowledge. For example, “Chapter 7: Covalent Bonding, Lesson 1:The Covalent Bond” in the “Teacher eBook - Chemistry” includes a section titled “Science Background” that provides the teacher with information about the content which is covered in the lesson, such as “Covalent bonds form when atoms share electrons to fill their outer valence shell.”
- The materials support the teacher’s recognition of barriers to student conceptual development as outlined in the TEKS by providing options for lesson differentiation. For example, “Chapter 11: Gases, Lesson 4: Gas Stoichiometry” includes activities marked as “Reinforce,” “Extend,” or “EB/EL.”
    - The lesson includes an activity titled “Differentiated Instruction: Visuals” that is marked as a “Reinforce activity. This activity guides teachers to use ball-and-stick models of chemical reactions to help students who “understand stoichiometry better if they can visualize reactions.”
    - An “Extend” activity titled “Enrichment: Compressed Gases” states, “Ask a representative of a company that sells compressed gases to give a classroom presentation on uses for the gases and how to handle compressed tanks.”
    - An “EB/EL” activity titled “ELPS Support” is included and allows teachers to check reading comprehension by asking questions as students read orally. The materials provide questions for the teacher to ask at each English Language Proficiency Standards tier, including Beginning, Intermediate, and Advanced/Advanced High. For example, for Advanced/Advanced High Emergent Bilinguals, the teacher can ask, “How can you make water vapor?”

- The materials include additional support for teacher recognition of barriers in the “Supporting All Learners: Equity and Access in Science” by providing “Strategies for Students with Special Instructional Needs,” including ADHD, Visual and Cognitive. For example, the materials state that “for students with hearing and visual difficulties,” the teacher can “move students closer to where the lesson instruction is happening” or “include visual clues on the walls.”

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

- The materials include a "Texas Science Program Overview" document under the “Resources” menu that describes the program’s instructional approaches. For example, the materials state that the “5E Lesson Model allows for a clear recommended path to cover the TEKS with flexibility throughout the lesson to deliver the content that best fits their classroom needs.”
- The “Supporting All Learners: Equity and Access in Science” document details the intent of the 5E lesson model and provides the purpose of each phase of the lesson. For example, the materials state, “EXPLORE Investigate the topic using Hands-On Investigations and Simulations. This phase of the 5E IM, the exploration phase, now provides the students with a common, concrete learning experience. This phase is also student-centered and incorporates active exploration, typically facilitated by the teacher.”
    - This document also provides a rationale for the use of the 5E Lesson Model, and includes the research behind it. For example, the materials state, “The Instructional Model (IM) uses the 5E model and provides a routine for students to engage with phenomena, gather evidence, connect with science content in authentic ways, and show understanding.”
- The materials provide a document titled “Supporting All Learners: Equity and Access in Science” that thoroughly describes the program's instructional approaches and references researched-based strategies. For example, the materials use the Multi-Tiered System of Supports (MTSS) and state, “A Multi-Tiered System of Supports is a whole-school, data-driven, prevention-based framework for improving learning outcomes for every student through a layered continuum of evidence-based practices and systems.”
    - This document also provides a list of "resources that could support MTSS initiatives." These resources include "Differentiated Instruction point-of-use support in the Teacher Edition, Science Language and Content Acquisition pages in the Teacher Edition, EB/EL leveled support at point of use in the Teacher Edition, Formative Assessments (Chapter Pre-Test, Science Probe, Chapter Review, Exit Tickets), Summative Assessments (Vocabulary Test and Lesson Quiz) and Ancillaries (Interactive Visual Literacy, Vocabulary Word Labs, Interactive Example Problems, Science Literacy Essentials, Leveled eBooks, TEKS Refresh, LearnSmart).

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Indicator 4.1

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

1	Materials consistently support students' meaningful sensemaking through reading, writing, thinking, and acting as scientists and engineers.	M
2	Materials provide multiple opportunities for students to engage with course-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 course-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 materials consistently support students' meaningful sensemaking through reading, writing, thinking, and acting as scientists and engineers by providing students with opportunities to design their own experiments. For example, "Chapter 10: Stoichiometry, Lesson 3: Limiting Reactants" has students "design an experiment to determine the maximum yield of carbon dioxide produced by the reaction of baking soda and vinegar."
- The materials include opportunities for students to develop and use models to support meaningful sensemaking. In "Chapter 8: Chemical Reactions, Lesson 2: Classifying Chemical Reactions" students "use a model kit" to build reactants in a provided double replacement reaction and then manipulate the models "so that the reactants produce the products." After students "describe in writing how the models were manipulated so the reactants formed products."

- The materials encourage students to keep a chemistry journal where they can record their observations and descriptions of content. For example, “Chapter 8: Chemical Reactions, Lesson 1: Reactions and Equations” guides the teacher to “have students keep a running list in their chemistry journals of chemical reactions they observe. Have students also describe and include evidence for each listed reaction.” “Chapter 16: Acids and Bases, Lesson 3: Hydrogen Ions and pH” has students complete a “Quick Research” activity where they “research the pH of a person's skin and how various products - particularly basic soaps - can interact with substances to protect skin” and include their findings in their chemistry journal.
- The “Interactive Student eBook: Chemistry” consistently provides "Ask Yourself" questions and prompts the students that support their sensemaking as they read the text. “Chapter 9: The Mole, Lesson 1: Measuring Matter” has students read texts about counting particles and the mole, view figures that represent a specific number of items (e.g. a pair of gloves, a dozen eggs, a ream of paper) and the mole, and then answer “Ask Yourself” questions and prompts about the reading. For example, “Write the numerical value of Avogadro’s number to three significant figures.” and “Describe how the two conversion factors between dozens of roses and roses are related to each other.”

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

- The materials provide multiple opportunities for students to engage with course-level appropriate scientific texts to gather evidence and develop an understanding of concepts. For example, the “Interactive Student eBook” provides students with a grade-level appropriate scientific text that they engage with to gather evidence and develop an understanding of concepts. For example, each chapter provides "Ask Yourself" prompts that students can answer using the text and supporting figures. In “Chapter 19: Electrochemistry, Lesson 1: Voltaic Cells” the students read about “Redox in Electrochemistry," view figures of zinc and copper strips submerged in a liquid, and then respond to the Ask Yourself prompt “Identify the oxidizing agent and the reducing agent in the redox reaction between zinc and copper.”
- An “Interactive Case Exploration” found in Chapter 5 titled “Realities of Rare Earth Elements” allows students to engage with scientific text to gather evidence and develop an understanding of concepts. Students read the article about rare earth elements and technological advancements and answer questions as they go, such as “Using neodymium in the magnets of technology has allowed for which of the following technological advancements?” and “The graph shows how many metric tons of rare earth oxides were produced in the year by Australia, China, U.S., and other sources in recent years. What was the total produced in 2015?” At the end of the text, students revisit the driving question and use evidence gathered from the reading to answer it.

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 materials provide multiple opportunities for students to communicate thinking in graphic modes to display an understanding of scientific concepts. For example:
    - in “Chapter 2: The Nature of Matter, Lesson 4: Mixtures of Matter” the “Planning and Carrying Out Investigations” extension activity allows students to conduct research,

design an investigation to separate mixtures and communicate their design in a flow chart after receiving a baggie filled with small pieces of sand, foam, copper sulfate, and iron filings.
    - "Chapter 12: Liquids and Solids, Lesson 1: Forces of Attraction" allows students to display their understanding in a graphic organizer. Students "make a table of dispersion forces, dipole-dipole forces, and hydrogen bonds, listing their relative strength, how each atom forms, and examples of types of molecules in which they form."
    - "Chapter 11: Gases, Lesson 1: Kinetic-Molecular Theory" includes a "System and System Models" activity in which students "develop their own visual or physical representations to help others understand the kinetic-molecular theory and behavior of gases.
- The "Interactive Student eBook: Chemistry" includes "Ask Yourself" questions and prompts that engage students in writing to support their developing and displaying an understanding of scientific concepts. For example, "Chapter 4: Electrons in Atoms, Lesson 1: Light and Quantization of Energy" includes prompts such as "Describe how the visible spectrum of light relates to the electromagnetic spectrum" and "Explain why a new model was needed to describe how light interacts with matter."
- Materials include "Claim-Evidence-Reasoning" activities at the beginning of each lesson that relates to the scientific concept being studied and allow students to communicate their understanding in writing. "Chapter 11: Gases, Lesson 1: Kinetic-Molecular Theory" has students use the CER strategy to make a claim answering the essential question "Why do different gases behave the same way?" Students return to this CER in the "Elaborate" section of the chapter in order to revise their claims with new evidence gained from the activities.

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 materials include STEM Projects in each chapter that engage students in the engineering design process in the "Chapter Planning and Support" section of the Teacher eBook.
    - Chapter 10: Stoichiometry includes the STEM Project "Evaluate Stoichiometry for a Favorite Recipe" where "students will use project-based learning to investigate real-world issues." In this project, "students will use stoichiometry to evaluate a favorite food recipe" and use the interactive steps of the engineering design process, such as researching and brainstorming ideas, generating concepts, comparing and selecting designs, and creating models.
    - Chapter 14: Energy and Chemical Changes include the STEM Project "Design a Medical Transport Device" where "students will design a device that uses a chemical reaction to transport temperature sensitive medicine."
- The materials support students to act as scientists and engineers who engage in phenomena and engineering design processes, make sense of concepts, and productively struggle as they design and build models based upon specific criteria and outcomes. For example, in "Chapter 4 Lab: Design Atomic Models" students study the orbital shapes and arrangements of d orbitals in the drawings provided. Then after consulting with their group members, students write down the plan to create a model of five d orbitals and construct their models using the provided materials. Afterward, students identify the problems encountered in building their models as well as the advantages and limitations of their models. Students can extend their learning by designing a more permanent model of atomic architecture.
- Phenomena are presented at the onset of each chapter using a photo that ties to the Driving Questions. For example, "Chapter 5:The Periodic Table and Periodic Law" shows a picture of a

group of people engaged with a cellular phone and includes the Driving Question "What elements were used to make your phone?" This Driving Question is revisited at the end of each lesson in order to support students in making sense of concepts by acting as scientists who engage in phenomena. The “Driving Question Connection” in “Chapter 5, Lesson 1: Development of the Modern Periodic Table states, that If possible, students “disassemble a device that is no longer working and identify its components. Then they can discuss the properties of the materials that indicate what type of elements occur in each part.”

McGraw Hill Texas Chemistry

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 course.	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 course. 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.

- The materials include a "Claim, Evidence, Reasoning" activity within each lesson that addresses an essential question. For example, "Chapter 7: Covalent Bonding, Lesson 1: The Covalent Bond" of the "Teacher eBook: Chemistry" includes the "CER: The Covalent Bond" activity that prompts students to make claims to answer the essential question "Why do covalent bonds form?" Students return to this activity after learning about covalent bonds and "record their evidence, revise their claims, and explain their reasoning in answer to the essential question…."
    - A Claim, Evidence, Reasoning printable worksheet is provided for students to use to guide them through the CER process. The worksheet prompts students to "Explain your reasoning for how and why your evidence supports your claim. Describe the scientific principle, knowledge, or theory you used to create your argument."
- The materials include a "Lab Library" that provides students with hands-on opportunities to use evidence to support their hypotheses and claims. For example, Chapter 8 quickLab: "Observing a Precipitate-Forming Reactant" includes questions in which students classify reactions, such as "Which type of reaction did you observe when you mixed the two solutions? Support your

answer with evidence." Similarly, Chapter 5, "Small-Scale Lab: Periodicity and the Properties of Elements'' includes questions to which students apply their learning, such as "Physicians can treat some types of cancer by placing small amounts of a radioactive element in a sealed tube and inserting the tube in the cancerous tissue. Which alkaline earth metals could be used for this kind of treatment? Support your answer with evidence." Both question types prompt students to use evidence to support their hypotheses and claims.

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

- The materials provide a "Science Language and Content Acquisition" section at the beginning of each chapter, designed to "provide students rich and varied experiences with science vocabulary as a way to bolster confidence and help students develop scientific language." This section provides a "Chapter Vocabulary" breakdown that includes "Target Vocabulary" consisting of "Prior Knowledge Terms," "Lesson Vocabulary," and "Supporting Vocabulary." This section also suggests students use the "Interactive Word Wall" to "gain an understanding of target vocabulary with the context of the entire TEKS."
- The materials include "Vocabulary Resources," such as the "Word Lab" and "Science Literacy Essentials," that provide repeated exposure to content vocabulary through individual or small group work to develop scientific vocabulary in context.
    - "Word Lab: Lesson 10.3" provides the students with the terms limiting reactant and excess reactant. Students view the word, its definition, and a sentence using the word before completing practice questions designed to help them build scientific vocabulary in context. For example, students view the definition of limiting reactant and then answer, "To make a ham sandwich, you need two pieces of bread, a tablespoon of mayonnaise, and two slices of ham. You have eight pieces of bread, seven tablespoons of mayonnaise, and ten slices of ham. What is the limiting reactant?"
- The materials provide opportunities to utilize scientific vocabulary in context within Chapter Vocabulary Tests. For example, question 9 of the Chapter 13 Vocabulary Test asks, "The symbol M in 2.0M stands for ____," and question 9 of the Chapter 16 Vocabulary Test asks, "If you wanted to adjust the solution in a titration so that the pH changes very slowly, you could add a/an _____ to the reaction mixture."

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

- The materials include opportunities for students to engage in argumentation and discourse by providing them with activities to debate a topic. For example, "Chapter 20: Nuclear Chemistry, Lesson 4: Applications and Effects of Nuclear Reactions" includes a "Lesson Wrap Up" activity that instructs teachers to "Have students form teams (pro and con) to research and debate the use of fossil fuels as a source of energy for generating electric power in the United States. Be sure the teams include economic and environmental considerations in their debate."
- Materials integrate argumentation throughout to support students' content knowledge and skills development through "Engaging in Argument from Evidence'' activities. For example,
    - In the Explain section of "Chapter 16: Acids and Bases, Lesson 1: Introduction to Acids and Bases," students view a quick demo demonstrating whether ammonia is an acid or a base. Afterward, the teacher is guided to have "two student volunteers plan and perform a debate involving the Arrhenius and Bronsted-Lowry models of acids and bases."

    - The materials include activities such as “Small Scale Lab” and “ChemLAB” that contain “Engaging in Argument from Evidence” activities. For example, Chapter 10: Stoichiometry, “ChemLAB: Solve It: Mystery of the Moonlight Ride,” states, “A classmate claims that copper or zinc electrodes could have been used for the electrolysis reaction instead of the very expensive platinum electrodes. Is she correct? Explain why or why not." Chapter 10: Stoichiometry, “Small Scale Lab: Stoichiometry of a Chemical Reaction,” states, “ Two classmates are arguing about which reactant is the limiting reactant in this lab, the carbonates/hydrogen carbonates or the HCl(aq). Which classmate is correct? Support your argument with a definition of limiting reactant and with evidence from your lab."
- The Claim, Evidence, Reasoning (CER) strategy is used throughout the book to allow students to construct and develop written scientific discourse to justify solutions and problems. For example, “Chapter 22: Substituted Hydrocarbons and Their Reactions, Lesson 1: Alkyl Halides and Aryl Halides” includes a CER activity that allows students to write a CER about the essential question, “How do a hydrocarbon’s properties change if you replace one of the hydrogen atoms with an atom of chlorine or fluorine?” Then in the Elaborate phase of the lesson, students are prompted to return to their original CER and “record their evidence, revise their claims, and explain their reasoning.”

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.

- The materials include a “Claim, Evidence, Reasoning” activity in every lesson throughout the text. For example, “Chapter 2: The Nature of Matter, Lesson 3: Elements and Compounds” begins in the Engage section with a “CER: Elements and Compounds” activity that prompts students to make initial claims that answer the essential question “What are elements and compounds?” Students revisit this activity during the Elaborate section of the lesson by recording their evidence, revising their claims, and explaining their reasoning.
- “STEM Projects” included in every chapter allow students to use evidence from learning experiences to justify explaining phenomena and solutions to problems using written or verbal arguments. For example, “Chapter 2: The Nature of Matter” includes the STEM Project “Design a Rainwater Harvest System.” The materials state, “Students will use project-based learning to investigate real-world issues. Students will account for properties of matter in constructing a rainwater harvesting system for homes. Students should begin this project after Lesson 2.” Students go through the steps of the engineering design process to complete the STEM Projects.
- Several chapters within the materials include activities titled "SEP Engaging in Argument from Evidence," located in the Explain or Elaborate sections. For example, the “SEP Engaging in Argument from Evidence” activity within the Elaborate section of “Chapter 13: Mixtures and Solutions, Lesson 4: Colligative Properties of Solutions” states, "Rock salt is used extensively to melt the ice on roadways in the winter. Have students debate the positive factors (reducing accidents) and negative factors (corrosion of cars and bridges, the accelerated deterioration of roadways, and the killing of roadside plant life) of using salt."
- The materials provide ChemLABs that allow students to justify their written or verbal arguments for phenomena or solutions to problems with evidence from their learning. For example, “Chapter 20: Nuclear Chemistry” includes a ChemLAB that allows students to “research and debate the use of nuclear energy.” The expected outcome of this lab states, "Students should

conduct research and gather information, including empirical evidence, to support their arguments during a debate." The materials also include an “Analyze and Support” section within the Teacher Support document that states, "Students should critique the debaters' arguments, looking for evidence of logical reasoning."

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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 scaffolding and supporting students' development, and using 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.

- Materials provide teacher guidance on anticipating student responses by including possible student misconceptions and using questioning to deepen students' understanding of concepts. For example, in the "Clarify a Preconception" activity found in "Chapter 12: Liquids and Solids, Lesson 4: Phase Changes," the materials state, "Students might have misconceptions about the activity of molecules during phase changes." The materials prompt the teacher to ask questions such as "What happens to molecules in a solid as it melts." Possible student responses to the question include "the molecules themselves break apart," or students might "describe boiling and sublimation in the same way."
    - The materials guide the teacher to demonstrate the concept, in this case, by using "drawings and models to show how intermolecular forces, rather than intramolecular bonds, break as a substance is heated." Afterward, the teacher assesses new knowledge by asking students to "draw several water molecules, using solid lines for intramolecular forces and dashed lines for intermolecular forces. Then, ask them to redraw the molecules as water is heated."
- Materials provide teacher guidance on anticipating student responses. For example, in "Chapter 8: Chemical Reactions, Lesson 2: Classifying Chemical Reactions," during the "Planning and Carrying out Investigations" activity in the elaborate phase, the materials instruct the teacher to

"Ask students to devise and explain an experimental procedure they would use to place an unknown metal in an activity series of metals." The materials provide teacher guidance by stating, "Typical student procedures will involve putting samples of the metal in aqueous solutions of the salts of other known metals. Such experiments provide data allowing students to place the unknown metal above metals if it replaces and below metals if it does not."

- Each chapter includes a revisited driving question, and questioning is used to lead students to develop deeper understandings. For example, in "Chapter 1: The Central Science, Lesson 1: What is Chemistry?," the "Driving Question Connection" activity instructs teachers to ask students, "How did scientists and engineers use their understanding of matter to solve the problem of water supply on the ISS?" after they view the Chapter Opener image of an astronaut doing a spacewalk with the International Space Station and Earth in the background. After giving suggested answers, the materials instruct teachers to ask a more profound question, "How has solving this specific problem on the ISS benefited society on a larger scale?"

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

- Each chapter overview within the materials contains a "Science Language and Content Acquisition" section that lists prior knowledge terms, lesson vocabulary, and supporting vocabulary. Here the materials provide a comprehensive list of vocabulary words that students will interact with in context throughout the lessons in the chapter. For example, "Chapter 8: Chemical Reactions" Lesson 2 includes lesson vocabulary such as "synthesis reaction" and "combustion reaction," prior knowledge terms such as "nonmetal" and "chemical reaction," and supporting vocabulary such as "yield" and "substance."
    - The materials suggest building an Interactive World Wall for each lesson as a class and using it "to help students understand the target vocabulary within the context of the entire TEKS."
- Materials include teacher guidance on scaffolding and supporting students' development, and using scientific vocabulary in context. For example, the "Supporting All Learners: Equity in Science" document guides teachers to "Provide assistance in the specific and general vocabulary to be used for each lesson, using reinforcement or additional practice afterward. Pre-teach vocabulary and provide adequate opportunities for students to hear and use new vocabulary in context before applying it to practice and application. Instructional resources and instruction should be monitored for the ambiguities of language that would be confusing. Limit the number of concepts and new vocabulary presented at one time."
- The materials include additional vocabulary resource tools such as WordLab and Science Literacy Essentials in every chapter within the text "to provide repeated exposure to content vocabulary." Students work individually or in small groups to practice content vocabulary terms.
    - WordLab "provides visuals, definitions and examples for vocabulary words, as well as activities involving word origins, affixes, multiple-meaning words. and words in context." For example, "WordLab 10.1" includes definitions of the words stoichiometry and mole ratio, examples of sentences using the words, flashcards with definitions, and questions such as "What is the law of stoichiometry based on?" that require students to synthesize their learning of the vocabulary in context.
    - Science Literacy Essentials include reading support and "additional vocabulary support, practice, and assessments…" that can be assigned for the entire chapter or specific lessons. For example, "Science Literacy Essentials: Percent Yield" includes opportunities for students to write about their reading, such as "explain why the actual yield and

theoretical yield are often unequal." This document also includes tips and vocabulary in call-outs to the side of the reading. The Teacher Support Science Literacy Essentials Document for each student version includes answer keys to "review student responses."

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

- The "Supporting All Learners: Equity in Science" document provides teacher guidance on preparing for student discourse.
    - The "Meaningful Student Discourse" section in this document states, "The "Talk About It" collaborative symbol found throughout the instructional lessons signals to teachers to allow time for students to participate in collaborative discourse. Use these activities for meaningful practice for engaging in student conversations in whole class, small group, and partner settings."
    - The "Why is it Important" section guides the teacher by stating, "Participation in these conversations requires specific expectations on the part of the student, both as a speaker and a listener. Students must learn to contribute relevant and accurate new information by staying on topic, responding to and developing ideas that others have contributed, summarizing and synthesizing various ideas discussed and presented preparing for discussions ahead of time when necessary by reading or gathering specific information."
    - The "Support Student Discourse" section states that students use Claim, Evidence, and Reasoning routines to communicate their claims, share evidence, and argue reasoning. Students "prepare their claim to answer the Essential Question" using their observations, search for "evidence to back up their claim" in the hands-on activities or their reading, and "use that evidence to draw conclusions."
- The materials provide teacher guidance on the Claim, Evidence, and Reasoning (CER) activities within each chapter to support students in using evidence to construct written and verbal claims. For example, in "Chapter 3: The Structure of the Atom, Lesson 1: Early Ideas About Matter," the CER activity "CER: Early Ideas About Matter" guides the teacher to "have students make their initial claim, using the Claim Evidence Reasoning (CER) strategy, to answer the essential question, "How has our understanding of matter changed over time?" Students revisit this activity at the end of the lesson and "record their evidence, revise their claims and explain their reasoning in answer to the essential question…"

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

- Materials support and guide teachers in facilitating the sharing of students' thinking and finding solutions. The materials include teacher strategies, such as Problem Solving and Applying Practices, that pose questions or situations to help assess student understanding.
    - For example, "Chapter 7: Covalent Bonding, Lesson 1: The Covalent Bond" includes "Applying Practices: Electron States and Simple Chemical Reactions," which asks students introduction, interpretation, and application questions such as, "Develop an explanation for the reaction between sodium metal and chlorine gas supported by electron configuration notation as a model of the reactants and products. Is your explanation consistent with a scientific theory explaining how and why atoms form bonds? Elaborate."

- The materials provide teacher support and guidance to engage students in thinking and finding solutions in various modes of communication throughout the year. Multiple opportunities for written and verbal expression of students' thinking are given throughout the 5E lesson plans. For example, in “Chapter 11: Gases, Lesson 4: Gas Stoichiometry," students research non-agricultural uses for ammonia and include the chemical reactions that are involved in each example, then students "share their findings with the class in the form of a graphic or presentation." The materials include a list of uses, such as the paper industry, for the teacher to help guide students if they become stuck.
    - Furthermore, in “Chapter 13: Mixtures and Solutions, Lesson 1: Types of Mixtures," the materials include detailed guidance in facilitating sharing of students’ thinking with opportunities to clarify preconceptions and assess new knowledge. The materials state, “Have students draw three beakers: one containing a solution, a second a colloid, and the third a suspension. Have them illustrate how particle size affects one or more of the properties of each type of mixture. Students should then explain their illustrations to the class."

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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.	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 various 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. 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.

- Materials include a range of formative assessments. Each lesson contains numerous “Ask Yourself” questions in the “Interactive Student eBook: Chemistry.” For example, “Chapter 2: The Nature of Matter, Lesson 1: Properties of Matter includes the “Ask Yourself” prompt "State the chemical name for table salt and explain why its chemical composition never changes."
- The materials include summative assessments in a variety of formats. For example, the materials provide a summative vocabulary assessment for each chapter, including multiple-choice and fill-in-the-blank questions. The materials also provide Chapter Test assessments for each chapter, which include multiple choice, short answer, and fill-in-the-blank questions. For example, the “Chemistry TX Science Chapter Test: Chapter 18” includes the short answer question, “What is the oxidation number of calcium in $CaCl_2$?”
- The materials include a diagnostic assessment to assess student learning in various formats. A pre-test before each chapter is provided, and the questioning format varies. For example, “Chemistry TX Science Chapter Pre-Test: Chapter 7” contains multiple choice questions and a drop-down option question that states, “Electrons in a covalent bond are (Select Choice: sometimes, never, always) shared equally between the two atoms forming the bond.”

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

- The materials include assessments that assess all student expectations and indicate which expectations are being assessed. For example, each chapter has four digital assessments: pre-test, vocabulary, review, and chapter test. All of these digital assessments indicate the TEKS being assessed. Further, each chapter has one or more lab investigations indicating the TEKS being assessed. Chapter 12, “ChemLab: Properties of Ionic Compounds,” indicates TEKS 1.B, 1.C, 1.D, 1.E, 1.F, 3.A, and 7.D.
- The materials list the TEKS at the beginning of each assessment under “About this Resource (i)” at the top right of the assessment. For example, in the “Chemistry TX Science Chapter Vocabulary Test: Chapter 9,” after clicking the information (i) button, the materials list the TEKS being assessed under the Standards(TEKS C.7.B, C.8.A, and C.8.D). The same applies to the Chapter Reviews and Chapter Tests.
- The materials include detailed TEKS-based lesson plans that outline how the materials can be used to teach and assess the identified student expectations. Each Chapter lesson identifies the student expectations that will be taught and includes an “Unpack the TEKS” section that describes the verb used in the SE, the content being addressed by the SE, and the context in which students will study it.
    - For example, within “Chapter 4: Electrons in Atoms, Lesson 1: Light and Quantization Energy” in the “Unpack the TEKS” section, the materials state “TEKS 6.C The student understands the development of atomic theory and applies it to the real-world phenomena. The student is expected to: investigate the mathematical relationship between energy, frequency, and wavelength of light using the electromagnetic spectrum and relate it to the quantization of energy in the emission spectrum.”

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

- The materials include assessments that integrate scientific concepts and science and engineering practices.
    - The 5E lesson plans contain opportunities for the teacher to assess formally and informally while integrating SEPs. For example, in “Chapter 6: Ionic Compounds and Metals, Lesson 2: Ionic Bonds and Ionic Compounds,” the Elaborate activity “SEP Developing and Using Models” instructs the teacher to “have students write a story or create a model about the formation of an ionic bond. Then have them read their story or present their models in class.”
    - The Chapter 2 Test includes a question that asks students, "Your friend says that because the before and after masses are not equal that the cookies violated the law of conservation of mass. Analyze, evaluate, and critique your friend’s explanation. How could you improve your experiment to show that the law of conservation of mass is upheld.”
    - “Chapter 16: Acids and Bases” includes a small-scale lab titled "Comparing the Strengths of Acids" that prompts students to “prepare serial dilutions of standard acids solutions, measure the pH of the standard and diluted solutions, calculate the H^+ ion concentration of each solution and the K_a of each weak acid, and rank the acids in order of strength.”

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

- The materials include assessments that require students to apply knowledge and skills to novel contexts. For example,
    - “Chapter 20: Nuclear Chemistry, Lesson 2: Radioactive Decay” includes an "Assessment Quick Check" that instructs teachers to explain that some emergency exit signs are illuminated by tritium, a radioisotope of hydrogen, and to ask "students to list the advantages and disadvantages of using tritium" and "to write the correct nuclear equation for the beta decay reaction."
    - The Chapter 13 Test includes a question that asks students, "You want to cut up some celery to eat with a dip, but the celery in the refrigerator is limp. Propose a solution that will allow you to crisp up the celery. Support your solution using the model below and explain the scientific ideas and principles behind your proposed solution."
    - The “Elaborate Activity” in “Chapter 12: Liquids and Solids, Lesson 1: Forces of Attraction” instructs the teacher to "Ask students to research the structures of several types of fabrics, rank the fabrics by the number of hydrogen bonds that their molecules should form with water, and then test their rankings by performing an absorbency test with water."

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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 a variety of 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.

- The materials include information and resources that provide guidance for evaluating student responses for the various types of assessments.
    - For example, "Chapter 20: Nuclear Chemistry, Lesson 3: Nuclear Reactions" begins with a Claim-Evidence-Reasoning (CER) activity that prompts students to use the CER strategy to answer the essential question, "What is the relationship between mass and energy and why is it important?" At the end of the lesson, the materials prompt teachers to have students "return to this activity to record their evidence, revise their claims, and explain their reasoning in answer to the essential question." The materials also include a "CER Rubric" that provides additional support in evaluating Claim-Evidence-Reasoning responses.
    - In addition, this same lesson includes an "Obtaining, Evaluating, and Communicating Information" SEP activity that guides teachers to "Have students research one of the major nuclear accidents, such as Chornobyl or Fukushima, and prepare a report or poster describing the events. Students should include a description of what they learned in this lesson about chain reactions and critical mass to the accident." The materials provide additional suggestions and include a "Project Rubric" that can be used to evaluate more open-ended activities such as Projects and Applying Practices.

- Materials include answer keys with sample student responses as well as rubrics to evaluate student responses.For example, the “Exit Ticket” in “Chapter 3: Structure of the Atom, Lesson 2: Defining the Atom” states, "The first paragraph of this section discusses dividing gold dust particles into smaller and smaller pieces until reaching a particle that can't be further divided. Gold melts at about 1064°C. Ask students if the result of this hypothetical experiment would be different if performed with liquid gold rather than gold dust.” The materials provide an answer that states, “No. The state of an element at a particular temperature is a physical property, not a chemical property. An atom of gold is the same regardless of the state of matter."

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 materials include relevant assessment tools that support the analysis of assessment data, and provide guidance to respond to individual student needs based on measures of student progress.
    - Materials include assessment tools that yield data teachers can analyze and interpret. Percentages are color coded for both student and class averages. Performance is charted on a graph that shows each student's progress over time for both activity and standards-based. The activity performance data provides a class average with a circle graph that further breaks down the class's performance. A bar graph can also be accessed to analyze specific details of the assessments for a class or individual student.
    - In “Chapter 13: Mixtures and Solutions, Lesson 4: Colligative Properties of Solutions," after a recommended Assessment Quick Check, Virtual Lab, and Apply Your Knowledge activity, the lesson offers differentiation under the Extend and Reinforce icons. The Extend states, "Have students write a letter to their local, county, or state highway department asking what substances and methods used have changed over time, and if so, for what reasons." the Reinforce states, "For remediation, have students work in groups of two to quiz each other on the different colligative properties, their definitions, and practical applications..."
    - The materials state, "Go online to access and assign these (Word LAB and Science Literacy Essentials) to remediate and differentiate as needed. After students are finished reviewing these resources, ask if they have questions or reassess.”
    - The “Assessment Adimistration Guide” includes a section titled “The Assessment Process - how to analyze and respond to data” that provides an overview of how data influences instructional decisions. For example, the materials include a list that states “The process starts with measurement and scoring (test results, observations). The next step is to compare and interpret the information you have gathered. The third step is to make instructional decisions based on your conclusions. This process is ongoing: measure, interpret, make decisions …” This document allows the teacher to make instructional decisions for different groups of learners.

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

- The tools available for varied types of assessment yield relevant information.. For example, “Chapter 10: Stoichiometry, Lesson 1: Defining Stoichiometry” suggests that teachers “check in on student responses to the Ask Yourself reading comprehension questions and pull in Exit Tickets (in Evaluate) for each topic.” and “utilize the leveled eBook as needed to further support student learning.”
- The materials provide assessment tools that yield relevant information for teachers to use when planning core instruction. For example, the materials provide a pre-test at the beginning of each chapter that can be edited and used to assess foundational knowledge and progression of the TEKS. The materials include tools for data analysis that display class and individual student performance data by overall assessment and by individual questions and standards for each question.
- The information provided by the pre-assessments could be used by teachers when planning instruction, intervention, and extension. The “Assessment Administration Guide” includes sections titled “Use Progress Monitoring to Make Instructional Decisions” and “How to Make Instructional Decisions” that describes the purpose of progress monitoring using relevant information obtained from assessments. This document provides “Reflection Questions” for teachers to support them in making instructional decisions.

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

- Materials provide a variety of resources and different activities for teachers to use. The materials include suggestions for reinforcement and extension throughout the lessons. For example, “Chapter 3: Structure of the Atom, Lesson 2: Defining the Atom” instructs teachers to assign an Extend assignment for students who are ready to go deeper. The “Obtaining, Evaluating, and Communicating Information” Extend activity instructs teachers to “Have students research the breathing apparatus that scuba divers use and compare that equipment with compressed gas equipment in a laboratory. Have students write a brief report summarizing their comparisons.”
- The materials provide teacher guidance on how to respond to student performance data.The materials provide assessment tools that can track both class and individual progress by assessment and by standards for each chapter after administering lesson quizzes, chapter reviews, and chapter vocabulary tests.
    - For example,the “Assessment Administration Guide” includes a section titled “Implementation Strategies for Quick Task Analysis” that instructs teachers on leveraging different activities in response to student data. The materials state, “If the overall average is a 3 on the task, proceed with your learning plan and consider adding more EXTEND activities for acceleration or provide students more ELABORATE activities.If the overall average is a 2 on a task, consider revisiting the concept to provide explicit instruction/correction or modeling before moving on with learning. Look for REINFORCE strategies in the lesson to support learning. If the overall average is a 1 on a task, consider reteaching the concept with the entire class or with a small group. Utilize Science Literacy Essentials to help take another look at the concepts with more scaffolds. Or assign this resource to individual students.”

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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.	PM

Partial Meets | Score 1/2

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

Assessments contain scientifically accurate items that 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 some guidance to offer accommodations for some 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.

- Assessments contain scientifically accurate items. For example, “Chapter 2: The Nature of Matter, Lesson 2: Changes in Matter” has several “Ask Yourself” questions. One question asks students to define a chemical change. The answer key for this question states, “A chemical change is a process that involves one or more substances changing into new, different substances having different chemical compositions and different properties.”
- Assessments contain items that avoid bias. The chapter tests include a variety of question types, such as multiple choice, short answer, fill in the blank, and essay questions. The “Chemistry TX Science Chapter Test: Chapter 24” includes six questions, four of which are essay questions, one is multiple choice, and one is a short answer.
- Assessments contain items that are free of errors. For example,
    - Question six in the “Chemistry TX Science CH14 Lesson Quiz: Lesson 3” has an answer of 240, and the materials show the correct answer as "2.4×10^{2}".
    - Question seven in the “Chemistry TX Science CH14 Lesson Quiz: Lesson 2” includes a table with enthalpy data that matches the problem.
    - Question 24 on the “Chemistry TX Science Chapter Test: Chapter 13” asks students to reference results shown in a table. The table is provided for the students to reference.

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

- Assessment tools use clear pictures and graphics that are developmentally appropriate. For example:
    - The “Chemistry TX Science Chapter Test: Chapter 4” includes a question that asks students, "Which label identifies the trough of the wave shown." A diagram of a transverse wave is displayed with clear labels(A, B, C, and D) marking the main features of the wave.
    - The “Chemistry TX Science Chapter Test: Chapter 2” includes a picture of a cubic container with particles partially filling it. The question asks the students, "Which is the state of matter shown in this figure?"
    - Chapter 16, “ChemLAB: Determining the Strength of Acetic Acid in Vinegar,” shows graphical icons that clearly communicate the safety considerations and the required personal protective equipment needed for the lab. Further, the procedure contains a picture that clearly depicts the correct way to set up the lab equipment, including the ring stand, burette clamp, and Erlenmeyer flask. The picture also identifies the burette's stopcock, referenced in the procedure.
    - The “Chemistry TX Science Chapter Test: Chapter 12” includes the question, "What happens to the particles in the shaded area?" and a graph titled "Energy Distribution of Molecules in a Liquid" is shown. The y-axis of the graph is labeled "Number of molecules," and the x-axis is labeled "Kinetic energy." A line indicates where on the curve shown on the graph "minimum kinetic energy required for vaporization" takes place, and the shaded area is filled to the right of it.

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

- The materials provide guidance to ensure consistent and accurate administration of assessment tools.
    - Each lesson includes a “Summative Assessment” section in the lesson plan. This section in “Chapter 9: The Mole” provides the teacher guidance on a suggested time allotment of 30 minutes to complete the assessment and states, "This digital summative assessment evaluates student understanding of the mole as a measure of the amount of matter."
    - Each chapter contains multiple lessons, and each lesson within the chapter ends with a lesson quiz. For example, the “Chapter 3: Structure of the Atom, Lesson 2: Defining the Atom” Wrap Up prompts teachers to assign the Lesson Quiz. This lesson quiz "evaluates student understanding of atomic structure as well as the mass, charge, and location of electrons, protons, and neutrons."
    - The “Digital Chapter Resource” pages in the “Teacher eBook: Chemistry” preview all the digital assets available for each chapter, including a section for assessments. This supports the teacher in understanding which assessments are formative or summative. An "F" icon is placed next to formative assessment titles, and an "S" icon is placed next to summative assessment titles.
    - The materials include a professional learning series of videos that guide teachers in creating and administering assessment tools, such as how to customize assessments to produce multiple versions. In addition, the materials guide teachers on how to customize the assessment settings, including adding teachers instructions, tips, and reminders that students will see before they begin the assessment, as well as options

for allowing student tools such as calculators, reference sheets, hints and the ability to cross out answers.

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

- Some assessment tools do not include guidance to offer accommodations that allow students to demonstrate mastery of knowledge and skills aligned to learning goals. For example, in “Chapter 10: Stoichiometry, Lesson 1: Defining Stoichiometry," the first Exit Ticket question asks, "How can you use a balanced chemical equation to tell you how to most efficiently scale-up or scale-down a chemical reaction?" The answer provided states, "You would use the mole ratios in a balanced chemical equation to tell you the proportions of reactant amounts to maintain regardless of the scale of the chemical reaction you carry out." This assessment tool does not provide guidance to offer accommodations that allow students to demonstrate mastery of knowledge and skills aligned to the learning goal.
- The “Assessment Administration Guide” includes information about what assessment is, opportunities within the program, support in making instructional decisions, guidance for evaluating student responses but does not include guidance to offer accommodations on formative assessments such as Exit Tickets and Ask Yourself Questions.
    - Teachers can accommodate students when using formative assessments if they enter questions into the digital assessment platform. However, the materials do not provide guidance that instructs teachers to do so.
- The materials offer accommodations for assessment tools on summative assessments so that students of all abilities can demonstrate mastery of learning goals. In online summative assessments, the materials provide a highlighter, notepad, calculator, line reader, and text-to-speech tools. However, very limited guidance is provided in regards to the accommodations.

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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 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 mastery.

- Materials provide recommended targeted instruction and activities to scaffold learning for students who still need to achieve mastery in the Lesson Blueprint section of each lesson. For example, the Lesson Blueprint in “Chapter 5: The Periodic Table and Periodic Law, Lesson 1: Development of the Modern Periodic Table” contains a Dot-to-Dot puzzle differentiated instruction activity embedded in the lesson that has students create dot-to-dot pictures of lab equipment using the element symbols for the numbers on each dot.
- The materials include LearnSmart, a personalized learning tool that uses multiple-choice questions to gauge student understanding to provide recommended target instruction and activities for students who still need to achieve mastery. When students answer a question incorrectly, they can access built-in support that reviews relevant material in different formats, such as videos, short, focused text, manipulatives, and quick interactives.
- The materials include activities with the “Reinforce” label to support students who have not mastered the topics. For example, “Chapter 13: Mixtures and Solutions, Lesson 1: Types of Mixtures” directs teachers to have students “take a closer look at different types of heterogeneous mixtures” by completing the “Interactive Visual Literacy: Heterogeneous Mixtures” video and interactive activity.
    - Some recommended lesson activities include a reinforcement label for remediation on the recommended activity. For example, the “Apply Your Knowledge: Suspensions and Colloids” activity has a remediation option that allows students to create posters of common household mixtures, “describe the dispersed particles and dispersing medium for the mixture, and label each picture according to the proper classification.”

- The materials include a “Reteaching Library” of resources that provide the teacher with guidance for students who may need additional support on prior TEKS or background knowledge.

Materials provide enrichment activities for all levels of learners.

- The materials provide additional activities beyond what is needed to teach the core of the content for each lesson. Each chapter includes customizable lesson options that provide a recommended lesson plan using green check marks. The unchecked activities can be used as enrichment activities to reinforce and extend student learning. For example, “Chapter 17: Reaction Rates, Lesson 3: Reaction Rate Laws” includes activities such as “Quick Demo: Oxygen and Combustion Rate,” Vocabulary Word Lab, “Interactive Visual Literacy: Determining Reaction Order,” “Small-Scale Lab: Determining Reaction Order” and “Science Literacy Essentials” that can be used to provide students with enrichment.
- Materials provide enrichment activities labeled “Extend” throughout the lessons for all levels of learners. For example, “Chapter 6: Ionic Compounds and Metals, Lesson 2:Ionic Bonds and Ionic Compounds” includes an “Extend” activity titled “Using Mathematics and Computational Thinking” that instructs teachers to “have students determine the interionic distance for LiF, LiCl, and LiI” using ionic radii. Another “Extended” activity titled “Differentiated Instruction: Student Research” allows students to “research the Born-Haber cycle for energy changes in sodium chloride formation” and “design a Born-Haber cycle for the formation of potassium fluoride.”

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

- Lessons include activities with the heading “Reinforce” that provide scaffolds and guidance for just-in-time learning acceleration for all students. For example, “Chapter 14: Energy and Chemical Changes, Lesson 5: Reaction Spontaneity” includes an “Activate Prior Knowledge” Reinforce activity that guides the teacher to “explain that a systems ΔH, which is positive for an endothermic process and negative for an exothermic process, plays a significant role in determining whether or not a process is spontaneous because of how it affects the surroundings.” Another Reinforce activity titled “Visual Literacy” guides the teacher to “ask students if painting an iron object makes the rusting reaction in the photo nonspontaneous” and “ask how painting an iron object enables it to exist in wet conditions without rusting.”
    - These activities are optional, allowing the teacher to choose whether or not to include them in the lesson. If students need just-in-time learning acceleration, the teacher can include one or a few activities to support learning. Each activity provides teacher guidance and scaffolds.
- The materials include “LearnSmart, an adaptive tool that provides differentiated support.” This online material gives the student "a chance to take learning into their own hands while granting teachers insight into student understanding." It allows the teacher to provide differentiated just-in-time learning acceleration to students who may need additional support.

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Indicator 7.2

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

1	Materials include a variety of developmentally appropriate instructional approaches to engage students in the mastery of the content.	M
2	Materials consistently support flexible grouping (e.g., whole group, small group, partners, one-on-one).	M
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.	M

Meets | Score 2/2

The materials meet the criteria for this indicator. Materials include 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 flexible grouping (e.g., whole group, small group, partners, one-on-one). Materials support multiple types of practices (e.g., modeled, guided, collaborative, independent) and provide guidance and structures to achieve effective implementation. Materials 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.

- The materials provide a variety of developmentally appropriate instructional approaches to engage students in the mastery of content. For example, lessons include exploration with concrete and hands-on materials. In “Chapter 7: Covalent Bonding," the "ChemLAB: Model Molecular Shapes" provides a hands-on opportunity for students to use molecular modeling kits to help them draw Lewis (electron-dot) structures to predict the shapes of different molecules. Also, in “Chapter 3: Structure of the Atom, Lesson 2: Defining the Atoms” students use magnets to demonstrate the attraction of opposite poles and the repulsion of like poles, “make an analogy to the cathode-ray tube experiment” and then “use the PhET simulation *Rutherford’s Experiment* to explore Rutherford’s gold foil experiment.”
- Lessons follow the 5E (Engage, Explore, Explain, Elaborate, Evaluate) instructional model and include a variety of different instructional approaches in each section. In “Chapter 1: The Central Science, Lesson 1: What is Chemistry”:
    - The Engage section includes a Claim-Evidence-Reasoning activity to answer the essential question “How can chemistry help you understand the world?” and a video

that “illustrates the study of matter” as well as an optional Chemistry Journal activity and an Activate Prior Knowledge activity.
- The Explore section includes two optional activities: “QuickDemo: Chemistry and Matter” and “Demonstration: The “Magic” of Chemistry” where students learn “that one substance can be changed into another substance having different properties.”
- The Explain section includes a Vocabulary Word Lab digital activity to have students practice vocabulary, a “Main Idea” activity to address the topic of “Why study chemistry," an “Interactive Visual Literacy: Branches of Chemistry” activity that allows students to take a deeper look into the branches of chemistry, and a “Driving Question Connection” activity where students discuss questions after completing the reading.
- The Elaborate section revisits the original CER activity and has students revise their claims, include new evidence, and explain their reasoning. Students also have five “Apply Your Knowledge” activities that allow them to apply what they have learned throughout the lesson. The “Obtain, Evaluate, and Communicate Information” activity has students work in groups to research how astronauts perform common tasks.
- The Evaluate section includes “Exit Tickets” and “Lesson Quizzes” to evaluate student learning, with optional differentiation resources such as “LearnSmart” and “Science Literacy Essentials” for remediation.

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

- Materials consistently support flexible grouping (e.g., whole group, small group, partners, one-on-one). For example, “Chapter 20: Nuclear Chemistry, Lesson 1: Nuclear Radiation” begins with individual students drawing and labeling models of the atom in the “Engage” portion of the lesson and then dividing into three groups to model isotopes and nuclear decay by acting as protons, neutrons and electrons in the “Elabore” portion.
- The materials provide teacher guidance on using specific grouping structures based on student needs. For example, in the “Teacher Support Lab Library” the activity “Construct an Atomic Theory Timeline” includes a “ Before You Begin” section that states “Decide how you will organize the class into groups. Ensure each group has students with diverse abilities.” This section further supports flexible grouping by stating “You may decide to have two or more groups working on models for each stage of the atomic theory in order to have smaller groups.”
    - The “Teacher Support Lab Library” includes suggestions for group sizing underneath the title of the lab. For example, the “QuickLab: Identify Compounds” and the “Laboratory: Making a Graph” suggest pairs, while the “QuickLab: Model Isotopes” and the “ChemLAB: Investigate Descriptive Chemistry” suggest small groups.

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

- The materials consistently support multiple types of practices in the “Teacher eBook: Chemistry," and provide guidance and structures to achieve effective implementation. Materials include lessons in which the teacher models or demonstrates a new skill or concept and provides opportunities to practice the skill or concept in a variety of ways.
    - For example, “Chapter 11: Gases, Lesson 1: Kinetic-Molecular Theory” includes a variety of activities such as a “Quick Demo: Physical Properties of Gases” activity where the teacher inflates a beach ball and asks students to explain what occurs inside the toy, a “Virtual Investigation: Kinetic Theory” activity where students “explore the relationships

between the speed of particles in a gas and the temperature and particle mass" and a "Systems and System Models" activity that allows students to "develop their own visual or physical representations" of the kinetic-molecular theory.
- The materials include a "Professional Learning Library" that allows teachers to watch pre-recorded topic specific videos. These videos provide guidance on a variety of topics including formative assessment strategies, EB/ELL supports, rigor and writing, as well as transferable and non-transferable skills,
- For example, "Chapter 7: Covalent Bonding, Lesson 1: The Covalent Bond" includes an activity titled "Interactive Visual Literacy: Why do atoms bond?" that allows students to "learn about the sharing of electrons in covalent bonds." This activity supports students' individual practice and provides guidance and structures to achieve effective implementation in the "Teacher Notes" section of the activity.

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

- "Chapter 0: The Process of Science, Lesson 3: Equity in Science" in "Interactive Student eBook: Chemistry" includes images and information that highlight notable scientific contributions of historical women and people of color. For example, the reading provides images and discusses scientists such as Cecilia Payne from England, who graduated from Harvard in the 1930s and was a renowned astronomer whose "work changed the way we view the composition of the universe" and George Washington Carver, an African American scientist, who revolutionized crop yields in the 1900s through techniques such as crop rotation. The materials also highlight current scientists, such as Kizzmedia Corbett, an African American female scientist at the National Institute of Health, who led a team that helped develop the SARS-CoV-2 vaccine.
- The "Interactive Student eBook: Chemistry" contains photographs in the "Driving Question" section at the beginning of each chapter to introduce phenomena related to the scientific concepts in that chapter. The photographs represent diverse communities of people and places.
    - Some examples include the city of Dallas, the Guadalupe Mountains National Park, the beach at South Padre Island, a Texas oil field, and La Sal Del Rey near the Rio Grande Valley.
    - The picture provided for the driving question reflects the diversity of school communities and matches the content. Characteristics vary in images to include race and ethnicity, gender identity, and hair texture. For example, in "Chapter 5: The Periodic Table and Periodic Law" an image of a diverse group of students is shown surrounding a digital device. This image supports the driving question, "What elements are used to make your phone?"

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Indicator 7.3

Materials include listening, speaking, reading, and writing supports to assist emergent bilingual students in meeting course-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.	M
2	Materials encourage strategic use of students' first language as a means to linguistic, affective, cognitive, and academic development in English.	M

Meets | Score 2/2

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

Materials include guidance for linguistic accommodations (communicated, sequenced, and scaffolded) commensurate with various levels of English language proficiency as defined by the ELPS. Materials encourage 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 "Teacher eBook: Chemistry" contains a planning page at the beginning of each chapter with the heading "EB/EL Emergent Bilingual /English Language Supports" that provides an introductory recommendation for activating prior knowledge for the various levels of English language proficiency. For example, "Chapter 6: Ionic Compounds and Metals" directs teachers to activate prior knowledge about the elements by having the students complete K-W-L charts. Students write what they know about the chemical elements and what they want to know about them. Beginning-level students write two things, intermediate-level students write three things, and advanced/advanced high students write four things. Teachers use yes/no and "or" questions to prompt the beginning-level students. At the end of the lesson, teachers help students fill in what they have learned on their charts.
- The materials include an "ELPS Support" section within each lesson. For example, "Chapter 11: Gases, Lesson 1: Kinetic-Molecular Theory" states, "As students read about low dentistry, use visuals to help them understand." The materials guide teachers to draw two sets of dots on the board to represent chlorine (not dense) and gold (very dense). The materials include different levels of support in this activity for each tier EB/EL, such as pointing and gesturing to support comprehension and asking further questions to Intermediate and Advanced students.
- The materials include a document titled "Supporting All Learners: Equity and Access in Science" that consists of a section titled "Supporting Students Experiencing Difficulty with Literacy in Science and Engineering" that explains how teachers can support students who might have

difficulties with literacy, such as EB/EL students. For example, the materials state, “Provide assistance in the specific and general vocabulary for each lesson, using reinforcement or additional practice afterward. The materials direct teachers to pre-teach vocabulary and provide adequate opportunities for students to hear and use new vocabulary in context before applying the terms to practice and application. Materials direct that the instructional resources and instruction be monitored for the ambiguities of language that would be confusing. Limit the number of concepts and new vocabulary presented at one time.”

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

- The materials encourage the use of the student's first language as a means to develop the learner in English. The “Emergent Bilingual/English Language Supports" subsection of the “Science Language and Content Acquisition” section in “Chapter 1: The Central Science” states that the teacher should allow Beginning EB/EL students to "use their home language to discuss how chemistry relates to our lives.”
    - In “Chapter 10: Stoichiometry," the EB/EL support section instructs teachers to “have students scan the chapter for words they already know and to note the words they do not yet know or fully understand.” The teacher supports beginning EB/EL students “in sharing what words they know.” and allowing “students to use their home language.”
- The materials include a “Spanish Language Transfer” subsection in the “Science Language and Content Acquisition” section that provides for transferable skills, non-transferable skills, cognates, and false cognates. The cognates section states, "For students whose first language shares cognates with English, have them use the knowledge of their first language to learn English."

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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.	M

Meets | Score 2/2

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

Materials provide information to be shared with students and caregivers about the program's design. Materials provide information to be shared with caregivers for how they can help reinforce student learning and development. Materials 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.

- The materials include a “Communicating with Caregivers Guide” that details the design of the program. For example, the materials state “This program and our class activities this year are designed to encourage students to explore chemistry concepts through reading, writing, lab activities, and self-assessment. The program design allows students to explore through a chapter-level Driving Question, which is the overarching concept of the content.” The materials also detail the 5E Lesson Model “which allows teachers to cover the TEKS with flexibility throughout the lesson to deliver the content that best fits their classroom's needs.”
- Materials provide information to share with students and caregivers about the course and the program's design. For example, the materials provide “Letter to Home” templates for each chapter that includes a description of what is being learned in the chapter, the TEKS that are being covered within that chapter, and family activity.
    - For example, the “Letter to Home: Chapter 2” states, “Our class is exploring phase changes, chemical changes, and characteristics of mixtures.” After, the letter lists the five Texas Essential Knowledge and Skills being covered in the chapter and then includes a family activity where students and caregivers record examples of states of matter that they see or interact with in their daily lives.

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

- Materials provide information to be shared with caregivers to help reinforce student learning and development. The materials provide a Letter to Home template within each chapter, including extension activities involving caregivers. This is the only information provided to be shared with caregivers for how they can help reinforce student learning and development.
    - All chapters provide information to be shared with caregivers through a letter. The letters explain which TEKS will be covered in the chapter and suggest an activity that can be done with caregivers and students to help reinforce student learning. For example, the letter for Chapter 3 explains to caregivers that the chapter title is 'The Structure of the Atom' and that the class is "exploring how we can study things that cannot directly be perceived." The suggested activity explains, "Learn about nanotechnology! Have your student research several types of scanning probe microscopes that are used to study atoms (atomic force microscope, scanning tunneling microscope, and magnetic force microscope). Have your student be sure to find out about what a scanning probe microscope is, why it is effective for studying atoms, and the way each type works. Your student should also explore the implications such technology has for the future of nanotechnology. Your student should choose a format, such as a chart or poster, to help explain this technology to you. Encourage your student to use scientific vocabulary such as electron, proton, and neutron in their explanations."
    - For example, in "Letter to Home: Chapter 3," there is a family activity to learn about nanotechnology. The activity states, "Have your student research several types of scanning probe microscopes that are used to study atoms." The activity includes research focus guidance and formatting guidance for the caregiver and states, "encourage your student to use scientific vocabulary such as electron, proton, and neutron in their explanations."
    - For example, the "Letter to Home: Chapter 10" states, "Your student has done some research about the role of lithium hydroxide (LiOH) in the removal of the carbon dioxide exhaled by astronauts. Ask them to explain why the carbon dioxide must be removed and how stoichiometric calculations are used to minimize the weight of lithium hydroxide carried into space. Then ask your student to perform a rough calculation of the amount of carbon dioxide exhaled by a person in a day."

Materials include information to guide teacher communications with caregivers.

- Materials include information to guide teacher communications with caregivers. An Assessment and Report eLearning is provided for teachers to be able to track students' progress in the course. Individual student reports can be downloaded.
- The "Communicating with Caregivers Guide" includes an Assessment Snapshot template, a Conference Checklist for Students template, and a Caregiver Post-Conference Questionnaire. These documents facilitate communication between teachers, caregivers and students.
- Materials include information to guide teacher communications with caregivers in the form of a letter home for each chapter that describes the learning objectives for the chapter, lists the TEKS being covered, thanks caregivers for their interest and involvement, and invites them to explore the subject further with an at-home activity. The document is provided in word format that can be downloaded and modified by the teacher to suit the needs of their students.

- For example, “Chapter 1 Letter Home” starts with “Dear Parent or Guardian, Our class is exploring how chemistry can help you understand the world; why scientists use standardized units; and why significant figures are important.” and ends with "Thank you for your continued interest and involvement in your student’s schoolwork. I hope this letter helps you stay informed about what your student is studying. You and your student can continue to explore this subject by completing the following family activity. As always, please feel free to contact me if you have any questions."

McGraw Hill Texas Chemistry

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.	PM
2	Materials provide clear teacher guidance for facilitating student-made connections across core concepts and scientific and engineering practices.	PM
3	Materials provide review and practice of knowledge and skills spiraled throughout the year to support mastery and retention.	M

Partial Meets | Score 1/2

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

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

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 resource provides a Table of Contents that outlines the order of content taught. At the onset of each chapter, the TEKS covered by that chapter is provided in the TEKS at a Glance section. No specific scope and sequence document outlining the order in which the TEKS are taught is evident; however, a TEKS Correlations: Chemistry tab on the dashboard provides a list of TEKS and their aligned materials throughout the product.
    - While the materials include a Table of Contents that is organized by chapters and lessons, the materials do not include a scope and sequence. The Table of Contents provides teachers with a list of chapters and lessons, including the TEKS taught in each chapter and lesson, but a scope and sequence document is not provided for reference.
    - Students and teachers may access a digital TOC in the navigation portion of the Online Learning Platform in which the eBook is one resource. TEKS for the students and teachers are available at the point of use throughout the eBook.
- The student-facing and teacher-facing eBook Program Overview includes a resource titled Full Scope and Sequence that provides the order of material taught into chapters, but it does not include an outline of TEKS alignment to each chapter. Materials instruct teachers to follow the sequence of chapters laid out by the table of contents. At the onset of each chapter in the eBook, the correlating TEKS are provided in the TEKS at a Glance. Chapter overviews provide TEKS-aligned lessons for each chapter. For example, Chapter 7 contains five lessons that break down and connect TEKS 6E, 7A, 7B, 7C, and 7D.

- The materials include TEKS alignment in the TEKS Correlations: Chemistry tab on the dashboard. Teachers can view locations of alignment in both the student and teacher materials by TEKS.

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

- There are many opportunities for students to engage in science and engineering practices as they learn core concepts throughout the book, and these opportunities offer driving questions for teachers to ask students to facilitate learning of the content. However, evidence of teacher guidance to facilitate student-made connections across concepts and SEPs is limited.
- Materials include opportunities for teachers to ask students driving questions within the unit to guide student learning and to engage in scientific and engineering practices. For example, in Chapter 11 (Gases), there are opportunities for students to connect gas concepts to scientific and engineering practices, such as computational thinking (Lesson 2) and obtaining, evaluating, and communicating information (Lesson 3). The resources in these sections, as well as throughout each unit, provide driving questions, essential questions, and phenomena examples for students.
- Students and teachers may refer to the Science and Engineering Practice Handbook for in-depth information on SEPs. The SEP Handbook provides background information on the connections of SEPS to the general content and scientific concepts in the material. However, this document does not provide clear teacher guidance for facilitating student-made connections across core concepts and scientific and engineering practices.

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

- The materials provide opportunities for reviewing and practicing grade-level, content-specific knowledge throughout the year. These are spiraled throughout the year to support mastery and retention. For example, TEKS 9.B on differentiating among acid-base reactions, precipitation reactions, and oxidation-reduction reactions and 2.C on using mathematical calculations to assess quantitative relationships in data are first introduced to students in Chapter 8, Lesson 3 of the chemistry materials. The topic of differentiating among acid-base reactions, precipitation reactions, and oxidation-reduction reactions and 2.C on using mathematical calculations to assess quantitative relationships in data are returned to in Chapter 15, Lesson 3; Chapter 16, Lessons 1, 2, and 4; and Chapter 18, Lessons 1 and 2; in the chemistry materials during the discussion of chemical reactions, chemical equilibrium, acids and bases, and redox reactions.
- The materials include reinforcement activities or questions in the Activating Prior Knowledge section of each lesson and a Chapter Vocabulary section that includes Prior Knowledge Terms. Upon results of a Chapter Pre-Test, teachers are directed to “assign LearnSmart review assignments” from the Reteaching Library.
- Materials provide review and practice throughout the year to support retention and mastery of concepts after a Chapter Pre-Test in the LearnSmart review assignments in the GO Online Reteaching Library referenced throughout the product (such as Chapter 1).

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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 course.	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 course-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 the use of all materials, including text, embedded technology, enrichment activities, research-based instructional strategies, and scaffolds to support and enhance student learning. Materials include standard correlations, including cross-content standards, that explain the standards within the context of the course. Materials include a comprehensive list of all equipment and supplies needed to support instructional activities. Materials include guidance for safety practices, including the course-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 provide teacher guidance and recommendations for the use of all materials in each Chapter Overview. A blueprint is provided that outlines objectives, digital resources, and labs. Guidance and recommendations are included in the implementation of a 1-2 day lesson following the 5E instructional model. Also included in the resources and guidance are scaffolds, literacy supports, differentiation, extension, formative and summative assessments, STEM resources, inquiry-based investigations, and more.
- The materials include teacher guidance in a Chapter Overview in every chapter that provides a blueprint of available resources, such as objectives, digital resources, and labs, along with a recommendation on which resources to implement to achieve a 1-2 day lesson, as well as a succinct description of each. The 5E Teacher Guide in each lesson of the Teacher Edition provides an instructional model to differentiate, reinforce, and extend the lessons. Scaffolds to support and enhance student learning include comprehension support in the form of formative assessment, summative assessment, adaptive practice, literacy support, STEM resources, and inquiry-based investigations. Guidance is also provided via the Supporting All Learners

document which promotes the Universal Design for Learning Framework. For example, Lesson 2 in Chapter 13 describes how teachers can use the number of students standing on a large square taped to the floor to represent concentration. The same lesson includes an extension activity for students to research EPA's allowable limits for contaminants in drinking water. In Chapter 12, Liquids and Solids, a pretest is suggested to launch the chapter. It states, "This digital formative assessment uncovers prior student knowledge about the structure and properties of liquids and solids." The Chapter 10, Lesson 1 Blueprint shows how much time each activity will require, multiple options for student processing, and resources for differentiation

- In the Lesson Blueprints mentioned above, all materials are listed for the lesson, but a green check mark provides further guidance for teachers which materials are recommended. According to the Program Overview, green check marks indicate the recommended path "to make sure all TEKS are covered for each lesson."

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

- Materials include standards correlations that include vertical alignment to prior grades in the TEKS at a Glance in each chapter. An Unpack the TEKS guide is provided to outline the detailed context of the standards throughout the chapter and course. Each chapter also contains correlating English Language Proficiency Standards at the onset of each lesson.
- Chemistry standards are present at the onset of each lesson in a graphic illustrating vertical TEKS progression from middle school in TEKS at a Glance with the applicable correlating science standards from the previous grade level in the Student Edition. Vertical and content alignment is also present throughout each chapter.
- The materials include a Cross-Content Correlation document that includes connections between science, ELAR, and math standards. This document also includes a list of each standard, a location in both the Teacher and Student Editions, and a brief summary of how the standards connect. For example, the English Language Arts Standards state, "Connection: Students are provided with examples of how scientists participate in active discussion and critique of ideas and hypotheses."
- The Unpack the TEKS section is available at the beginning of each chapter to show in text and on a flowchart how the TEKS are met in the lesson. For example, in Lesson 2 of Chapter 13, TEKS 11.E and 11.F related to concentration and dilution calculations show TEKS progression from the Grade 7 TEKS 7.6.D. The materials then unpack the high school TEKS by defining the word "calculate" and indicating that "By demonstrating how to calculate the concentration of solutions in units of molarity, this lesson is designed to complete coverage of TEKS 11.E."
- The correlating English Language Proficiency standards are also present at the onset of each lesson. Examples of how these standards are used within the context of the course are provided. For example, in Chapter 18, Lesson 1, Oxidation and Reduction, the Explain section provides ELPS support with recommendations for the teacher to assess student comprehension based on Beginning, Intermediate, or Advanced levels with the content for the specified chemistry standard.

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

- Teachers can access a comprehensive Lab Materials List in the form of an Excel spreadsheet titled Lab Materials List found in the Lab Support and Projects tab, as well as

complete lists of supplies and equipment for each lab within the Teacher Support Lab Library along with teacher guidance for implementation. This list details all equipment and materials required for the course, including laboratory investigations, quick labs, launch labs, and inquiry activities.

- The Additional Resources section of the Teacher Support Lab Library: Chemistry provides a complete list of supplies and equipment for each lab as well as guidance for teachers on how to set up and utilize the materials to ensure student success. For example, the Teacher Support Lab Library explains how to set up the pipettes for a lab involving acids: "To reduce the number of pipettes required, provide a labeled pipette with each acid solution. Warn students not to contaminate pipettes with other solutions." In addition to the comprehensive Lab Materials List, a complete list of materials needed for each lab is provided within each lab as well. It is unclear if this additional resource, the Teacher Support Lab Library: Chemistry, is included in the primary resource.
- Outside of the extensive resources for lab activities, the materials do not include a comprehensive list of other instructional activities and learning experiences.

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

- Safe Practices and Safety Equipment lab handouts for each lab investigation, as well as the Lab Skill and Safety Handbook, are provided detailing required personal protective equipment and caution statements using text, pictures, and hazard symbols. A Teacher Support Lab Library also provided ample teacher guidance for safety procedures and equipment used for each lab included throughout the materials.
- Lab investigation student materials provide a safety handout titled Safe Practices and Safety Equipment, indicating the required personal protective equipment and caution statements using text, pictures, and hazard symbols. For example, the Safe Practices and Safety Equipment handout cautions students to wear safety glasses and an apron, avoid looking directly at burning magnesium, and avoid handling heated materials until they have cooled. Pictures and symbols reinforce this same information.
- The Teacher Support Lab Library provides guidance for teachers on safe lab set-up and safety reminders for students before they begin each lab. For example, in the ChemLab for the Determination of Mole Ratios, teachers are guided to "make sure students use tongs to remove the beaker from the hot plate" in steps 4 and 11 of the procedure.
- Materials also include a Lab Skill and Safety Handbook that contains sections on grade-appropriate guidance for safe practices, safety equipment, and safety symbols. This resource is online and visible to both teachers and students.

McGraw Hill Texas Chemistry

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.

- Materials support scheduling considerations in the Chapter Planning and Support section of each chapter. Lesson Blueprints at the start of each lesson offer pacing guidance within the Customizable Lesson Options content table, where all available resources are listed along with a pacing suggestion. Within the list of Customizable Lesson Options, a recommended path of instruction and activities for a 1-2 day lesson is indicated with green checks next to each suggested component to make up the 1-2 day lesson.
- The materials include a Pacing Guide that provides an additional level of detail for teachers to use in assessing yearly and daily durations. Recommended times for activities are further supported within these durations. For example, the Mole chapter contains five recommended lessons which are 60-65 minutes each. After adding extra minutes for the introduction and assessment, the entire time is estimated at 390 minutes.

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

- Materials include a chapter sequence in the Table of Contents, indicating that precursor concepts are addressed first. For example, students learn about reactions and define moles and molar mass before learning about stoichiometry. By also providing suggested times for each activity in the Customizable Lesson Options of each lesson, teachers can choose to add or remove activities to adjust the unit time for local considerations without disrupting the sequence.

- Materials also guide strategic implementation without disrupting the sequence of content in the Chapter Overview on the first page of each chapter. For example, in the Chapter Overview for Chapter 11 on Gas Laws, the flow of the chapter begins by studying Lesson 2, The Gas Laws, which extends into Lesson 3, The Ideal Gas Law. Finally, with those foundations, Lesson 4, Gas Stoichiometry applies stoichiometry to the gas laws.
- Implementation guidance can also be found in the TEKS Progression section of each lesson in the Teacher Edition, where prior knowledge is listed. A Build to the TEKS section immediately follows, describing the progression of learning for that TEKS in the remainder of the resource. For example, in the TEKS Progression for Chapter 10, Lesson 1, Defining Stoichiometry, the content shows 8.6E as a prior knowledge TEKS for the current chapter TEKS 9.C. The other lessons in the chapter progress to Lesson 2, Stoichiometric Calculations; Lesson 3, Limiting Reactants; and Lesson 4, Percent Yield.

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

- Although a year at a glance or scope and sequence containing a year-long pacing overview for completing the coursework in a school year is not evident, there is ample guidance and flexibility within each chapter and lesson in the Customizable Lesson Options within each Lesson Blueprint. Each lesson provides resources and pacing for a recommended 1-2 day lesson sequence, with a number of additional resources to provide flexibility in teachers scheduling instructional and student needs.
- The materials provide a Pacing Guide that includes the number of minutes and days for each lesson within a chapter. The Pacing Guide states, "As all classrooms and teachers require flexibility, the information above is a general guide (...) Suggested pacing above is based on using the recommended green check-marked items on the respective Lesson Blueprint page in the Teacher Manual."
- Materials include Lesson Blueprints that provide recommended lesson plans with the time allotted for each recommended activity. For example, Lesson 1 in Unit 8 is a 1-2 day lesson plan with 155 minutes of recommended instructional materials, indicated with a green check mark. Flexibility in the Customizable Lesson Options chart provides teachers flexibility when changes in scheduling are needed. Teachers have options to extend or condense lessons to meet local calendar constraints. For example, in Chapter 11, Lesson 4, covering gas law stoichiometry, materials recommend a CER and quick demo for engagement, a design your own mini project for exploration, in-class examples for an explanation, solving problems for elaborate, and an exit ticket/quiz for evaluation.
- The pacing guidelines shown on the blueprint indicate a total of 135 minutes for this content. Teachers have the flexibility to eliminate some items for a shorter lesson or add other items for a longer lesson, such as a biology connection (30 minutes) or a research project (60 minutes). Shorter differentiated or enrichment activities are also embedded in the lesson as well (5-10 minutes). The materials also provide extra chapters at the end of the textbook to supplement with content should the pacing suggestions fall short.

McGraw Hill Texas Chemistry

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.	Yes

Not Scored

The visual design of materials is 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 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 materials include an appropriate amount of white space and a design that supports and does not distract from student learning. For example,
    - “Chapter 2: The Nature of Matter, Lesson 1: Properties of Matter” in the “Interactive Student eBook: Chemistry” includes a figure of salt from the sea and salt from the mine that provides labeled images and text explanations, surrounded by white space that does not distract from student learning.
    - The content is organized in a logical progression. For example, in “Chapter 10: Stoichiometry, Lesson 1: Defining Stoichiometry,” the lesson title is in large dark blue font as "Defining Stoichiometry," followed by a subheading in smaller dark blue font titled "Particles and Mole Relationships," followed by more minor black subheadings for relevant text such as, "Stoichiometry" and "Mole ratios." The white space around the text makes content easy to read and comprehend.
    - The “Interactive Student eBook: Chemistry” utilizes consistent margins, edges, and empty spaces around the content and consistent spacing between sections and paragraphs. The text appears in one consistent font in different sizes, capitalized when necessary, bold in titles and headings, and colored to draw the students’ eye.

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

- The materials provide age-appropriate visuals and graphics that support learning without being visually distracting. For example:

- "Chapter 2: The Nature of Matter, Lesson 2: Changes in Matter" includes an image of condensation on the outside of a pitcher of lemonade and icicles on the eave of a house to demonstrate two of the states of matter. The text references the figure, and the picture is engaging, reinforces the text, and does not distract.
- "ChemLAB: Properties of Ionic Compounds" includes a labeled figure for the appropriate lab equipment setup. The figure shows students how to place a crucible above a flame and allows students to replicate the process quickly.
- In "Chapter 10: Stoichiometry, Lesson 3: Limiting Reactant" of the "Interactive Student eBook: Chemistry," an analogy is used to help students develop the concept of limiting and excess reactants. The image for Figure 5 shows how many of each tool type is available, what a complete set of tools requires, and which tools would be left over after the maximum number of complete tool sets have been put together.

Materials include digital components that are free of technical errors.

- The materials included in the digital components are mostly free of technical errors.
  - The materials are free from grammatical and spelling errors. For example, "Chapter 1: The Central Science, Lesson 3: Uncertainty in Data" includes a Lesson Objective that states, "Students will learn about accuracy and precision and how significant figures reflect the precision of a measurement, further developing their ability to analyze data.
  - The materials are free of inaccurate content materials or information. For example, in "Chapters 10: Stoichiometry", the "Eggs-ploding Stoichiometry" video includes the closed-captioning option and displays the correct captioning for the video.
  - The materials are free of wrong answer sheets to problems. For example, "Chapter 4: Electrons in Atoms, Lesson 1: Light and Quantization Energy" includes an "Activating Prior Knowledge" section that states, "Ask students to recall the characteristics of mechanical waves, including wavelength, frequency, period, speed, and amplitude, from their previous science students." It then includes the answer, "Wavelength is the distance between two crests of a wave. Frequency is number of wavelengths to pass a point per second. Period is the time it takes for one wavelength to pass a point. Speed is the distance a point on a wave travels per unit of time. Amplitude relates to the energy of a wave."

McGraw Hill Texas Chemistry

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 and course-specific 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 and course-specific 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.

- The materials integrate digital technology and tools that support student learning and engagement. For example:
    - The “Interactive Student eBook: Chemistry” includes “Ask Yourself” questions throughout the lessons. For instance, “Chapter 5: The Periodic Table and Periodic Law, Lesson 1: Development of the Modern Periodic Table” includes an “Ask Yourself” prompt that instructs students to "Describe the purpose of the periodic table."
    - The materials embed multimedia digital resources such as interactive eBooks, simulations, and videos. “Chapter 3: Structure of the Atom, Lesson 2: Defining the Atom” includes the digital resource “PheT Simulation: Rutherford's Experiment” that allows students to “explore Rutherford’s Gold Foil experiment.”
    - The materials include an embedded glossary that can be accessed by clicking on the highlighted words within the “Interactive Student eBook: Chemistry.” In “Chapter 8: Chemical Reactions, Lesson 1: Reactions and Equations” students can click on the highlighted phrase “chemical reaction” and view the glossary entry with the definition stating that a chemical reaction is “The process by which the atoms of one or more substances are rearranged to form different substances; occurrence can be indicated by changes in temperature, color, odor, and physical state.”

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Materials integrate digital technology in ways that support student engagement with the science and engineering practices and course-specific content.

- The materials integrate digital technology in ways that support student engagement with the science and engineering practices and course-specific content. For example,
    - Lesson plans include suggestions for using the materials digital resources throughout each lesson. For example, “Chapter 5: The Periodic Table and Periodic Law” includes an Interactive Case Exploration activity titled “Development of the Periodic Table” that includes multiple images with layers which activate when clicked such as hotspots that give more information, highlights of lanthanides, actinedies etc. and questions to be answered by the students as they explore the resource.
    - Materials provide videos for students to explore course-specific content. In “Chapter 6: Ionic Compounds and Metals," a chapter launch video on salt crystals is provided in order to engage students “by previewing concepts” for the chapter. The materials state “Use the video to spark interest in and increase knowledge about the driving questions, "Why are salt crystals shaped like cubes?"."
    - The materials incorporate “Virtual Labs” that support students' engagement with the Science and Engineering Practices. For example “Chapter 16: Acids and Bases, Lesson 4: Neutralization” includes the Virtual Lab "pH Balance--Antacids as Buffers" which requires students to first make a prediction and test distilled water as a negative control. Next, students perform an experiment with five virtual antacids shown in different packaging which include these steps: crush tablets, add distilled water, add phenol red indicator, count the number of drops of hydrochloric acid until the mixture turns yellow, and record data in a virtual table. Next, students select parameters for a graph including variables for the X and Y axis and the graph type. Finally, students complete post-lab questions, determine if their prediction was correct, and save their progress by printing a lab report.

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

- The materials integrate digital technology that provides opportunities for teachers and/or students to collaborate. For example:
    - In “Chapter 4: Electrons in Atoms” the Chapter Planning and Support section allows teachers to assign student groups the “STEM Project: Create a New Astronomical Object." This activity supports collaboration and the use of technology.
    - The materials have digital activities that encourage collaborations such as simulations, virtual labs, and interactive case studies. For Example, “Chapter 3 Structure of the Atom, Lesson 2: Defining the Atom” includes an activity titled, “PhET Simulation: Rutherford's Experiment” that requires students to work collaboratively and use the simulation and collect and analyze data.
    - The materials provide an online platform for teachers to post assignments, videos, interactives, projects and assessments for students, but do not provide digital technology that provides opportunities for teachers and students to collaborate on these assignments and activities. The materials are compatible with "the platforms teachers already use" such as Canvas, Schoology, and Google Classroom.

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

- The digital materials are accessible and compatible with multiple operating systems and devices. For example:
    - The materials are accessible and compatible with Chromebooks, iPads, PCs, Apple computers, and/or smartphones. The materials include a link to the “Digital Technical Support” website that includes a list of minimum requirements for the program.
    - The materials are accessible online through any device with internet access. The minimum requirements list includes the following browsers “Google Chrome 104+, Mozilla Firefox 104+, Apple Safari 15+ *,Microsoft Edge 104+”
    - The materials are downloadable and accessible without access to the internet. The “Teacher User's Guide" indicates that "core content is available offline via the McGraw Hill Read Anywhere app" which allows students to "access their content from anywhere, at any time, on any device."

McGraw Hill Texas Chemistry

Indicator 9.3

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

1	Digital technology and online components are developmentally appropriate for the course 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 course-appropriate and provide support for learning.

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

- The digital technology and online components are developmentally appropriate and aligned with the course scope and approach to science knowledge and skills progression. Materials include a “Chapter Digital Resources” at the beginning of each chapter, providing the teacher with suggestions for developmentally appropriate online resources that can be assigned to students, such as videos and interactives, labs, assignments, and assessments.
    - For example, “Chapter 4: Electrons in Atoms, Lesson 3: Electron Configuration “ includes a digital component titled “Example Problem Video: Writing Electron Dot Structures” that works through a sample problem as a reference for students.
- The materials indicate the TEKS alignment for each lesson. For example, “Chapter 20: Nuclear Chemistry, Lesson 2: Radioactive Decay” teaches TEK 14.A and has an essential question of "What happens to unstable nuclei?." Objectives for this lesson include learning about the factors that determine whether a nucleus is stable or unstable, characteristics of three types of nuclear decay for unstable nuclei, balancing nuclear reactions, and how rates of decay are expressed in terms of half-life. The materials include an online lesson quiz that is aligned with the lesson’s TEKS and learning objectives. For instance, one of the questions in the quiz is an open-ended question that asks, "What type of particle is emitted during the nuclear decay of radioactive carbon-14, forming an atom of nitrogen-14?”

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

- Materials provide teacher guidance for the use of embedded technology to support and enhance student learning. For example, in “Chapter 3: Structure of the Atom, Lesson 1: Early Ideas about the Atom,” the “Interactive Visual Literacy: Conservation of Mass” activity instructs teachers to have students use the interactive component to expand on Figure 3.
- The materials provide teacher guidance for embedding the technology within lessons and assessments. These materials can be found at the beginning of each chapter in the Chapter Digital Resources and Lesson Blueprints. For example, “Chapter 6: Ionic Compounds and Metals” provides a “Lesson 1 Blueprint” that instructs the teacher to assign digital content such as “CER: Ion Formation” during the Elaborate phase of the lesson.
    - The “Chapter Digital Resources” for Chapter 6 indicate which lesson the activities occur in and include videos and interactives, labs, assignments, and assessments. Activities include “Virtual Lab: Kinetic Theory,” “Interactive Visual Literacy: Naming Ionic Compounds,” and “Simulation: Formation of an Ionic Compound,” to name a few.

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

- The materials provide letters to home for each chapter that support student engagement but do not include support for engagement with digital technology and online components. For example, the letter home for Chapter 3: Structure of the Atom describes that the class is "exploring how we can study things that cannot directly be perceived," lists the TEKS covered in the chapter, and invites parents and caregivers to "explore this subject by completing the following family activity" which is attached and suggests that parents "have your student research several types of scanning probe microscopes that are used to study atoms." The attachment further suggests criteria for this home research project but does not make recommendations on websites for student research. Further, the letter does not describe the digital resources that are available in Chapter 3 or provide tips on how to support student engagement at home with these resources.
- Materials for parents and caregivers are not included online to support student engagement with digital technology, such as webinars, frequently asked questions, links to extension projects, or suggested websites for student research. The materials provide information on how to access student digital content such creating and accessing student accounts, viewing student calendars and viewing student grades.