Cengage Learning World of Chemistry Texas Edition

Cengage Learning World of Chemistry Texas Edition 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 %
54.24%	54.24%	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 some variety of TEKS-aligned and developmentally appropriate assessment tools.
- The materials include guidance that explains how to analyze and respond to data from assessment tools.
- The assessments are clear and easy to understand.

Cengage Learning World of Chemistry Texas Edition

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 some 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 some 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 mostly designed to engage and support student learning with the integration of digital technology.
- The digital technology or online components are 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.

Cengage Learning World of Chemistry Texas Edition

Indicator 2.1

Materials are designed to strategically and systematically integrate scientific and engineering practices and course-level content as outlined in the Texas Essential Knowledge and Skills (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 to 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 opportunities for students to practice and demonstrate mastery of appropriate scientific and engineering practices. Materials strategically and systematically develop content knowledge and skills for the course as outlined in the TEKS. Materials include opportunities for students to ask questions and plan laboratory investigations in problem-solving.

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.

- Materials provide multiple opportunities for students to develop appropriate scientific and engineering practices (SEPs) as outlined in the TEKS in every chapter. For example, in the Chapter 1 planning guide, multiple SEPs are listed, such as developing and using models, defining a problem, and designing a solution.
- Materials provide opportunities for students to practice appropriate SEPs. For example, in the lab eBook (EBK), students are engaged with a probing question and asked to plan an investigation, collect data, and analyze the results, which are all part of scientific and engineering practices. In Chapter 2 of the Teacher's eBook, the scientific practice of developing models guides teachers to "have students model the differences between solids, liquids, and gases at the atomic/molecular level." This allows students to explain the differences between the concepts, ask questions, and develop a deeper understanding of the material. Also, in Chapter 11 on page 100 in the EBK: *World of Chemistry, Activities, and Lab Manual*, students are tasked with real-world problems, and they are instructed to predict what will happen, plan an investigation, carry out the investigation, and reflect on what is learned to refute or support their prediction. This allows students to take what they know about the concepts in the unit to a deeper level of knowledge.

- The materials provide opportunities for students to demonstrate mastery of the appropriate SEPs through extension activities and evaluative questions. In the EBK: *World of Chemistry, Activities, and Lab Manual Teacher Edition*, there is a section called, "Develop Evidence-Based Explanations," where students are given questions to evaluate their mastery of chemistry practices. For example, in the lab manual edition, students calculate pH values in the Acid Rain investigation. It helps students to determine the pH values of rainwater and the effect of soil on acidity. Then, they can conclude by calculating pH values and answering the guided question in "Develop Evidence-Based Explanations." In the Custom eBook: Hands-on Activities and Laboratory Manual in the lab "How can airbag inflation be optimized?" students practice and develop SEPs by responding to prompts and questions such as "recording data." This satisfies SEP 1E: "collect quantitative data using the International System of Units."

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 develop students' content knowledge and skills as outlined by the TEKS with repetition and increased complexity. For example, in Chapter 2, students learn about elements and compounds and later use this concept to make chemical reactions in Chapter 7. Another example from Chapter 3 has students learn about measurement, scientific notation, density, and significant figures. The students take the lessons learned from this chapter and apply them to help design a lab in which they have to identify three unknown liquids. In Chapter 10, the flow of energy is covered before measuring energy is introduced, which is an appropriate development of content.
- This is also seen in Chapter 7, where students learn to identify the signs of a chemical reaction, including what a precipitate is and how to balance equations. Then, in Chapter 9, students build on their understanding of chemical reactions and use those chemical reactions to complete stoichiometric calculations.
- In the materials, every chapter has the content scaffolded so that students are introduced to the topic first before progressively diving deeper into the lesson. This is specifically demonstrated by the activities that students participate in. For example, in Chapter 9 of the EBK teacher edition, students are first introduced to the topic of large-scale chemical reactions in the "Engage" segment. Students are then reminded to remember the information in the "Explore/Explain" segment. Students practice or apply what information they have acquired and, finally, at the end of Chapter 9, Lesson 1, are assessed. This continues throughout the rest of the lessons until students put it all together in the final investigation, which uses higher-order thinking.
- Materials include planning guides that show their systematic approach to developing knowledge and skills within scientific concepts with various learning experiences that help teachers track the use and development of skills across the course. Materials also provide core ideas, skills, teaching tips, checkpoints, and short explanations for scientific practices. By giving guidelines, materials show a connection between activities in the same lesson and SEPs. For example, students gain experience in using titration from the Investigation, "Acid Rain" in the EBK: *World of Chemistry, Activities, and Lab Manual*. Materials suggest applying these skills to solve a problem in a real-world case study: "Neutralizing Acid Deposition" in the EBK: *World of Chemistry, Teacher Edition*.

Cengage Learning World of Chemistry Texas Edition

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

- Several activities provide students sufficient opportunities to engage in problem-solving to develop an understanding of science concepts. For example, in the case study, "Green Chemistry," segment in Chapter 10 of the EBK teacher edition, students are presented with a case study and then asked to research three principles of green chemistry that were not discussed in the case study. This is their opportunity to ask questions and research to find the answers.
- Materials include sufficient opportunities for students to plan and conduct classroom investigations. In the EBK: *World of Chemistry, Activities, and Lab Manual*, students are encouraged to plan and then conduct an investigation about isolating components of a mixture. This has students engage in a problem-solving activity to understand the science concepts within that unit of study. For example, in Chapter 3, students work in groups to plan an investigation, including lab equipment they use, data they obtain, and calculations they need to make.
- Additionally, in Chapter 4, on page 120, students have the opportunity to perform the lab, "How Big is An Atom?" to better appreciate how small an atom is. After each chemistry investigation, materials make suggestions for real-world problems. In Lesson 16.3, students learn titration skills using Titration Curves Simulation. After that, they analyze the case study Neutralizing Acid Deposition. On page 100 in the EBK: *World of Chemistry, Activities, and Lab Manual*, students are tasked with real-world problems and instructed to problem-solve by planning an investigation. Teachers are guided by the following: "Ask students to explain how math is the language of science. Lead a class discussion based on their answers. Possible answers include that scientists use math to help explain the universe and investigations or that measurements can be used to quantify phenomena."
- Furthermore, on page 20, regarding the MRE lab in the lab manual, students are asked to design an MRE that meets the specific requirement. Students are then allowed to test the design, collect data, problem-solve, and refine their design multiple times. These are all part of the SEPs meant to help them understand science concepts.

Cengage Learning World of Chemistry Texas Edition

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 Texas Essential Knowledge and Skills (TEKS).	M
2	Materials intentionally leverage students' prior knowledge and experiences related to phenomena and engineering problems.	M
3	Materials clearly outline for the teacher the scientific concepts and goals behind each phenomenon and engineering problem.	M

Meets | Score 4/4

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

Materials embed phenomena and problems across lessons to support students in constructing, building, and developing knowledge through authentic application and performance of scientific and engineering practices 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.

- Materials embed phenomena and problems across lessons in units, chapters, and activities that connect to scientific and engineering practices and course-level content. For example, Chapter 2, "The Explorers at Work," illustrates Katlin Bowman's research on marine mercury and how it can be used as a phenomenon for exploring the rest of the chapter. Teachers can also use the case study article, which shows the global issue of rare earth element resources as an alternative phenomenon for inquiry-based learning. Chapter 2 opens up with a discussion that shows the importance of understanding the properties of matter in fields outside of chemistry. This discussion allows students to develop their understanding of what they know about the concept of matter and connect it to other practices outside the classroom.
- Along with the anchoring phenomena, materials provide case studies in each chapter to support students with phenomenon-based learning. For example, in Chapter 17 of the eBook (EBK): *World of Chemistry Teacher Edition*, students can develop their knowledge of Le Châtelier's principle by exploring the case study, "Carbon Sinks and Disruption of the Carbon Cycle."

- Materials include planning guides that clearly outline the engineering problems and phenomena within the lessons, chapters, and activities, allowing students to develop their knowledge of the content being taught through discussions and investigations. For example, in the Planning Guide from Chapter 6 of the EBK teacher edition, the "Engage" segment talks about the history of pennies and their composition and follows with scientists evaluating how the composition has changed by comparing the average weight of several pennies from two different periods. The students further develop the concept of counting through weight by completing a lab. This concept is further built upon as students learn about a mole and use the experience with the pennies as a foundation.
- The planning guides in the EBK teacher edition explain how each activity or segment of the chapter connects to real-life phenomena. For example, the "Explore" section in Chapter 7 grounds the concept of the importance of understanding chemical reactions in the phenomena of commercial responsibility for creating products that meet consumer standards, such as biodegradable products. Students build on this concept throughout the chapter by learning about the characteristics of different chemical reactions and how to balance chemical reactions (law of conservation of mass). In the material, as seen in Chapter 10 in the EBK teacher edition, students relate burning calories to the thermodynamics content within the unit. This allows students to develop knowledge through real-world applications concerning the course-level content.

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

- Materials accommodate different entry points to learning phenomena or solving problems with differentiated experiences such as demonstrations and hands-on investigations. And discussions. For example, in the explore section of Chapter 2, students use their knowledge of air pollution and air quality to create the criteria and constraints for a campaign to raise awareness of air pollution. This allows students to connect the students' knowledge to scientific and engineering practices (SEPs).
- In the materials, chapters covering difficult concepts begin with recommendations or demonstrations that connect students' experiences to the phenomena. For example, at the beginning of Chapter 7, the EBK teacher edition details a demonstration in which the teacher creates a handheld exothermic reaction. This is similar to what occurs in disposable hand warmers which students can feel and pass around. This practice provides students with the physical experiences they will use later in the chapter to understand thermodynamics, the flow of heat, and how chemical reactions use or store energy. Similarly, Chapter 2 of "Over Matter" begins with an "Explorers at Work" section that connects students' prior knowledge of biology to methylmercury accumulating in an organism's system.
- In one of the EBK: *World of Chemistry* activities and lab manual, it is recommended that a field-trip is arranged to a recycling plant to help leverage the student's knowledge of the content being presented. This recommendation allows students to experience the phenomena differently to connect the content to real-world applications.
- The materials also leverage the student's prior knowledge by providing common pictures and examples that high school students are likely to be familiar with in order to connect with the student's prior knowledge. For example, in Chapter 6 of the EBK teacher edition, students

examine signs of a chemical reaction, specifically exothermic and endothermic reactions. The text uses an image of an instant ice pack to draw on students' prior knowledge for understanding.

- On page 361 of the EBK teacher edition, students evaluate their prior knowledge of what they understand about the Sun as an important energy source and connect it to the content presented in the unit covering energy transformations in chemistry. As well as in Chapter 16 of the EBK: *World of Chemistry Teacher Edition*. An article about coral reef restoration helps students connect previously taught knowledge about coral reefs in biology to the current concepts.

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

- Materials clearly outline for the teacher the scientific concepts and goals behind each phenomenon and engineering problem. Page 17 of the materials highlights goals for all the engineering practices. For example, the margins of Chapter 1, "Exploring the World with Chemistry" has specific guidance about the phenomenon presented about Andrea Marshall who studies manta rays. The guidance says, "This requires an understanding of biochemistry and how ocean chemistry affects marine life." The EBK teacher edition uses exterior boxes in the margins of the page to provide teacher tips or instructions. Additionally, In chapter 10 of the ebook teacher edition, there is an explore/explain guide to help the teacher understand what the students are supposed to do with the phenomena or engineering problem introduced at the beginning of the chapter. Additionally, the Case Study in Chapter 1 offers teacher guidance on the phenomenon presented.
- The materials provide an overview of the student learning goals.. The EBK teacher edition provides a chapter overview of the phenomenon and engineering practices used in each chapter. For example, in Chapter 18 of EBK: *World of Chemistry Teacher Edition*, the real-world issues and phenomena section explain the phenomena to explore oxidation-reduction reactions.
- The lab manual's chemistry investigations provide objectives and pre-lab assignments. For example, in the EBK: *World of Chemistry, Activities, and Lab Manual*, the Chemical Competition lab acknowledges that side reactions are influenced by the relative concentrations of reactants. While the objective section's "Define the Problem" explains that the lab aims to explore the impact on equilibrium conditions in a system, it fails to specify a goal of the specific techniques and skills students will acquire. Additionally, the pre-lab assignment offers guided questions related to the equilibrium of a solution.

Cengage Learning World of Chemistry Texas Edition

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 include chapter overview sections designed to connect students' knowledge and skills within and across the units. The Chapter Overview, located at the beginning of each chapter, provides teachers with the intended order and objectives of each section within the chapter. For example, the Chapter 4 overview of the EBK: World of Chemistry, Teacher Edition, provides teacher guidance that states, "Students are introduced to the periodic table as the conventional arrangement of elements into groups, and models of atomic structure that include numbers of subatomic particles are used to explain differences in the chemical behavior of different elements. This discussion extends to the formation of ions, where an ionic charge is related to an element's position in the periodic table. The basics of atomic structure and periodicity build the foundation for understanding modern atomic theory in Chapter 11. Chapter 4 also expands on the concept of compounds, initially addressed in Chapter 2, by discussing Dalton's atomic theory that gives rise to the expression of compounds as specific formulas." In unit 11 of the EBK: World of Chemistry, Teacher Edition, the overview describes how students build their knowledge of atoms and energy within the unit and connect their knowledge to their previously known knowledge of what atoms are introduced earlier in the text. Students first begin by looking at the atomic structure and proceed to learn about electromagnetic radiation and how atoms emit light.

- Additionally, Chapter 6 begins with students exploring and understanding the concept of counting objects using the calculated average mass of a sample from their larger group of objects. Students build on this concept throughout the chapter, moving from counting using average mass to calculating average atomic mass (aam), using the aam to calculate the number of moles of a compound, then finding the percent compositions using aam, and finally, using the percent composition to find the formula for a compound. Students move on to chapter 7, which continues to use the concept of a mole and aam to make stoichiometric calculations. Stoichiometry is then built upon and used in thermochemistry, acids and bases, and gas laws. However, the scope and sequence do not reflect these connections throughout the resources.
- Another example that clearly illustrates how the material builds and connects their knowledge and skills within and across units is in Chapter 16. The chapter begins by introducing the idea of acids and bases by introducing Arrhenius and Brønsted–Lowry models in section 1. Subsequently, with a firm understanding of the properties of acids and bases, learning progresses to the pH and pOH scale in section 2. Following this, materials provide students with activities to enhance learning about titration and buffer systems, where students understand the effects of mixing acids and bases to identify the concentration of hydrogen and hydroxide ions in unknown acids or bases. In addition, the "Think Critically" section indicates that the reaction between an acid and a base to form water molecules can reduce the impact of ocean acidification. Students can revisit this theory in a future chapter, specifically for Chapter 17. The materials also show the connection of the current knowledge to the coral reefs in biology.

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

- The materials include a progression of concrete knowledge, then representations, before moving on to abstract reasoning when presenting concepts to provide opportunities for students to build on prior knowledge and understanding to achieve a deeper conceptual understanding. For example, in chapter 4, the materials have the teacher bring in samples of elements for students to identify and describe the function of. Then, the materials have students draw representations of atoms in a formula. Finally, students will perform an investigation called How Big is an Atom? The progression of the unit begins with concrete examples of elements where students can visualize their physical form, to representative where students develop models and formulas of the atom, to the abstract, where students understand the size of the individual atom of the element they brought into class.
- The materials are intentionally sequenced in a way that allows for a progression to aid in developing a deep conceptual understanding of course content. For example, Chapter 6 begins with students learning about using the average mass of an object to count how many objects there are in a large group. In the Explore section of 6.1, "students use the concept of counting macroscopic objects by weighing them as a model for the relationship between the mass of a sample of an element and the number of atoms it contains."Once students master calculating average mass, they dive deeper and are asked to calculate average atomic mass. Students are then asked to expand on that concept and calculate the number of moles of compounds based on mass and vice versa. After calculating moles, students are asked to expand and learn how to calculate percent composition using atomic mass. From the percent composition, students will then determine the molecular formula. At the end of the chapter, the student has taken the concept of average mass and built upon it to develop two other concepts. In later chapters, students take their understanding of average atomic mass and molar conversion and use them to complete stoichiometry calculations. Chemistry naturally has an order to it, escalating from

simple to complex. The materials follow this order, allowing students to build on and meld together different topics throughout the year. Another example, in section 11.2-The Hydrogen Atom of the EBK: World of Chemistry, Teacher Edition, students begin by pulling knowledge about the previous unit of electromagnetic radiation on electrons and then increasingly deepen their understanding to explain how the electron's position is represented in the wave model.

- Furthermore, The EBK teacher edition offers a comprehensive planning guide for each chapter, ensuring a well-structured instructional sequence to support conceptual understanding. The materials follow the 5E model, which promotes deeper conceptual understanding among students. For instance, for the planning guide of chapter 16 of the teacher edition ebook, teachers initiate the lesson with the engaging Sulfur Mining phenomenon. Subsequently, students explore the concepts further through the National Geographic Explorers at Work: Coral Reef Restoration with Alma Paola Rodríguez-Troncoso. Teachers provide clear explanations of the main concepts related to acids and bases. Following this, students apply their conceptual understanding in a case study titled "Neutralizing Acid Deposition." Lastly, students can evaluate their knowledge and skills through the Acid Rain Investigation, consolidating their learning.

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

- The materials provide teachers with a comprehensive and accurate chapter overview that includes all unit core concepts and science and engineering practices. Each science and engineering practice has specific core concepts and skills for students to develop their scientific understanding that is both accurate and clear. For instance, there is a comprehensive list of all TEKs for science concepts and science and engineering practices used in Chapter 18, which focuses on Oxidation-Reduction Reactions and Electrochemistry. The materials provide detailed information and learning objectives for each lesson within the chapter. Furthermore, for specific topics like Oxidation State, the materials provide teachers with core ideas and skills, teaching tips, and scientific practices for differentiated instruction to cater to diverse learners' needs. Moreover, all chapters have overviews that support the implementation of clear and accurate teaching of core concepts and science and engineering practices.
- The planning guide in front of each lesson provides teachers with a roadmap of what activities to complete in an order that is clear and accurately presents course concepts and science and engineering practices. Within each chapter of the EBK Teacher's Edition, the materials provide teachers with connections to real-world mathematical applications and student-driven hands-on practice. For example, in Chapter 6, students learn about average mass, which will later be used in molar calculations, stoichiometric calculations, and other topics. To illustrate the concept of counting by weighing using average mass, the students complete a jelly bean activity that gives them hands-on experience using the average mass principle to count jelly beans.
- The materials include teacher guidance within each activity in a way that supports clear and accurate instruction of course-level core concepts and science and engineering practices (SEPs). For example, in chapter 5 of the Engage, teachers ask students what elements form calcium carbonate. Students can then relate this to the chapter opener and what chemical compounds are found in limestone. In the Explore section, students then apply Chemistry in Your World to Hard and Soft ions to describe how water softeners exchange sodium ions for calcium and magnesium ions. Next, students move into how to construct binary compounds containing metals and nonmetals and how to name them. Students finally create models to visualize compounds containing polyatomic ions, which support the SEPs for developing and using models. This all accurately reflects the core concepts and SEPs for atomic structure for

chemistry. Additionally, in section 10.3, Energy and Chemical Reactions of the EBK: World of Chemistry, Teacher Edition, the course content is accurately presented according to the standards. Students first learn about thermochemistry and enthalpy, then move into Hess's Law, which accurately presents the chemistry content.

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

- Mastery requirements of the materials are within the boundaries of the course's main concepts as described by the learning targets for each chapter within the Chapter Overview. For instance, in the EBK teacher edition ebook, the materials provide a chapter overview that lists all standards to be introduced within each chapter that is within the boundaries of the course's main concepts. For example, the “Texas Essential Knowledge and Skills” section of the chapter overview states that the 19.1 Radioactivity subchapter covers TEKS 1D, 2C, 3A, 4B, 4C, 14A, and 14C.
- Also, in the Planning Guide for each chapter, the Explore/Explain section outlines the objectives for each subchapter. For example, in Chapter 19, under Explore/Explain, the following objectives are listed: “Define the types of radioactive decay. Represent radioactive decay using nuclear equations. Explain how one element may be changed to another by particle bombardment. Describe radiation detection instruments. Explain the concept of half-life and how it relates to radioactivity.” This defines the main concepts for this subchapter and what is required for mastery. Another example of this is in chapter 3, lesson 3.1, where the objectives are listed in the planning guide as “identify how very large or very small numbers can be expressed in scientific notation, express scientific measurements using the SI system, use the metric system to measure length, volume, and mass.”
- The mastery requirements of the assessments in the materials are within the boundaries of the main concepts listed within the course and the unit. For example, in the EBK: World of Chemistry, Teacher Edition section 10.3 about Thermochemistry, the assessment for Chapter 10.3 has appropriate questions aligned to the content goals for that section. For example, the first three questions on the assessment are as follows: “What sign should the enthalpy for an exothermic reaction have? Why? If the temperature of the solution …how would you determine the energy produced by the reaction? and " What is Hess’s law, and why is it useful?” The remaining questions have students calculate enthalpy for a series of chemical reactions. This aligns with the objectives of “Analyze the heat (enthalpy) of chemical reactions and define Hess’s law” from the planning guide.

Cengage Learning World of Chemistry Texas Edition

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.	PM
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 Texas Essential Knowledge and Skills (TEKS).	M
3	Materials explain the intent and purpose of the instructional design of the program.	M

Partial Meets| Score 3/6

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

Materials partialy 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 instructional design of the program.

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.

- The materials provide some guidance for teachers to identify prerequisite knowledge required for each chapter. Although the beginning of each chapter does review some content from previous courses, it is not clearly stated in a way that would be obvious for teachers new to the course. For example, in Chapter 11 of the ebook (EBK): World of Chemistry, Teacher Edition, the chapter begins by reminding students of the definitions of potential and kinetic energy as well as the relationship of KE to temperature; however, it does not specifically state that students have seen this information before in previous courses.
- Some sections of the EBK: World of Chemistry, Teacher edition explain some connections between new learning and previous learning within the course; however, materials do not provide specific guidance to assist in understanding the vertical alignment of course-appropriate knowledge and skills within the activities of the unit. For instance, in the EBK teacher edition ebook, in the Connect to Mathematics section of Lesson 19.3 (i.e., in Chapter 19), students recall their prior knowledge about the structure of atoms from Chapter 4 and oxidation-reduction reactions from Chapter 18 to describe the atomic-level processes involved in a fission reaction of U-235. However, there is no outline for teachers of the specific mathematical skills students

must achieve by the end of the unit or how to apply and reuse those mathematical skills in future units.

- Teachers are supported in understanding materials through teaching tip boxes and meeting individual needs. For example, in Chapter 6 of the EBK Teacher's edition, students explain the concept of average mass and how counting can be done by weighing. The teachers are provided with a teaching tips box that asks probing questions to students to get them to relate the activity with candy to calculating the average atomic mass of compounds in chemistry. A meeting individual need box suggests teachers encourage students to use the Taking Notes resource to help them take effective notes from their readings and class lectures. However, they do not provide specific guidance on the vertical alignment of standards. Another example in Chapter 4 states, "Some symbol pairs, such as Au/Ag, Na/S, K/P, and Mg/Mn, are less clearly connected to the English names for their elements or can easily be confused for others."

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 grade-level misconceptions to support teachers' subject knowledge and recognition of barriers to student conceptual development. In EBK Teacher's Edition, Chapter 14- Liquids and Solids, in the margins under Teacher Tips, misconceptions are clearly labeled for the teacher with the following statements: "Ask students what they think is inside the bubbles formed when water boils. Students often think they are bubbles of air. Instead of telling them the answer, guide them to discover it themselves by asking questions similar to these: What makes the water boil? (adding energy to it) What does this energy do to the water particles when the water reaches boiling? (causes them to change to a vapor) What happens to the vapor if it forms inside the liquid? (forms bubbles) " This helps the teacher guide the students in chemistry through these common misconceptions.
- Another example, in Chapter 6 of the EBK Teacher's Edition, within the teacher tips, there are comments in the margin indicating that students may struggle with the concept of a mole and confuse the mole with mass and that teachers can avoid this pitfall by giving students practice problems in which students are calculating the molar mass when given the number of moles and the mass of the sample. Additionally, teachers are advised to instruct students not to round atomic masses because rounding early in the mathematical process can result in rounding errors when completing longer stoichiometric calculations. In Chapter 11, the Teaching Tip explains that students may have referred to light at other times of their education as only the visible portion of the electromagnetic spectrum and that in this chapter, they are referring to the entire electromagnetic spectrum with the term light.
- A final example, teachers can refer to the planning guide of Chapter 16 in the online resources and the EBK teacher edition ebook to discover that the background information for lesson unit 16.1, which covers the Properties of Acids and Bases, is the Lewis Theory. Furthermore, the EBK teacher edition ebook the materials highlight misconceptions regarding coding for protein synthesis for Section 21.2 about biochemistry.

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

- The materials explain the intent and purpose of the program's instructional design. For example, " A Word From the Author" states that the curriculum is "designed to put students at the center of the learning process" (pg T7, EBK Teacher's Edition). The materials state, "Students must

construct for themselves with the help of the teacher, the textbook, laboratory exploration, and other provided materials." On pages T7-T9, the program's philosophy emphasizes active learning, problem-solving and exploration, assessment and program support, and integrating technology into student learning.

- The planning guide for each chapter includes instructional strategies to support teachers in their instruction. For instance, in the online resources' Chapter 17 planner of the EBK teacher edition ebook, teachers can access a list of activities organized into three categories: In-text Features, Support all Learners, and Teaching Resources. By referring to this guide, teachers can identify specific activities with their corresponding purpose. For example, they can determine that "Modeling the pH Scale" is a group activity. This information assists teachers in effectively planning and implementing instructional strategies for diverse learners.

Cengage Learning World of Chemistry Texas Edition

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.

- Materials consistently support students' meaningful sensemaking through reading, writing, thinking, and acting as scientists and engineers through various learning experiences throughout the lessons. For example, in Chapter 2, Section 2.3, Teaching Tip, students begin by observing different types of familiar mixtures teachers make available, such as dry cake mixes and other packaged foods. They then read the text about the differences between mixtures and pure substances. Under the Misconceptions box in this section, teachers help students distinguish the definition of "mixing," combining two or more different substances to help students distinguish a mixture from a compound. This approach helps students with their sensemaking in this unit. Students move on to act like a scientist and perform a mysterious mixing lab where they continue their sense-making by drawing molecular models to explain their observations and write a prediction of results if they experimented with different conditions.

- Additionally, in Chapter 5, students start with an engaging segment introducing the concept by relating it to natural phenomena. Then, students have another instance where they can read about "Chemistry in Your World" in two different articles; think using the "Infer" prompt "What if all compounds had only common names? What problems might arise?." Students also have the opportunity for sensemaking in collaborative group learning, laboratory experiments, and case studies.
- Furthermore, in Chapter 10, Section 10.1, after learning about kinetic and potential energy, students are asked to stop and act like a scientist by observing a teacher's demonstration using various colors of lightsticks and hydrogen peroxide; they are prompted to observe and ask questions. From there, they are prompted to think like scientists by describing what they saw and determining whether heat was a product.
- Materials incorporate scientific investigations and engineering design projects in each chapter, promoting collaborative problem-solving among students. As an illustration, in Chapter 17 of the EBK teacher edition ebook, the materials include an article in the Explore Engineering section titled "Manufacturing Sulfuric Acid Using Shifts in Equilibrium." Students read the article and write the equilibrium expressions for the heterogeneous reactions described, aiming to determine the factors influencing the direction of product favor in each process step. Teachers provide guided questions to focus on the main reaction in the contact process. By the end of this activity, students develop an understanding of the economic implications and global trade related to the element sulfur, thereby connecting their learning to real-world applications.

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

- The opportunities for students to engage with scientific texts include activities, such as vocabulary, to help them develop an understanding of concepts. For example, in Chapter 2, in the student edition ebook, in Section 2.1, key terms are on the right side of the page. These terms are bolded in the text as students read the definition within the scientific text. Students also have opportunities to pre-read with graphic organizers. For example, in Chapter 2, Section 2.2, in the teacher's edition ebook in the English Language Learners box, there is a Pre-Reading with Graphic Organizers suggestion. It states, "Before students read the text in Lesson 2.2, have them make a chart with four boxes labeled "Physical Properties," "Chemical Properties," "Physical Changes," and "Chemical Changes." Have students look for information to complete each part of the graphic organizer as they read." This strategy benefits all learners.
- At the beginning of each chapter, an explore segment allows students to engage with a course-level appropriate scientific text. This segment examines chemistry in the real world and gives students the background information and context they will build on throughout the chapter to develop an understanding of concepts. For example, Chapter 5 contains three different scientific texts for students to read and connect their knowledge: an article about limestone and how understanding nomenclature helps scientists understand what substances they are dealing with, an article about air pollution and how ions can be used to help remove pollution from the air, and an article about semiconductors, naming them and their uses.
- Additionally, in Chapter 10, Section 10.1, students can read about exothermic and endothermic processes in the chapter text, accompanied by a graphic that supports the text through the use of models to delineate between the two reaction types. There is a section in the Sidebar labeled Teaching Tips where the book guides teachers to have students label the provided real-world scenarios (Your hand gets cold when you touch the ice.) as endothermic or exothermic. This helps students use the evidence from the text they read to apply their understanding to various

scenarios. Also, there is an assessment labeled 10.1 Assessment with questions for students to demonstrate what they learned in the text, which is written and visual (Question #4).

- The materials allow students to actively engage with scientific texts through pre-laboratory activities, evidence gathering, and data analysis during lab investigations. For instance, in Chapter 16 of the EBK lab ebook, students have a pre-laboratory task to read the entire acid rain lab procedure to plan their investigation. Students then follow the three parts of the lab procedure to collect data for the titration of different types of rainwater samples using NaOH. Upon completing the titration, students analyze their results using guided questions in the lab ebook. This practice effectively enhances students' understanding of the neutralization reaction and the process of titration.

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 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 in the form of laboratory experiments. For example, in Chapter 2, Section 2.3 of the student's edition ebook in the Mysterious Mixing lab, students will draw molecular-level pictures that explain their observations. Students will develop Evidence-Based Explanations, "Is the mixing of food coloring and water a chemical or physical change?" Students will predict how to experiment to make the food coloring mix more quickly with the water, explain what they did, and explain the experiment's results.
- The materials provide multiple opportunities for students to engage in various written modes of communication through case studies. For example, in the case study from Chapter 5, students are asked to read through an article about semiconductors and focus on the naming. Students are to identify the pattern used for naming semiconductors from the names presented in the article and communicate their observations through writing.
- The materials offer students a range of opportunities to engage in both written and graphic modes of communication. In the EBK teacher edition ebook, Chapter 10, Section 10.1, there is text with more content about endothermic and exothermic reactions, and there is also a picture and a graph to support that text. On the same page, there is an assessment labeled 10.1 Assessment with questions for students to demonstrate what they learned in the text, requiring written and graphic responses.
- In Chapter 16, Section 16.1, a box titled Recurring Themes describes the common patterns observed in acid-base reactions, specifically as conjugate acid-base pairs. Students view an illustration of an acid-base reaction, which aids in learning how to predict the conjugate acid and conjugate base with the given reactants. Students are asked to write a short report about two industrially important acids in the box connecting to Language Arts. Students must include each acid's chemical formula, properties, production process, and usage in their report. This activity encourages students to conduct research, engage in written communication, and develop a deeper understanding of the acids' significance in various industries.

Cengage Learning World of Chemistry Texas Edition

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.

- 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. For example, in Chapter 2 of the student edition ebook, Separation Challenge, students act like a scientist to design a procedure to separate a mixture of sawdust, iron filings, sand, and salt into its components and recover each separately. In this activity, the students must take what they learned in the chapter about the scientific concepts of matter and physical and chemical properties and use productive struggle because there are no lab procedures to act like a scientist to solve the problem.
- The materials engage students in making sense of the concepts through productive struggle by having them analyze what improvements can be made to their engineering designs after completing a trial. For example, in the lab "What is the best design for a Meal Ready to Eat" found in the online lab manual, students are asked to "draw a diagram of [the] team's final MRE design, clearly labeling each part" and then "provide an explanation of why [the] design is optimal." At this point, students have already made tweaks to their design to improve it, which is all part of the SEPs and is used to help the student gain a deeper understanding of the content.
- At the start of each chapter, students engage with phenomena to spark their engagement and exploration. They then work towards developing a deep understanding of the concepts presented to apply their knowledge in a case study at the end of the chapter, where they actively design solutions. For example, in Chapter 10, on page 359, students take their learning of the content about Hess's Law and apply it to the phenomena of Hot Plants in the section labeled Chemistry in Your World. This will help students make sense of the concepts while engaging in a real-world phenomenon. At the beginning of Chapter 16 is a phenomenon of Sulfur Mining. This phenomenon is continued in the engage section of Chapter 17. In Section 16.1, students research solutions for a case study titled "Neutralizing Acid Deposition." In this case study, students can utilize their prior experience with titration from the previous acid rain investigation. This experience equips them with knowledge on neutralizing soil acidity using calcium carbonate, which can be applied in the liming process presented in the case study. By engaging in this process, students reinforce their understanding of the concepts and gain practical experience designing solutions to real-world challenges.

Cengage Learning World of Chemistry Texas Edition

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 verbal arguments that justify explanations to phenomena and/or 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.

- Materials prompt students to use evidence to support their hypotheses and claims through various projects and investigations throughout the materials. For example, in the EBK: World of Chemistry, Activities, and Lab Manual, in the Chapter 4 investigation, students will conduct a lab on electric solutions. Students gather evidence while conducting this lab to support their conclusions on the following question and draw a model. The question states, "What do your observations tell you about the contents of each cup? Draw molecular level diagrams for each cup to explain your results." Students use their models to explain what happens when you add water to the solutions that originally caused the bulb to light. Finally, students answer, "How could you tell if a compound consists of ions if it does not dissolve in water?" These support students to use evidence in this lab to support their claims.
- Also, in the EBK: World of Chemistry, Activities, and Lab Manual, in the Large Scale Hands-On Project, in the project titled "What are the best materials for building temporary housing?" students are first prompted to predict and draw what type of structural component would be best in building a temporary shelter. From there, they will build and test their temporary shelter

designs. At the end of the investigation, students are prompted to use evidence to critique their original design from what data they collected during the experiment.

- Moreover, at the end of Chapter 4, students complete an investigation of solutions in which they will make observations about the conductivity of solutions, classify substances as electrolytes or nonelectrolytes and make particulate drawings of solutions. At the end of this investigation, students are asked to develop evidence-based explanations in answering the question, "How could you tell if a compound consists of ions if it does not dissolve in water?"
- Additionally, each chapter contains an exploration section incorporating articles like "Explorers at Work" from National Geographic with critical thinking and evaluation segments. These segments prompt students to utilize evidence to support their claims concerning the issues presented in the articles. For instance, in the EBK teacher edition ebook for Chapter 19, there is an article titled "Improving Nuclear Power" featuring National Geographic Explorer Leslie Dewan. The Thinking Critically section guides students in formulating their claims regarding the controversies surrounding nuclear power. These claims may include arguments such as nuclear power being a viable and safe alternative to fossil fuels and a potential large-scale solution with new technology. Conversely, students may argue that safety concerns render nuclear power unsuitable for use at any scale. To support their arguments, students conduct research and provide evidence from areas such as nuclear reactor functionality, nuclear safety, or waste disposal technology.

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

- Materials include embedded opportunities to develop and utilize scientific vocabulary in context through chapter reading and activities within the text. For example, Chapter 2 begins with key vocabulary under Key Terms. In the text, the key terms are bolded for the students as they read the text. In this section and chapter, some checkpoints have students use the key terms through various tasks. For example, "Why are hydrogen molecules called "elements," but water molecules are called "compounds"? Also, in the assessment in this section, students can utilize scientific vocabulary in context. In Section 2.2, there are practice problems where students have opportunities to utilize scientific vocabulary in context. For example, "Classify each of the following as a chemical change, a physical change, or a combination of the two." Also, in Chapter 18, Section 18.1 - Electron Transfer Reactions, the materials introduce the new terms "oxidation" and "reaction." On the same page, materials include a video depicting the reaction of sodium and chlorine gas, demonstrating how sodium is oxidized and chlorine is reduced to form sodium chloride. After that, the materials provide Checkpoint questions for students to utilize the new vocabulary of oxidation and reduction to explain the reaction shown in the video. The materials then provide additional practice problems (18.1), focusing on applying the context of oxidation and reduction to identify the element that undergoes oxidation and the element that undergoes reduction.
- The materials provide teacher support to guide students in acquiring new vocabulary through the core ideas and skills heading in the margins of the Teacher's edition list the different terms that students will need to be able to explain. These terms are then covered again in the lesson assessments, classroom reviews, and study guides. For example, in Chapter 4, the "Core Ideas and Skills" list one of the objectives as "Explain the terms isotope, atomic number, and mass number." Also, the lesson assessment asks students to use vocabulary by comparing and contrasting the different subatomic particles.
- Furthermore, in the Teacher Edition EBK, Chapter 11, Section 11.3- Atomic Orbitals, there is a beginning section called Explore/Explain that informs teachers upfront about the vocabulary

terms that students will slowly become familiar with, and it explains the process in which that will happen throughout the unit. “In this section, students will explore different types of atomic orbitals and their shapes. They learn how the principal energy levels of an atom are divided into sublevels and that each sublevel contains a specific number of orbitals. Students describe how the Pauli Exclusion Principle limits the number of electrons in each orbital.”

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

- Materials integrate argumentation and discourse to support students’ content knowledge and skills development as appropriate for the concept and course. For example, in the EBK teacher edition ebook, in Chapter 2, Section 2.1, students will choose an element they have heard to be toxic to humans. Students may choose mercury, lead, or arsenic. They will research the element and write an evaluation of this claim. Another example in Chapter 2, Section 2.3, has students examine claims about everyday filtration devices, such as drinking water and fish tank filters. Companies may, for example, claim to “remove 99% of impurities” or “make water 99.9% percent pure.” Students will investigate several of these claims and discuss what these claims mean at the molecular level. Both activities allow students to construct arguments to support these concepts of matter.
- Additionally, in Chapter 20, Section 20.3, materials provide a Connection to Language Arts Section about focusing on key ideas and details to construct arguments. Materials prompt students to research the United States government’s current stance on ethanol as an energy source and write a persuasive argument supporting or rejecting the conclusion. The students need to apply their knowledge about ethanol, as provided on the same page, and locate sources of information to support their argumentation.
- Furthermore, students conduct investigations to develop arguments to justify their experimental approach during inquiry labs. In the EBK: World of Chemistry, Activities, and Lab Manual, students complete the lab investigation “How can airbag inflation be optimized?” which asks students to evaluate which ratio of citric acid to baking soda would be optimal for airbag inflation. Students must first determine which ratio leads to optimum inflation via stoichiometric calculations. Students then form an argument or explanation for why their choice is optimal based on the data they have collected. After they have settled on their design, students are asked to explain what they would do to their design to improve its performance, if they would change materials, and what the tradeoffs of making these changes would be.
- Additionally, students engage in discourse to share their learning during investigations. For example, in the Lab Manual, in the Large-Scale Hands-On Project - Can Acidification of Aquatic Environments Be Reversed? students are to compare and contrast data from their investigation with other student groups. From there, they select the evidence and data that best supports their claim from their discourse with other groups.

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

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

encompass instruction on constructing and presenting verbal and written arguments, aligning them with the specific concepts and objectives covered in the course through real-world issues that serve as contexts for students to develop their arguments and engage in debates. These opportunities aim to equip students with the necessary skills for argumentation. For example, in the EBK teacher edition ebook, in Chapter 2, the Separation challenge, students communicate how the physical properties of a substance are key to the successful separation of the challenge and how the techniques they used were based on these properties. The students cite specific examples of the property from the procedure they used and the separation they achieved. This is an example of students constructing a developmentally appropriate written argument that justifies explanations for a solution to a problem.

- Additionally, Chapter 4 contains an investigation, " Electric Solutions," in which students, at the end of the investigation, develop evidence-based explanations to answer the following question: "How could you tell if a compound consists of ions if it does not dissolve in water?" The student version specifically calls for students to base their responses on evidence collected in the investigation. Additionally, the teacher's version of the investigation recommends under the "something extra" segment teachers have the students summarize their results and present them to the class.
- Furthermore, in Chapter 19, Section 19.3, the materials provide information about the chain reaction of fission and prompt students to research a scientific aspect of the history of nuclear fission. Students then utilize their findings to write an informative text. Materials provide guided questions to assist students in formulating their written arguments, such as "What experimental evidence showed that nuclear fission reactions can occur?" and "What political and ethical issues did scientists face in their efforts to produce and study nuclear chain reactions." The materials then initiate a debate on a real-world issue, such as the use of nuclear power. The materials provide context, accompanied by figures 19-14 and 19-15, which illustrate the functioning of a nuclear reactor. Furthermore, materials provide information regarding the enrichment of Uranium ore for use in nuclear power plants. Subsequently, on the following page, the materials offer information on future energy sources and nuclear accidents. Students utilize the provided information and conduct additional research on various aspects, including reactor designs, safety concerns, nuclear waste management, and economic considerations. Armed with the evidence gathered, students debate the authorization of a nuclear power plant in their community.
- Materials in the EBK: World of Chemistry, Activities, and Lab Manual also provide many opportunities for students to construct and present developmentally appropriate written and/or verbal arguments that justify explaining phenomena and solutions to problems using evidence acquired from learning experiences. For example, in the Chapter 1 Investigation, students are working with the phenomena of a candle burning and then the flame being dampened when the candle is covered. There is a post-laboratory discussion in which students are to verbally respond to this phenomenon using evidence from experiencing the phenomena in class. A further learning opportunity is presented below this discussion suggestion, where students can design an experiment and discuss their results using the data they collect.

Cengage Learning World of Chemistry Texas Edition

Indicator 5.2

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

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

Meets | Score 4/4

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

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

Evidence includes but is not limited to:

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

- Materials provide teacher guidance on anticipating student responses and the use of questioning to deepen student thinking. In the Teaching Tips section of the sidebar in each chapter, materials offer teacher guidance for questioning strategies and suggestions for possible student responses, allowing educators to build upon students' thinking. For example, in Chapter 2, Section 2.1, materials provide teacher guidance: "Draw students' attention to Table 2-1, which show models of common atom combinations that form compounds. Ask them what the model for each compound tells them about the compound. Tell students that ammonia is another compound and that ammonia consists of molecules made from one nitrogen atom and three hydrogen atoms packed together. Give students the formula 'NH3' and ask them to use what they have learned about molecules of other compounds to draw a model showing what one ammonia molecule might look like." This teacher's questioning guidance helps deepen student thinking of compounds and atoms.
- Additionally, in Chapter 11, Modern Atomic Theory, Lesson 11.1, Atoms, and Energy, there is a section called Teaching Tips that informs the teacher to anticipate students being familiar with various forms of electromagnetic radiation and that this section reviews the concepts of these waves but also introduces the new of idea of the dual nature of light.

- Moreover, in Chapter 16.1, in the Teacher Tips sidebar, the materials guide teachers to ask students for examples of everyday acids and bases they encounter. This approach helps students connect their prior knowledge to how acids and bases interact. In Chapter 16.1, the materials acknowledge that students are likely aware that strong acids can cause skin corrosion. Additionally, the materials mention that students may have limited experience with the concept of an equilibrium constant. Therefore, when teachers discuss Kw (the ion product constant of water) as a constant, students may reason that "Pure water contains 1.0 × 10−7M H+ and 1.0 × 10−7M OH−." By providing specific examples and addressing potential student misconceptions or questions, materials prompt teachers to encourage active student engagement and address common student queries, fostering a deeper understanding of the subject matter. The materials offer valuable support to teachers to enhance student thinking through effective questioning techniques. In the Differentiated Instruction: Leveled Support section of Chapter 16.1, materials provide specific guidance to prompt advanced learners with a task that deepens their understanding of amphoteric ions. In this section, teachers ask advanced learners to write chemical equations where the HPO_4^{2-} ion can act as an acid and a base. This task challenges students to apply their knowledge and explore the behavior of amphoteric ions in chemical reactions.
- Materials also provide teacher guidance on anticipating student responses and the use of questioning to deepen student thinking in the various articles provided in the text. For example, in Chapter 5, students begin by reading the article "Cleaning the Air with Ions," which connects the previous learning about atomic structure and ionic and covalent bonds to the current topic of nomenclature. While reading the article, students are asked to "find evidence that ionic compounds can be used to remove unwanted substances from water" and to "give examples of design criteria and constraints engineers would need to consider." In the sidebar, a section called "Analyzing Chemistry" tells teachers where students might find an answer to their prompt. In this same sidebar, teachers are told that students "should recognize that a chemical analysis of the water would be needed to determine what the predominant contaminants are," as well as other hints that help the teacher anticipate student responses. The teacher can use the guidance in this sidebar to ask guiding questions that lead students to a deeper understanding of how ionic bonding principles relate to real life. For example, the guidance" Students should recognize that a chemical analysis of water would be needed to determine the predominant contaminants" would be or "What types of contaminants could be in the water? These open-ended questions encourage deeper thinking into the problem and, therefore, a better understanding of the content.

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

- Materials include teacher guidance on scaffolding and supporting students' development and using scientific vocabulary in context. Through the sidebar, materials offer teacher tips for misconceptions and scaffolding for developing the student's scientific vocabulary. For example, in Chapter 2, Section 2.3, under misconception, the text states, "Because of the colloquial definition of 'mixing' as combining two or more different substances, students may think that because compounds consist of two or more types of atoms, they are a type of mixture. To help students distinguish between these forms of matter, have them use models or diagrams to demonstrate the molecular-level differences between a compound, a mixture of atoms, and a mixture of compounds."

- Additionally, Chapter 4 provides students with a chemistry foundation regarding atomic structure, elements, compounds, ions, and subatomic particles. In lesson 4.1, while students are discussing different elements, there is a teaching tip in the sidebar of the online Teachers' Edition. This tip provides teachers with guidance in scaffolding the understanding of the different uses of the word element. The guidance is as follows: "Advise students to look at the context of the word element. Ask them to identify whether the microscopic, macroscopic, or general form is used in the following examples." Furthermore, in the text, there is a graphic organizer that depicts the three possible definitions of elements along with written descriptions. By first having the teacher draw attention to a key point (the context of the vocabulary), then providing students with the different possible definitions based on context, and finally having students practice examining the context of examples of this vocabulary, teachers can ensure that students will firmly grasp and be able to use this vocabulary word appropriately. This is important, as many other vocabulary words in chemistry are defined using the term element, and students will need a clear grasp of the term to clearly and accurately communicate with their peers.
- Materials include teacher guidance on scaffolding and supporting students' development and use of scientific vocabulary in context through frontloading vocabulary and review at the end of the Chapter. For example, in Chapter 10-Energy, Lesson 10.1-Energy, Temperature, and Heat, the key terms and core ideas are listed at the beginning of the section. Through the section, students are slowly guided from a basic understanding to a deeper understanding through scaffolded activities and using the vocabulary. For example, the definition of energy is listed at the beginning of the section. Then, in the Teaching Tip, teachers are given guidance on taking the definition deeper by giving practical examples of energy students will already know in everyday life. Then, the term energy is dissected further into kinetic and potential energy with definitions. Then, a demonstration the teacher will do with a textbook setting on the edge of the desk where they place the textbook on the edge of the desk and ask students about the potential versus kinetic energy of the book.
- Moreover, the review for each chapter includes essential scientific vocabulary, including key terms and key ideas relevant to the specific sections of the chapter. For instance, Section 17.1 focuses on reaction rates and equilibrium, and Section 17.2 emphasizes equilibrium characteristics. In addition to the chapter review, the materials offer leveled classroom worksheets that scaffold vocabulary development through guided questions. These worksheets provide differentiated support to meet the diverse needs of students. They present basic questions that assist students in understanding and internalizing the vocabulary within the context of the topics discussed. For example, students explain the collision model for chemical reactions and identify what actually "collides" in this context. They may also define the concept of reaching a state of chemical equilibrium. By incorporating these resources and leveled worksheets, the materials effectively support teachers in guiding students toward a deeper understanding of scientific vocabulary.

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

- Materials provide teacher guidance on preparing for student discourse and supporting students in using evidence to construct written and verbal claims. In the sidebars of the chapters, teachers are provided with tips and guidance for the various readings and activities. For example, in Chapter 4, the teacher's guidance on constructing written explanations states, "As students progress through the rest of this chapter, they should be able to develop an

explanation from the chemical standpoint for why the lanthanide and actinide series are set apart. Initially, they should note that similarities in chemical properties arrange the table, so the elements in each of these series likely have properties in common with each other. They might also recognize that both series fall in the transition metals group, where elements can form cations of various charges."

- Additionally, in Chapter 5, Section 1, students explore naming different compounds. The section begins with students looking at a "before" photo (solid copper and a glass of clear liquid) and an "after" photo- a glass beaker with dark orange and brown liquid and orange gas. The students use these visuals to observe whether or not a reaction has occurred. Then, students are tasked with writing the names of all compounds and elements involved. In the "Scientific Practices: Constructing Explanations" sidebar at the bottom of the page, teachers are told to ask the students to describe the properties of the reactants. The teacher then verbally provides the names of the products while the students record the names, formulas, and properties and determine if they are ionic. Teachers are instructed to ask students how analyzing this reaction could help them predict the outcome of other reactions, one with similar ionic compounds and one with covalent compounds. The materials then provide the teachers with exemplary answers to facilitate how students should use their observations within their responses as evidence for their claims; in this particular answer, students should note that since their example reaction was between ionic compounds, another reaction between ionic compounds may have some similarities, but a reaction with covalent compound likely would not. By providing the leading questions and exemplar responses, the materials guide teachers to facilitate students constructing responses based on evidence.
- For example, in Chapter 11- Modern Atomic Theory, Section 11.2- The Hydrogen Atom, the Teaching Tips section has guidance for teachers in prompting students to make claims on how Bohr's model resolved issues that Rutherford's model had created using evidence from their learning. "Have students look back at Rutherford's nuclear model of an atom in Section 1 and compare it with Bohr's model. Explain that one of the primary flaws in Rutherford's model is that according to classical electrodynamics, objects that accelerate in a curved path, such as electrons, should emit electromagnetic radiation. This would mean electrons would constantly lose energy, causing them to quickly spiral into the nucleus. Have students describe how Bohr's model resolved this issue. Students should explain that in Bohr's model, electrons are constrained to specific orbits and can move to another orbit only by absorbing or emitting specific amounts of energy."
- Moreover, in Chapter 19.3, the materials guide teachers to support students in a debate regarding the authorization of a nuclear power plant in their community using the evidence they gather. The materials provide teachers with context, accompanied by figures 19-14 and 19-15, which illustrate the functioning of a nuclear reactor, providing students with a better understanding of the topic. Additionally, the materials cover information about the enrichment of Uranium ore for use in nuclear power plants, insights into future energy sources, and nuclear accidents. This information serves as a foundation for students' research and debate. Teachers guide students to conduct additional research on various aspects such as nuclear power, including reactor designs, safety concerns, nuclear waste management, and economic considerations. By exploring these topics, students can gather evidence to support their claims. In the Connect to Language Arts section of Chapter 19.3, students research the scientific history of nuclear fission and use their findings to write an informative text. Materials provide teachers with guided questions to support students in utilizing evidence for their written claims, such as, "How was the model of the nucleus refined through the experiment in the early 20th century?" This question prompts students to examine historical experiments and the resulting scientific

advancements. By incorporating these guided questions and research activities, the materials enable students to develop their critical thinking skills, research proficiency, and ability to construct well-supported claims.

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. Again, in the sidebars of each chapter, teacher guidance is provided in the various information boxes. For example, in Chapter 5, Section 5.2- the Connection to Language Arts box provides teacher guidance stating, "As students read this section, have them make a table to show any patterns that they notice about naming acids. Once the table is complete, ask students to go back and mark the always true or sometimes true patterns. As a class, discuss the scenarios for when a pattern is only sometimes true."
- Additionally, Section 6.1 is about counting using average mass, which progresses toward calculating the average atomic mass and using it to calculate percent composition and molar conversion. At the beginning of this section, teachers are provided support in the Teaching Tip box and the Meeting Individual Needs box, both in the sidebar. The teaching tips tell teachers to ask students to relate the example of counting jelly beans via average mass to chemistry and then to reason through what the jelly beans represent and what is being represented by the fact that we are using the average mass and not the mass of a single jelly bean which varies. The teacher can use these questions to guide the students in sharing their thinking during the class discussion. Additionally, the "meeting individual needs" text emphasizes that there is a lot of conceptual and mathematical information in this chapter and that students benefit by using the "Taking Notes" resource to help them focus on key points and important information. Furthermore, the teacher's guidance suggests continuing to help students in the following activity, in which students work in small groups to predict the number of pieces of candy in a package based on weight.
- Furthermore, in Chapter 11- Modern Atomic Theory, Section 11.2-The Hydrogen Atom, there is guidance for teachers in one of the Teaching Tips boxes that has teachers facilitate a whole group activity to share the learning of the terms orbit and orbital. It guides teachers to have them discuss their thoughts and discuss any disagreements. "To help students differentiate an orbit and an orbital, draw a large, empty Venn diagram on the board. In one circle, write Orbit, and in the other, write *orbital*. Where the circles overlap, write Both. As a class activity, have students name properties that fit in each section. Encourage students to discuss any disagreements. Sample properties: Both are three-dimensional and characterize the locations electrons may occupy in the nucleus. Orbits describe fixed paths. Orbitals describe probabilities of locations and have various shapes."
- Moreover, each chapter includes an Explore Engineering section for students to share their thoughts and propose solutions. For instance, in Chapter 20 of the EBK teacher edition ebook, materials present an Explore Engineering article focusing on the design of biocompatible prosthetics. Students explore various materials used in modern prosthetics, such as human teeth, ivory, lead, and gold, discussing their advantages and disadvantages as body parts. This information raises important real-world issues related to cost, professional fitting, routine maintenance, and limited access to medical prostheses due to poverty and resource constraints. Teachers can guide students to select a familiar implant or prosthesis. Then, students can create a list of criteria and constraints similar to those mentioned in the article but specific to their chosen implant, prosthesis, or body part. Teachers can refer to the guidance provided to help

students evaluate the polymers listed in Table 20-10 for clues and evidence to support their analysis. Finally, students present the evidence they gather from their research to support their analysis and proposed solutions. This activity promotes critical thinking, problem-solving skills, and the ability to communicate findings effectively. By including the Explore Engineering section and providing clear instructions and guidance for teachers, the materials enable students to share their knowledge in real-world scenarios, fostering creativity, collaboration, and figuring out solutions.

Cengage Learning World of Chemistry Texas Edition

Indicator 6.1

Materials include a variety of Texas Essential Knowledge and Skills (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.	PM
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

Partial Meets | Score 1/2

The materials partially 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 to assess student learning in a variety of formats. Materials assess all student expectations over the breadth of the course but do not necessarily indicate which student expectations are being assessed in each assessment. 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.

- The materials offer a variety of diagnostic assessments for teachers to assess students' prior learning before starting new chapters. For example, in unit 2, Section 2.1, the diagnostic assessments include pre-reading questions. One of the pre-reading questions is, "How do atoms differ from molecules?" In another example, Chapter 16 includes the pre-reading questions "What does the term 'base' mean?" or "What is your understanding of the pH scale?" These pre-reading questions enable teachers to assess students' prior knowledge.
- The materials also offer a variety of formative assessments to assess student learning throughout the chapters before a formal summative assessment is given. For example, in unit 2, Section 2.1, the formative checkpoint assessment is "Why are hydrogen molecules called 'elements' but water molecules are called 'compounds'?" Additionally, in Chapter 4, Section 2, a pop-out box labeled "Evaluate" has students evaluate what might have happened in different situations about the different atomic models by asking questions such as "What if Dalton had been correct? What would Rutherford have expected from his experiments with gold foil." Also, in Chapter 11.1 - Atoms and Energy, one of the questions teachers can use for assessment says, "Describe the relationship between frequency and wavelength." Another assessment opportunity is where students use graph paper to demonstrate waves after conducting a hands-

on activity. Furthermore, multiple times, students could be assessed either formally or informally. Three pages into the chapter, a checkpoint seems to be an informal assessment for teachers and students to check their understanding of the content read so far. It says, “Describe the relationship between frequency and wavelength.” A couple more pages show a more formal assessment. At the end of the activity, students are asked to “Explain their answers from steps 2 and 3” to analyze what they learned in the activity. At the end of section 11.1, there is a summative formal assessment with seven questions that students will be given over the entirety of the section.

- The materials also contain a summative assessment at the end of each chapter. For example, in Chapter 2 of the Assessment ebook, the teacher has two options: Assessment A or B, which evaluates all content within the chapter. These summative assessments contain a variety of question styles, including matching, multiple-choice, and free-response questions.

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

- While the students assess all student expectations over the breadth of the course, the assessments do not indicate specifically which objectives are being assessed by each question. For example:
    - Each chapter has a TEKS-aligned scope and sequence that lists the TEKS assessed in each chapter. For example, Chapter 2 lists the TEKS as 1.B; 1.E; 3.A, D; 3.B; 11.B, and 1.E; 1.G; 3.A. However, the assessments in the Assessment Ebook do not indicate which standards are assessed for each assessment.
    - Another example is in Section 4.1, which covers TEKS 2B and 4B. The assessment states: "Analyze: the graph below shows the mass percentages of the six most abundant elements in the human body. Use the graph to answer the following questions, a) what is the fourth most abundant element by mass in the human body? B) which element is about twice as abundant by mass as hydrogen, c) what percentage of the human body is not made up of carbon, oxygen, or hydrogen." The materials are not specific about which of the two TEKS are being assessed by this question.
    - Again, in Chapter 16, Section 1, the materials cover TEKs 2. C, 3. A, 12. B, 12. C, and 12.D, indicated by the TEKs aligned scope and sequence. However, the materials lack clear indications of the TEKs standards within the chapter tests from the online resources. Materials do not provide the TEKS correlation for each assessment item and the answer keys in the Teacher Assessment ebook. As a result, it becomes challenging to identify precisely which student expectations are being assessed and measured for mastery of the concepts and skills taught throughout the materials.

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

- Materials include various activities within the Lab Ebook that can be used as assessments integrating scientific concepts and science and engineering practices. For example, in the Large Scale Hands-on Projects section, the lab "What is the Best Meal Ready to Eat?" can be a formal formative or summative lab that integrates scientific and engineering practices and science concepts. This lab assessment covers multiple TEKs and SEPs, including 1A, 1B, 1G, 2C, 2D,1-A, 13B, 13C, and 13D. "When students engage in this project, they investigate a phenomenon to see what energy changes happen during the breaking and formation of chemical bonds; design a preliminary sketch of the MRE after understanding the criteria and constraints of a problem

posed by the CEO of an MRE manufacturing company; evaluate the merits of each individual design and combine solutions to come up with the best group design; conduct experiments and take data to test the MRE; optimize the MRE design; and write a scientific report individually."

- Additionally, materials include assessments integrating scientific concepts and science and engineering practices within the EBK teacher edition ebook. The assessment from Chapter 5.2 asks students to conclude by answering the following question: “When writing a formula from a chemical name, how can you tell how many of each element or polyatomic ion to put in the formula?" To answer this question, students must understand the principles of writing formulas for ionic compounds, but additionally, students must "communicate explanations and solutions individually in a variety of formats," which is directly related to SEPs 3B. Using the phrase "How can you tell" asks the student to provide an explanation based on their knowledge, which comes from understanding the accepted scientific principles of bonding (balancing charges for ionic bonds). This directly relates to SEPS 3.A.
- Moreover, the materials include case studies in each chapter that allow students to integrate scientific concepts and science and engineering practices into real-world problems. For example, in Chapter 20, students find solutions for a case study addressing the plastic problem. In this activity, students integrate their scientific knowledge of organic chemistry and the law of conservation of mass. They prepare an informative text that effectively utilizes organization and style appropriate to its purpose and audience. Students must construct persuasive arguments supported by selective and authoritative sources. Their explanations should demonstrate how the suggested improvement will benefit the community. This activity assesses students' understanding of the concepts and enhances their critical thinking and communication skills.

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

- The materials allow students to apply knowledge learned in class to novel contexts through various labs provided in the Lab Ebook. For example, the large-scale hands-on projects in Part I of the lab manual put students in the role of engineers to solve a problem using scientific and engineering principles in real-life scenarios. For example, the first hands-on project works off of the driving question, "What is the best design for a Meal, Ready to Eat?." In this hands-on project, students use scientific and Engineering principles to apply their knowledge of chemical reactions to design, troubleshoot, and redesign the best Meal, ready to eat that they can. Throughout the process, students collect data, use that data to support their claims, and discuss the failures and successes of their design to improve it.
- Additionally, the lab "Can acidification of aquatic environments be reversed?" can be used for a summative assessment for students to apply their knowledge of acid-base systems and equilibrium to a novel context in the form of ocean systems and acidification. "When students engage in this project, they research the properties of acids and bases and apply these principles to perform a titration assay on local water. They also explain the behavior of equilibrium systems and use the explanations to model the deterioration of calcium carbonate structures in acidic solutions. The students evaluate solutions to environmental acidification, use evidence to explain them in terms of shifts in equilibrium, and communicate information by defending their findings persuasively using scientific reasoning.
- The materials also include assessments within the chapter that require students to apply knowledge and skills to novel contexts through questions at the end of each subchapter and through case studies and readings. For example, in Chapter 11.2 - The Hydrogen Atom, the end of section assessment question 1 has students apply their learning to emission spectrums. The question instructs students to "Infer: In figure 11-16, there are four different colored lines. You

already know that hydrogen only has one electron. How can we get four lines from one electron?"

- Moreover, teachers can use the sulfur mining phenomenon in Chapter 16 to assess students' further exploration of sulfuric acid production in Chapter 17. In the EBK (eBook) teacher edition, Chapter 16 provides a case study titled "Neutralizing Acid Deposition," where students research solutions using their prior concepts. This case study builds upon their knowledge and skills with titration from a previous investigation on acid rain. These assessments provide valuable opportunities for students to demonstrate their knowledge in authentic contexts, fostering deeper understanding and application of the concepts covered.

Cengage Learning World of Chemistry Texas Edition

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 some 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 some teacher guidance on how to leverage different activities to respond to student data.

Evidence includes but is not limited to:

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

- Materials include information and/or resources that guide evaluating student responses in various ways by using answer keys for all assessments within the materials. The materials provide a check for understanding questions and teacher guidance to support the teacher in evaluating student responses. For example, in Chapter 4, Section 4.2, the checkpoint question is "How does Dalton's model explain the law of constant composition?" The teacher's guidance reads, "If a compound always contains the same relative numbers of atoms, it will always contain the same proportions by mass of the various elements."
- Additionally, the materials provide chapter assessments that contain scoring guides to support the teacher in evaluating student responses. For example, Question 4 of the Chapter 6 assessment asks students to calculate the percentage of the overall molar mass of the compound represented by positive ions. The materials provide an exemplar answer with the key points that students should address. In this case, the key provides the correct percentage and the identity of the positive ion to assist teachers in providing appropriate feedback to meet the needs of each student.
- Furthermore, there are pre-reading questions before each chapter, and in the teacher edition, there are answers that can help teachers evaluate student understanding. In Chapter 11, Section 11.1, a pre-reading question asks, "What particles make up an atom?" In the teacher edition,

information is given for teachers to evaluate student responses that say, "Protons and neutrons are in the nucleus of an atom. Electrons are outside the nucleus of an atom."

- Moreover, the materials offer differentiated instruction boxes with various activities to meet the learning needs of individual students. Answer keys accompany each activity, which assists teachers in identifying specific components to consider when evaluating student responses. In the EBK (eBook) teacher edition, specifically in Chapter 17.2, materials include a Connect to Mathematics box that guides evaluating student responses. This box indicates common mistakes in student responses, such as inverting the ratio when writing equilibrium expressions with reactants in the numerator and products in the denominator. The materials also include questions with corresponding answer keys in Example 17.1 for teachers to assess students' skills in writing equilibrium expressions.

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.

- Materials include assessment tool add-ons such as MindTap that yield data teachers can easily analyze and interpret. The materials allow teachers to sort the grade book by "overall grades," according to the "Help Menu" for "Gradebook Display Settings" on the "Cengage Mind Tap Instructor Help" website. The materials provide "View Analytics" in the "Help Menu-Grades and Scores," where teachers can "view scatter plot charts correlating your students' performance with engagement, time spent" or "activities opened." The materials state that these "can both indicate overall class performance and help you identify students whose performance is significantly above or below the average..."
- The materials provide guidance for teachers to respond to individual students' needs, in all areas of science, based on measures of student progress appropriate for the developmental level. The materials provide checkpoint assessments that support the teacher in understanding the level of comprehension of chapter content. The materials further support the teacher by providing guidance within the "Differentiated Instruction" sidebars to support students' needs. For example, in Chapter 2, Section 2.2, the checkpoint question has students answer the formative assessment question, "Why are changes of state [for example, liquid water changing to steam] not considered chemical changes?" The materials provide teacher guidance based on students' responses. The guidance reads, "Advanced Learners: Tell students that baking involves both physical and chemical changes. Have them list the steps they would take to follow a recipe and categorize each step as a physical or chemical change. Have students research to confirm whether they are correct about each step. Finally, have students make a poster to show what they learned and present it to the class."
- Additionally, in Chapter 5: Nomenclature Section 5.2, there is a checkpoint assessment in which students are asked, "How is naming compounds that include polyatomic ions similar to naming binary ionic compounds? How is it different?." The materials then suggest, "Advanced learners can complete an extension project called "Investigating Polyatomic Ions" while struggling learners get a quick reteach, through an activity that utilizes a flow chart made from index cards for naming." Furthermore, in the teacher ebook, Chapter 20 includes a "Meeting Individual Needs" section within the Evaluate section. This section facilitates differentiated instruction by providing Review Worksheets with questions at basic, standard, and challenge levels, enabling teachers to cater to students' understanding and skill development. In Chapter 21.2, the Meeting Individual Needs section offers inclusion strategies to help students effectively retain information about DNA strands. Although the materials provide the teacher with guidance on

supporting students' individual needs through the "Differentiated Instruction" and "Meeting Individual Needs" side bars.

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

- Through checkpoints throughout the chapter, teachers can analyze student responses to check for understanding and then utilize the various sidebar boxes to plan instruction, intervention, and extension. For example, in unit 3, lesson 3.3, the checkpoint formative assessment question states, "Why must a conversion factor come from an equivalence statement? How can you decide which conversion factor to choose in a problem?" Afterward, the teacher analyzes the students' answers to this formative assessment question. The teacher can then use the teacher guidance in the Differentiated Instruction Box to plan instruction, intervention, and extension. For example, the materials for unit 3, Section 3.3, have teacher guidance: "Differentiated Instruction: Advanced Learners - Have students write a program in an available application to perform conversions. The program should allow the user to input an initial value and unit as well as the desired unit, and the program should show the result and all conversion steps. Struggling Students - Encourage students to set up a table like the one shown to perform dimensional analysis. Point out that vertical lines represent multiplication and horizontal lines represent division."
- Teachers can analyze student calculations and utilize the Connect to Mathematics box in the sidebar to evaluate student responses. This box highlights students' common mistakes, such as inverting the ratio when writing equilibrium expressions with reactants in the numerator and products in the denominator. It helps teachers identify areas where students may need additional support. Additionally, the materials provide interventions for those mistakes. For example, in Chapter 17- Equilibrium, Section 17.2, the Connect to Mathematics sidebar has teachers divide the class into small groups and provide each group with chemical equations and their corresponding equilibrium expressions. These equations intentionally contain common mistakes. Students work collaboratively to identify the errors and write the correct versions of the equilibrium expressions. These various boxes in the sidebar enable teachers to assess student responses, target specific areas of improvement, and differentiate instruction to meet the diverse needs of their students.

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

- Through the sidebars, the materials provide various resources and teacher guidance for leveraging different activities to respond to student data. For example, in Chapter 4, the materials provide various resources for the teacher to leverage different activities. In Section 4.1, in the Thinking Critically section, there is teacher guidance for differentiated instruction for advanced and struggling students. The materials state, "Advanced Learners- Have students explain nuclear symbol notation and define the relationship between the variables A, Z, and the number of neutrons in an isotope. Ask which variable will differ in a sample of a mixture of isotopes of the same element. Struggling Students- If students have difficulty explaining the natural variation in isotopic composition, refer them to Example 4.2 and remind them that elements are usually found in nature as a mixture of isotopes. The ratio of isotopes varies based on the source of the sample."

- Additionally, a teachers' guide is available, assisting educators in evaluating student responses and providing valuable support. For instance, in Chapter 16, the online resources include a guide for the labs in the chapter, with answers for the lab reports. This comprehensive guide covers pre-lab questions, analysis, conclusions, and data tables, aiding teachers in assessing and evaluating student work. Furthermore, the materials include teacher guidance for responding to performance data within the Analysis and Conclusions section. For example, in the Acids, Bases, and Buffers Teachers Guide, the handouts provide sample data for all three parts of the lab reports, including the pH of the buffer mixture.
- Furthermore, the teacher guide offers insights into interpreting the performance data, such as noting the differences between graphs, stating that "the start of the second graph is much flatter. The first one starts lower but climbs more steeply. The steep rise comes earlier in the first graph, too." These insights and information help teachers effectively support the development of students' science knowledge and skills based on the data collected. By analyzing the lab reports and reviewing the data, teachers can identify specific areas where students may have made mistakes or require additional support. They can then utilize the leverage activities provided in the materials to address those areas of improvement.

Cengage Learning World of Chemistry Texas Edition

Indicator 6.3

Assessments are clear and easy to understand.

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

Meets | Score 2/2

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

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

Evidence includes but is not limited to:

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

- Assessments contain items that are scientifically accurate and free from errors.
    - For example, in the Assessment Ebook Assessment A for Chapter 4, Question 2 B states, “Write the formula for each of the following substances, listing the elements in the order given. B) a molecule of two boron and six hydrogen atoms.” This item is scientifically accurate, avoids bias, and is error-free.
    - Additionally, in Chapter 10 - Energy, Section 10.1 assessment question 3 asks students to “Explain why energy is a state function, but heat and work are not,” which is an accurate question that avoids bias and is free from errors, as seen in the answer key for teachers which states “Potential energy depends on the position or composition of the system. Kinetic energy depends on the motion of the object.”
- Materials provide checkpoints with accurate scientific information in course content and concepts and eliminate bias by providing all students with a similar foundation through demonstrations. For example, in Chapter 16, Section 1, there is a demonstration of strong and weak acids using a conductivity apparatus with various solutions of strong and weak acids. Materials provide a checkpoint with accurate information on strong and weak acids. A strong acid is an acid that dissociates completely. A weak acid dissociates to a small degree. If we dilute a strong acid solution, the acid still dissociates completely and is still strong. That information provides students with accurate knowledge to understand the theory behind the demonstration, and they can complete an informal assessment described in an Engineering practice box. This assessment requires students to optimize the solution to the lead storage

battery in consideration of cost, safety, reliability, and impacts on local communities and the environment.
- Assessments contain items that avoid bias through the use of various question types. For example, the Chapter 5 end-of-chapter test contains different item types such as matching, multiple choice, fill in the blank, and short answer, providing students with more opportunities that align with differing assessment styles and language abilities in students.

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

- The materials utilize clear pictures and graphics that are developmentally appropriate within formative and summative assessments.
    - For example, in the Assessment ebook, Assessment B, Chapter 3, question 3 asks, “Why can the length of the pin shown below not be recorded as 2.850 cm?” and shows a picture of a nail with a ruler measuring in cm and then a zoomed in picture of the end of the nail with a red dotted line at the very end of the nail where it ends on the ruler so the student can read the measurement.
    - Additionally, in the Section 5.1 assessment, question number 5 provides students with a flowchart for naming compounds and asks students to use the diagram to name six different compounds. The image is relatively small, clear, and easy to follow.
    - Furthermore, in the Chapter 10 assessment review, in question 3, there is a clear picture of a man holding a ball at the top of a hill labeled “A” and one at the bottom for when the ball rolls down the hill labeled “B.” This graphic is developmentally appropriate for students learning about potential and kinetic energy in Chapter 10.
    - Furthermore, in Chapter 18, Section 3 of the EBK student edition ebook, materials prompt students to answer the question in the checkpoint: “Why is it important to avoid a spark near a car battery when you are jump-starting it?” For this question, the materials provide a clear picture (Figure 18-23) illustrating water electrolysis. This visual representation highlights the production of oxygen gas at the anode (on the left) and hydrogen gas at the cathode (on the right) using the battery.

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

- The materials provide teachers with guidance to ensure consistent and accurate administration of assessment tools. In the preface of the teacher edition, in the section labeled Assessment and Program Support, the materials discuss the chapter review questions, the chapter tests, and the question bank accompanying the text. It also discusses the various toolkits in the sidebar of the teacher edition that provide teachers with tools to support varying levels of performance.
    - One toolkit is the English Language Learners box. For example, in Chapter 2, Section 2.1, the English Language Learners box guides the teacher for beginning, intermediate, and advanced/advanced high. The teacher guidance for the assessment states, “Beginning- Have students identify the following Figures 2-3 and 2-4: water, water molecule, dry ice, carbon dioxide molecule, carbon, hydrogen, oxygen. Intermediate- Have students describe Figures 2-3 and 2-4 in as much detail as they can, based on what they heard read aloud. Advanced/Advanced High- Have students compare and contrast the substances and molecules in Figures 2-3 and 2-4. Encourage them to explain their reasoning and build on one another’s ideas. This guidance ensures consistent and accurate administration of this assessment for students who are English Language Learners in chemistry.

    - Another toolkit provided is labeled Differentiated Instruction. For example, in Chapter 5, Section 2, students come across a checkpoint asking, “How is naming compounds that include polyatomic ions similar to naming binary ionic compounds? How is it different." For this checkpoint, teachers are provided with an exemplar answer to ensure that students are on track, but they are also provided leveled support in the form of a box called differentiated instructions. For advanced learners, teachers will assign a project using online resources to research polyatomic ions, whereas, for struggling students, students will complete a type of card sort for compounds identifying when they are a binary compound, if polyatomic ions are present, or if polyatomic ions are not present.
- Additionally, in the online platform, teachers can access the necessary support by navigating to the Support button located in the main menu on the left side. Clicking on this button directs teachers to a dedicated site that provides various options for instructor support. On this site, teachers can explore the embedded links for a paid addition to the program, which leads to the Teacher Navigation video. This video offers a detailed walkthrough of the features and navigation available in the Teacher Edition. It includes step-by-step instructions on how teachers can preview and assign content, including assessments, to their students. Additionally, online materials provide one assessment for each section and two summative assessments per chapter. To understand how these assessments align with the correlated TEKs (Texas Essential Knowledge and Skills) standards, teachers can access the description by clicking on the Standards button at the top right side of the site. Therefore, teachers can use the “MindTap Teacher Navigation” consistently as guidance to ensure accurate administration of assessments for students’ knowledge and skills following the specified standards.

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

- Materials include guidance to offer accommodations for students taking formal assessments. When students take a formal assessment, within a section on the right side of the page, there is an accessibility option where students can change the background and foreground colors of the activity. They can also change the font size and zoom in or out of the page. There is guidance built into these accessibility features for students to use. For example, for Zoom, the materials state, "Zoom in and out using the following keyboard shortcuts: Zoom in- To zoom in, press Ctrl +. The browser will zoom in incrementally once you press the plus (+) key.
- The materials provide accommodations for assessment tools to ensure that students of all abilities can effectively demonstrate mastery of the learning goals. Each section of the unit allows students to take one assessment, and there is clear guidance on utilizing the assessment tools to showcase their knowledge and skills. When students begin an online assessment, they can access the assessment tools on the right side of the website interface. Students can click the accessibility icon, showing various options to customize their experience. In the Color Scheme tab, students can modify the background and foreground colors, accompanied by explanations for each choice.
- Additionally, students can find guidance on how to zoom in and out using keyboard shortcuts. For instance, students can press Ctrl + "+" (plus) key to zoom in. This function incrementally increases the zoom level within the browser each time students press the plus key. Students can also access a calculator in this area and the ability to flag and save a question or jot down some notes.

Cengage Learning World of Chemistry Texas Edition

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 scaffolds to support the learning of scientific concepts for students who have not yet achieved mastery within the "Differentiated Learning" section. For example, in the teacher's edition ebook Chapter 4, section 4.2 in the Differentiated Learning section, there are notes for the teacher stating, "Students who need extra help reading chemical symbols should read the Meeting Individual Needs resource 'Reading Chemical Symbols.'" Another example is in Chapter 4, section 4.4; the Differentiated Learning section states, "Help students organize the information in this section by having them create a two-column table with the column headings METALS and NONMETALS. As students read this section, they should complete the table with traits specific to metals and nonmetals." These examples support targeted instruction for students who have not achieved mastery yet in this chapter.
- The materials provide differentiated activities and assignments for students on targeted areas that have not yet been mastered. For example, at the end of Chapter 6 in the EBK: Teacher's edition, on page 222, there are tips in the margin under the Evaluate heading. These tips remind teachers that there are worksheets for learners at the basic, standard, and challenge levels and that the Chapter 6 summary includes additional reading questions for an extension.
- Also, in Chapter 10, Section 10.4, after students have read about the effects of carbon dioxide on the climate in the student text, there is a checkpoint built in for the teacher to assess learning to ensure students are meeting mastery. The same page also has a box labeled English Language Learners; though this is labeled for ELL students, it can be used for all students, from beginners who have not mastered the content to advanced who are ready to apply their learning further, by providing sentence stems to help students frame their thinking.

- The materials offer valuable checkpoints to assess student understanding after introducing new science concepts. For instance, in Chapter 17.2, the materials include an active learning section that describes collaborative work in team learning worksheets. Immediately following this, the materials provide teaching tips and a checkpoint focusing on the equilibrium constant. These checkpoints serve as valuable opportunities for teachers to gauge students' comprehension and mastery of the newly introduced concepts. By incorporating collaborative activities such as team learning worksheets, students can collaborate with their peers to deepen their understanding of the material. The teaching tips provided alongside the checkpoint further support teachers in guiding students in learning new concepts. These tips may include suggestions for effective instruction, common misconceptions to address, or strategies to reinforce core concepts. By incorporating these checkpoints and accompanying teaching tips, the materials ensure that students consolidate their understanding of the science concepts, allowing teachers to assess student progress and provide additional support where needed.

Materials provide enrichment activities for all levels of learners.

- Materials include enrichment activities for all levels of learners. For example, in Chapter 4 of the case study, "Earth's Helium Resources," the materials ask students to Continue Your Exploration as it states, "Research how the helium deposit in Tanzania was discovered. What conditions are needed for a helium reserve to develop?" providing an opportunity for students to extend their learning. In Chapter 10, Section 10.4, in the box labeled Differentiated Instruction, students who are advanced learners are tasked to explore the topic of energy more deeply in an enriching way. In contrast, struggling learners are referred to the text for additional support. Also, in Chapter 18, section 18.3, materials provide illustrations and information about a salt bridge in an oxidation-reduction reaction. The Differentiated Instruction section at the bottom of the page offers additional guided questions for advanced learners and struggling learners that allow students to delve deeper into the topics, explore advanced concepts, and apply their learning. The materials designed for advanced learners prompt students to explain the ability of ions to enter and exit a salt bridge while electrons cannot. For struggling students, the materials include a task that asks them to explain why electrons flow from the reducing agent to the oxidizing agent in an electrochemical battery. In their explanations, students are encouraged to utilize the definitions of these agents as provided in section 18.1. This exercise aims to help students apply their acquired knowledge to real-world applications, specifically in the context of electrochemical batteries.
- In addition, all chapters typically have an engage, explore, and case study section within the chapter, providing enrichment opportunities for all students. For example, in the online platform, in the Chapter 7 case study, students read about the chemical reactions in neurotransmitters, providing context about how the human nervous system sends stimuli, extending learning outside of chemistry.

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

- Materials provide scaffolds and guidance for just-in-time learning acceleration for all students through the “Differentiated Instruction” sidebars beside the section’s learning experiences. These boxes can be used to push students ahead or deeper into the content or to scaffold learning for struggling students. For example, in Chapter 4, Section 4.2, the differentiation instruction tip box provides the teacher with leveled support. For the advanced learners, the teacher is instructed to give students the formulas for compounds that contain multiple

polyatomic ions and have them determine the number of atoms in each compound. For struggling students, on the other hand, the materials advise the students to read, meeting individual needs resource- reading chemical symbols. Furthermore, in Chapter 10, Section 10.4, in the box labeled Differentiated Instruction, students who are struggling are directed to study figures showing examples of differences in entropy between states of matter, while students who are mastering the content are tasked to do their research on the second law of thermodynamics.

- The materials offer comprehensive support and resources for advanced and struggling students to accelerate their learning. Each lesson provides opportunities to delve deeper into the core concepts and make connections to different content areas, which can be found within the planning guides. For instance, in the planning guide of Chapter 17 of the online resources, teachers can utilize embedded links to access additional resources. These links lead to chapter reviews, summaries, assessments, and investigations, guiding accelerated instruction to support their understanding of the content. This breadth of resources ensures that students can access the necessary materials to challenge and deepen their learning.
- Additionally, the planning guide includes print resources for team learning worksheets for lessons 17.1, 17.2, and 17.3, and the planning guide offers a Chapter 17 PowerPoint. Slide 3 of the PowerPoint presentation illustrates the collision model involving Br, N, and O atoms, highlighting how chemical reactions occur and result in Br2 molecules and NO molecules forming. Moving on to slide 5, the PowerPoint presents an energy diagram featuring the activation energy, aiming to assist students in their study of reaction kinetics and comprehend the specific conditions under which reactions can occur more effectively. The learning worksheet includes guided questions that prompt students to explain various concepts, such as the dynamic state of equilibrium on the microscopic scale and its appearance as a static state on the macroscopic scale. These questions encourage students to delve into the underlying principles and understand the relationship between the two perspectives.

Cengage Learning World of Chemistry Texas Edition

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 a variety of 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 consistently 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.

- Materials include a variety of developmentally appropriate instructional approaches to engage students in the mastery of the content. These practices include demonstrations, investigations for data collection, videos for visualization of science concepts, and collaborative learning opportunities. For example, in Chapter 4 of the online Teacher's edition, there is a demonstration in which students are exposed to real-life samples of elements, practice problems that familiarize students with the different elements, a carbon modeling tool that aids students in understanding what an allotrope is, animations that detail the molecular structure of an ionic compound, and a lab activity that ties it all together by having students test compounds to see if they are ionic. These activities are meant to engage students in mastering the content by different learning styles. The demonstrations and lab activities target students who learn visually, while the labs and the models target students who learn better kinesthetically.
- Another example, in Chapter 5, instructional approaches include real-world connections, connections to careers, team learning, interactive games, PowerPoint presentations, and mnemonics to engage students in the mastery of content. Chapter 5-Exploring Engineering, is an

example of connecting to real-world issues by having students look at urban air pollution involving ionic compounds, which in this chapter, students will be named using nomenclature rules. In this same section, students can explore career connections by reading about civil engineers, public health educators, or air quality analysts; all need to understand the names of compounds to do their jobs in the real world. In section 5.1, Naming Binary Compounds, teachers can help students engage by using the instructional approach of team learning and interactive games to help students memorize the elements they need in nomenclature. Also, this chapter suggests that teachers mnemonics to help students remember that cations have a positive charge and anions have a negative charge (A cat-themed mnemonic: CATions are PAWsitive). These instructional approaches help engage students in this chapter's nomenclature mastery.

- In Chapter 11, Modern Atomic Theory, students can engage in the content by collaborating on a team worksheet. Later, in Section 11.1, in the box labeled Differentiated Instruction, students have the opportunity to work in small groups to discuss what they have learned about particles and waves, as well as lead their research project to find recent evidence that supports the wave and/or particle model of light.
- Finally, according to the planning guide of Chapter 18 found in the online resources and the EBK teacher edition ebook, students begin by exploring real-world issues and phenomena related to Salty Stranded Ships. This activity sets the stage for their engagement in the topic. They can then delve into the content further with the Explorers at Work feature, which explores Microbial Photosynthesis and the Great Oxidation Event. This feature encourages students to connect science concepts to real-world applications. Materials also provide a video on sodium and chlorine gas reactions in the online resources to help students visualize the concept of oxidation-reduction reactions. This visual aid reinforces their comprehension of the topic and adds an interactive element to the learning experience. Materials include laboratory experiments such as the Halogen Activities Series, where students can actively practice measuring and collecting data. The details of this experiment can be accessed in the EBK: World of Chemistry, Activities, and Lab Manual ebook. This hands-on approach allows students to apply scientific methods and deepen their understanding through practical exploration.
- Furthermore, collaborative learning is encouraged through activities such as the Lemon Power Mini Lab. In this activity, students work together in groups to complete the task. This collaborative approach fosters teamwork, communication, and problem-solving skills among students. Moreover, students engage in inquiry-based learning by constructing explanations for how temperature affects the performance of an electronic device. This inquiry-based approach empowers students to explore and make connections between scientific principles and real-world scenarios.

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

- Materials consistently support flexible grouping within the text and its various activities, which are designed to foster student engagement and encourage collaborative learning, such as their lab investigations, "Active Learning" sections, and "Differentiated Instruction sections." For example, in the Lab Ebook in Chapter 2, Investigation, the teacher's guide states it may be helpful to have students work in teams to design their procedures during a class period before they conduct the investigation in groups, pairs, or individually.
- In addition, in Chapter 11, students will work one-on-one with the text, and then in the Differentiated Instruction section, students can work in small groups or research independently. There is also an Active Learning section where students work collaboratively in teams.

- One notable feature is the Active Learning section, which allows teachers to facilitate collaborative work among students. As an illustration, in the EBK teacher edition ebook, an opening image in Chapter 19 sparks a discussion on nuclear reactions and energy. Similarly, for section 19.1, the materials provide an Active Learning resource titled "Team Learning Sheet: Radioactivity." This handout includes guided questions to assist teachers in exploring concepts such as half-life and radioactive elements in greater depth.

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

- Materials consistently support multiple types of practices, including demonstrations, laboratory investigations, and collaborative work in the form of projects and guided practice. All chapters include PowerPoint for whole-group instruction, collaborative lab investigations, and independent worksheets. In the Chapter 5 planning guide on the online platform, students learn by completing a video of copper reacting with nitric acid, practicing using the name game, watching a demonstration called copper chlorides, and then going on to complete a laboratory assignment at the end of the chapter. Each activity provides students with a different approach to learning and practicing the content. Students watching the video see a chemical reaction in progress and observe the signs of a chemical reaction and the characteristics of a specific type of reaction, single replacement. Students then practice naming different compounds using the name game. In the lab at the end of the chapter, students put each part of practice together to determine if, when combined, different chemicals produce a chemical reaction and the name of the resulting products. In addition, there is an independent worksheet, Forming and Naming Ionic Compounds Worksheet, in Chapter 5, and in section 5.1, the Team Learning Worksheet provides opportunities for students to work collaboratively.
- The materials provide teacher guidance for effective implementation. For example, in the Lab ebook, Chapter 3 Investigation, there is a section labeled Procedure Tips, which states, "Parts do not need to be completed in order. Teams can be assigned a different order to use materials more efficiently. " Also, in Chapter 11, in the section for ELL students, there is guidance for teachers on implementing a reading activity. It states, "Elicit that this is a formal language. Restate it using informal language, including contractions. Have students choose the most interesting thing they learned from the text. Ask them to retell it as if for a class presentation and then retell it to a friend, using formal or informal language as appropriate." This is an effective use of modeled, guided, collaborative, and independent practices.
- Additionally, the materials provide checkpoints throughout the chapter that assist teachers in providing feedback and ensuring student mastery. For example, the checkpoint for Chapter 4, lesson 1 states," What element makes up nearly half of the earth's crust, oceans, and atmosphere? What percent of the mass of the crust, ocean, and atmosphere do the top nine elements make?"
- The EBK lab ebook provides a comprehensive teacher's guide for each experiment, aiming to support effective implementation in the laboratory setting. The materials employ explicit teaching strategies within the guide to help students develop a consistent routine for working independently during lab investigations. For instance, in the teachers' guide for the Activity Series Investigation in Chapter 18, the materials follow a structured approach to ensure clarity and coherence. Firstly, the guide presents the Objectives, Materials, and Preparation Tips for the lab, providing teachers with the necessary information to set up the experiment in whole groups. The lab ebook then provides a detailed Prelaboratory Discussion, Disposal, and Post Laboratory Discussion. This section offers guidance on what to discuss with students before and

after the experiment and proper disposal procedures. The materials maintain consistency across all labs by providing sections in the same order. These include the Prelaboratory Assignment section, where students receive specific tasks or questions to complete before starting the lab. The Data and Observations section has tables or guided questions for students to record their findings during the experiment. The Analysis and Conclusions section prompts students to interpret their data and draw meaningful conclusions. Finally, the Something Extra section may offer additional extensions, challenges, or explorations related to the experiment.

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

- Materials represent a diversity of communities in the images and information about people. Some examples are in Chapter 1: Andrea Marshall and Imogen Napper, who studies marine microplastics, and Ruth Berenito, a chemistry pioneer. In Chapter 10, Ibrahim Togola works with his foundation, Mali-Folkcenter Nyetaa, to help provide power to rural residents of Mali. Also, in Chapter 3, Section 3.2, there are multiple images showing scientists of diverse backgrounds, and Chapter 4 of the EBK Teacher's edition begins with a volcanologist who is a white male, repelling down a volcano.
- Materials represent a diversity of communities through images and information about places. In Chapter 1, we also learn that Raja Ampat is an archipelago consisting of the main islands of Batanta, Kofiau, Misool, Salawati, and Waigeo, as well as more than 1,500 small surrounding islands located in West Papua on the Equator. Meanwhile, Chapter 5 begins with images of buildings in China and Chile, where air pollution is high.
- Materials feature a section called "Chemistry Pioneers" in the EBK teacher edition ebook, showing the contributions of significant scientists whose research is related to the topic of each chapter. This section provides students with valuable information and profiles of influential scientists, fostering a deeper appreciation for their contributions to various fields of chemistry. For instance, the materials present the profile of Marie Curie in the "Chemistry Pioneers" section. The description highlights her groundbreaking work in radioactivity, which directly relates to the content covered in Chapter 19. By including Marie Curie's profile, materials acknowledge her achievements, helping students connect her discoveries to the concepts of radioactivity.
- Similarly, the materials provide a profile of Darleane Hoffman with her contributions to the discovery of plutonium-244. This profile offers insights into Hoffman's research and its relevance to the content discussed in the chapter. By showcasing the work of scientists like Darleane Hoffman, the materials inspire students and illustrate the real-world applications and implications of the chemistry concepts they are learning. The "Chemistry Pioneers" section provides students historical context, role models, and a broader understanding of the subject matter. By learning about the accomplishments and contributions of notable scientists, students can develop a deeper appreciation for the scientific process and its impact on the world around them.

Cengage Learning World of Chemistry Texas Edition

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.

- Materials include guidance for linguistic accommodations at different levels of English language proficiency. In each chapter of the EBK online teacher's edition, red boxes in the margin contain guidance for teachers with EB's and the ELPS. For example, in Chapter 1, Section 1.4, there is specific guidance for the teacher for linguistic accommodations for English Language Learners. Here the materials provide the following guidance for sentence stems: "Sentence Patterns help students use a variety of sentence patterns as they write a summary of 'Learn Chemistry: Prepare for Life.' Point out that students can use the questions in the text to help them summarize the main points. Provide sentence frames as needed. Beginning to Provide sentence frames that echo the wording of the questions: The purpose of education is to _____. Studying chemistry helps you _____. Intermediate: Provide sentence frames to help students write about causes and effects. To be successful, students need to _____. By studying chemistry, you can _____. Advanced/Advanced High- Have students summarize the text in three or four sentences and exchange their writing with a classmate. Have partners suggest a different way to say the same ideas."
- Additionally, in Chapter 4, Section 4.4, the English Language Learners Box in the sidebar recommends that teachers have students look at the periodic table while the teacher points out that we read from left to right, top to bottom in English. The text box goes on to further breakdown. It provides guidance based on the different levels of EBs, providing sentence stems for beginner and intermediate learners and asking advanced/advanced high students to name and describe groups of elements based on what they have learned from this section of the text.

- Furthermore, in Chapter 11, Section 11.4, the box labeled English Language Learners guides accommodations that include tips for Spelling and Memorizing Vocabulary broken down into beginner, intermediate, and advanced EB students. Within each level, there are activity suggestions that target the needs of the students at that level. It suggests that beginners spell and pronounce terms, while students are to sound and spell words syllable by syllable in the intermediate. Advanced students are encouraged to identify groups of words with similar spellings.
- Materials include guidance for linguistic accommodations through listening in context activities where the students read text aloud. For example, in Chapter 16, section 16.2, materials provide a listening-in-context activity to help students comprehend the concept of "Garden-Variety Acid–Base Indicators" as they listen to the text being read aloud. It also explains that the expression "garden variety" means ordinary, everyday, or normal. The materials offer differentiated tasks for each level of ELPS proficiency for linguistic accommodations. At the beginning level, students review color words using Figure 16-12, depicting the various colors produced by cabbage juice when exposed to different pH. Students create a list or draw things they find in a garden and can use colored words to describe them. Students work in pairs to describe a garden using complete sentences at the intermediate level. Finally, at the advanced/advanced high level, students collaborate in small groups to discuss fruit, flower, and vegetable gardens in detail and then apply the term "garden variety" in a brainstorming session.

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

- Materials encourage using students' first language as a means of linguistic, cognitive, and academic development in English. Materials include a Spanish glossary, reviews in Spanish, and various activities within each unit to support the acquisition of science concepts. For example, the materials provide a Spanish glossary for students to reference. Additionally, each chapter includes a chapter review available in Spanish and English, allowing students to complete the review by viewing both versions. This allows students the support of having the review in their first language while still allowing them to attempt to complete the review in English.
- Materials encourage strategic use of students' first language and guide teachers in the English Language Learners box included in the sidebars of the chapters in the teacher's edition. For example, in Chapter 21, Section 21.1, in the English Language Learners box, materials provide a listening and note-taking activity. For students at the beginning level, the materials encourage teachers to allow them to take notes in their first language while also jotting down corresponding words in English, attempting their best at spelling. This approach supports students in leveraging their existing language skills to comprehend and engage with the content while gradually building their proficiency in English.

Cengage Learning World of Chemistry Texas Edition

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.	PM
3	Materials include information to guide teacher communications with caregivers.	DNM

Partial Meets | Score 1/2

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

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

Evidence includes but is not limited to:

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

- Materials provide information to be shared with students and caregivers about the design of the program. The online materials and EBK teacher edition ebook include sections such as Communicating Chemistry, Problem-Solving in Chemistry, and Laboratory Safety Handbook, accessible to students. In the Communicating Chemistry section, at the beginning of the book, students can access suggestions about time requirements when reading scientific texts, how to get the most out of the textual and graphic layout, suggestions for effective and efficient reading, and suggestions for writing in chemistry, especially regarding the technical aspects. For example, the materials state, "Use these suggestions to become an efficient and effective chemistry reader. Before you read: When you start to read something new, preview it before you begin. Taking time to get an overview of the concepts within the source will help you become a more efficient learner. Glance at the highlighted features, photos, graphs, charts, and symbols to understand the content. " This information about the program provides students with best practices- such as previewing readings, validating content and research through using reliable sources, and being clear and concise when writing, that assist students in efficiently and effectively mastering content and can be shared with caregivers through the students so that the caregivers understand the design of the program. The Problem-Solving in Chemistry section provides information on a conceptual problem-solving approach, fostering meaningful engagement with the materials. For students' safety and understanding of laboratory procedures, the materials include a comprehensive Laboratory Safety Handbook. This handbook covers essential topics such as general safety rules, first aid in the lab, heating and fire safety, and working and clean-up procedures. It equips students with the necessary knowledge to

conduct investigations in the lab manual ebook and promotes a safe learning environment. There is an option for teachers from the teacher tools of online resources to share each chapter's resources to their Google classroom or learning management system.

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

- Materials provide some information to be shared with caregivers for how they can help reinforce student learning and development. There are checkpoints throughout each chapter that have question prompts to check for understanding that caregivers could use to help their students when reading the texts and to help reinforce what was read and understood. However, it is not explicitly stated to be used by caregivers For example, in Chapter 1, Section 1.1, the checkpoint states "What are some examples of chemistry that you see in everyday life?" In Section 1.2, the checkpoint for students states "In what ways is using a scientific approach to solving a problem similar to approaches you have used in solving problems in everyday life? In what ways is it different?" These checkpoints help students reinforce their learning for this chapter on the chemistry introduction.
- Additionally, in Chapter 11.1, Modern Atomic Theory, there is a checkpoint that encourages readers to "Describe the relationship between wavelength and energy." This is helpful for someone reading to slow down and process information before moving along in the chapter. Still, there is no guidance about who or when this should be used.
- The Student Edition provides tips and suggestions for effective and efficient reading and writing chemistry in the segment "Communicating Chemistry" at the beginning of the book. Caregivers can use this document to aid students in understanding and mastering content, specifically with reading and writing chemistry. However, the document does not specifically target the caregivers as the audience and state how those caregivers can reinforce student learning.
- Materials provide online resources and printable scientific texts that align with the learning targets for each chapter. For instance, while an Assignment tab is available in the drop-down menu at the top left of the online resources, there is no functionality specifically designed for caregivers to access or participate in the website. Moreover, the materials include printable scientific texts, such as chapter reviews in both English and Spanish, and valuable case studies that can effectively support student learning. However, they fail to provide explicit guidance on how to share these resources with caregivers. Furthermore, there is no instruction for teachers on whether to print or download and conveniently email to caregivers. However, the materials lack clear explanations or instructions on how caregivers can engage with and support student learning.

Materials include information to guide teacher communications with caregivers.

- Although the front pages give a thorough description of how the information will be presented to students throughout the course through problem-solving, communicating, and writing, which may help caregivers understand the course philosophy or components, there is no guidance for teachers on communication with caregivers as learning partners. The materials provide tips and recommendations for students for effective reading in the "Communicating Chemistry" segment, problem-solving tips, and a student overview, all at the beginning of the book. However, the materials do not provide any information that can help teachers communicate with student caregivers or to guide caregivers on how to be effective learning partners with teachers and students.

- The materials also do not guide for sharing progress updates for ongoing projects. For instance, in the online resources of Chapter 20, there is a case study centered around addressing the issue of plastic waste. For this project, students research the plastic disposal systems in their community. However, there are no specific guidelines for teachers to establish ongoing communication and foster a partnership with caregivers regarding this project.

Cengage Learning World of Chemistry Texas Edition

Indicator 8.1

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

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

Partial Meets | Score 1/2

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

Materials are accompanied by a TEKS-aligned Scope and Sequence outlining the order in which knowledge and skills are taught and built into the course materials. Materials provide clear teacher guidance for facilitating student-made connections across core concepts and scientific and engineering practices. Materials provide some 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 into the course materials.

- Materials include a TEKS-aligned Scope and Sequence outlining the order in which knowledge and skills are taught and built into the course materials. Materials include an overview of the sequencing of chapters within the text as well as provide pacing guides for each chapter. TEKS are listed with page number correlation in the teacher's edition. Materials provide guidance to scope and sequence outlining the order in which knowledge and skills are taught and built into the course materials.
- For example, in the teacher edition eBook (EBK) in Materials and Standards Correlations, the TEKS for each chapter along with knowledge and skills are listed for the teacher. The planning guide at the beginning of each chapter contains a sequence of topics. For example, at the beginning of each chapter in the EBK teacher edition, found under the chapter contents page, the TEKS covered are listed in the order addressed. For example, the contents for Chapter 1 are on page 2B, and the second section 1.1 “The Science of Chemistry” lists TEKS 1A and 1B as being covered.
- Teachers can access concepts, activities, and assessments related to the TEKS in the Standard Correlation of the teacher edition. Each chapter has a planning guide that shows the full list of activities with their objectives.

Cengage Learning World of Chemistry Texas Edition

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

- Materials provide clear teacher guidance for facilitating student-made connections across core concepts and scientific and engineering practices (SEPs). Teachers are provided with targeted support for three-dimensional instruction and cross-curricular connections to Math, English Language Arts, and other science disciplines with the Recurring Themes and Concepts (RTCs) clearly called out at the point of use on the overview teacher pages. Referenced titles to support connections will include: “Recurring Themes and Concepts,” “Scientific Practices,” “Connect to Language Arts,” “Connect to Math,” and “ELPS Standards Box.” The materials provide some guidance for teachers to help students make connections between key ideas and activities, however, lack specific guidance on implementation.
- In Chapter 2, the SEP “Defining a Problem,” is connected to the content by using the example of recycling. Core concepts are listed at the beginning of each section under the heading “Core Ideas and Skill” (see page 43 for an example). The scenario includes instructions for the teacher to ask a few specific questions that require problem-solving and the use of engineering principles. The chapter planning guide provides connections to engineering practices and makes connections to other concepts as well as recurring themes. The teacher edition material also provides connections to engineering practices as well as cross-content connections. The online textbook provides teachers with teaching tips, checkpoints, and misconceptions to help students make connections to future core concepts. For example, in section 2.3, the teaching tips mention that students can make the connection between the study of compounds and mixtures with the calculation of percent composition in Chapter 6. Another example of cross-curricular content is in Chapter 1, section 1.2, “Connect to Mathematics Statistics and Probability,” for students to connect their learning of averages in science to math.

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

- Opportunities are provided at the end of each chapter for students to review knowledge and skills for that chapter. TEKS are reviewed within each chapter but are not spiraled throughout the year. For example, at the end of Chapter 1, students have access to a review worksheet, a one-page review of TEKS in the chapter, and a review study guide prior to their evaluation with no clear opportunity or guidance to spiral the content throughout the year.
- This material does not have a “Year-At-A-Glance” or yearly outline that shows how or when students would review and spiral previous content but does have a planning guide that shows a chapter review at the end of the chapter.
- Within the EBK teacher edition, there is guidance for struggling and advanced learners to support various stages of learning, however, there is no formative assessment to begin each chapter so the teacher does not have guidance on how to spiral in previous material or prior knowledge. The online textbook provides access to different activities which have specific core ideas and skills that students will master, but there is no connection with previous skills and knowledge.
- While there are no practice opportunities built on previously taught knowledge and skills from earlier lessons, the planning guide for each chapter does show several checks for understanding in the evaluation section to guide students to master the current lessons’ knowledge and skills.

Cengage Learning World of Chemistry Texas Edition

Indicator 8.2

Materials include classroom implementation support for teachers and administrators.

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

Partially Meets | Score 1/2

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

Materials provide some guidance for scaffolding to support and enhance learning but do not provide guidance on research-based instructional strategies. Materials include science standards correlations, including cross-content standards. Materials provide a list of some equipment and supplies needed to support instructional activities. Materials include guidance for safety practices for teachers and students, including the course-appropriate use of safety equipment during investigations.

Evidence includes but is not limited to:

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.

- The materials provide a planning guide for teachers to use for different lessons and activities that can be scaffolded to support instruction, however, it does not provide guidance on research-based instructional strategies and implementation procedures.
- The materials have planning guides that include a list of sequential activities with embedded links from engage to evaluate components to enhance student learning which outlines the use and placement of each activity within the chapter. For example, according to the planning guide of Chapter 16, teachers can engage students with the Sulfur Mining text, then follow up with enrichment activities for main concepts such as The Chemistry of Baking Soda Investigation in properties of acids and bases or Buffer Behavior Demonstration in titrations and buffers. Finally, teachers provide a case study about Neutralizing Acid Deposition to evaluate students' knowledge and skills in acids and bases. However, materials do not include instructional explanations for the TEKS standards used in each activity within the lesson levels. For example, the materials provide teachers with guidance on how the materials offer differentiation and scaffolds within the chapters. Scaffolding for English language learners (ELLs) is available for teachers in the chapters by giving guidance to teachers on beginning, intermediate, or advanced/advanced high ELLs.

Cengage Learning World of Chemistry Texas Edition

- In the teacher edition, page 460, there are some recommendations and guidance for the use of some material, though not all portions of the materials include an implementation guide. For example, materials contain a planning guide in Chapter 2 which have two embedded animations, however, the text does not specifically give the teacher instructions on how or when to use the animations in the lessons.
- In the material, located within each section of the units in the teacher edition ebook, there is some guidance for teachers on how to use the text, technology support, and differentiated learning strategies to enhance student learning. For example in Chapter 4 in the section Active Learning, this section guides the teacher by stating in the text "The Sections 4.1–4.3: Team Learning Worksheet provides opportunities for students to work collaboratively. In this same chapter, there is guidance for the teacher for differentiated learning strategies for English language learners (ELLs) on sound-letter relationships for beginning, intermediate, and advanced/advanced high ELLs.
- The materials within each lesson include a variety of resources designed to support learning across multiple science concepts such as key concepts, figures, and embedded technology for Scientific and Engineering Practices. However, not every lesson provides instructions or guidance on implementation as well as differentiation for students. For example, in the Chapter 2 case study, teachers are provided with alternate topics of study for advanced and struggling learners, however, the guidance and recommendations are not explicitly stated.
- The materials provide a planning guide for teachers to use for different lessons and activities that can be scaffolded to support instruction, however, it provides some guidance on research-based instructional strategies and implementation procedures. For example in Chapter 1 section 1.2 in Teaching Tips, there is guidance for the teachers about solving everyday problems in this section. In this same chapter in section 1.1 in Active Learning, the teacher guidance provides opportunities for students to work collaboratively.

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

- The materials include science and ELPS standard correlations for the lesson activities in different units, chapters, and planning guides. For example, in the teacher version of the learning platform, teachers can click on Standards Correlations to view the standards displayed on that page. The standards shown are the ELPS, in which teachers can view how these relate directly to the course by looking for a red "English learners" box in the margins of the EBK teacher edition.
- The materials include cross-content standards for ELA, Math, and History within the chapters and margins or sidebar placements. For example, teachers have access to the chemistry standards correlations of the TEKS and how it connects to the corresponding chapters in the ebook. These include literacy, math, and historical connections in the chapters.
- In addition, throughout the EBK teacher edition, there are teaching tips and standard correlation descriptions in the margins. The materials use the boxes in the margins to explain how cross-curricular standards correlate to the course.
- The EBK teacher edition contains cross-content support for math, language learning, reading, and other concepts that are relevant to the content being covered in that unit. The chapter planning guide is a condensed version of the ebook that lists the connections to cross-content. For example, the planning guide for Chapter 3 in lesson 3.1 shows there is a connection to mathematics which is "Model with Mathematics."

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

- Even though the materials do not include an overall comprehensive list of equipment and materials for the year or each unit, it does however provide a list within each activity.
- For example, the materials allow teachers to have access to the materials list in each lab activity in the lab eBook. On page 18, a list of materials for the lab activity “Optimize Team Design” for “Meal Ready to Eat” is given, but the materials do not give a comprehensive list for the entire year.
- The materials have a chapter planning guide that only provides a list of lessons, core concepts, and activities, however, there is not a comprehensive list of all equipment and supplies needed for each unit lesson. This planning guide does not list materials or equipment needed within a unit or as a course as a whole.
- The Activities and Lab Manual in the material has a comprehensive list of equipment and supplies needed at the beginning of each activity. Teachers can only view the list for each activity separately, not overall in the unit planning guide or chapters.

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

- The materials provide teacher and student guidance for safety practices which include safety precautions, disposal methods, and use of equipment in the different science investigations.
- In the materials, teachers can access the lab safety handbook in the lab eBook on pages iii–v. These include general safety rules, first aid, heating, and fire safety, working in the lab safely, cleaning up the laboratory, as well as lab, safety, and cleanup icons.
- The “Activities and Lab Manual” list safety practices as well as age-appropriate lab equipment to be used within the lab activities. For example, page 19 has a lab titled, “Meals, Ready to Eat?” which states the safety precaution, “Students must wear goggles and lab apron, and all waste must be collected and disposed of according to local guidelines.”
- At the beginning of each laboratory exercise, there is a lab safety portion that lists the safe lab practices for students to use, including personal protection equipment, cautionary statements, and a list of materials.
- For the online platform, teachers can click on the embedded links for activities in the lesson to view the information of a chemistry investigation. These chemistry investigations include pre-laboratory assignments, materials lists, preparation tips, and cleaning-up procedures.

Cengage Learning World of Chemistry Texas Edition

Indicator 8.3

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

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

Meets | Score 2/2

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

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

Evidence includes but is not limited to:

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

- The materials include support for scheduling considerations such as time allotments for block scheduling and traditional periods for sections and activities. For example, in the Scope and Sequence, there is a time allotment for block periods and regular periods. For example, Chapter 1 section 1.1 has .5 blocks or 1 period allocated for the Explore/Explain activity.
- In the electronic lab manual, at the bottom of each lab, the time required for that lab is listed. The planning guide at the beginning of each chapter of the teacher edition provides a number followed by a block timing suggestion such as .5 blocks. Within the EBK: *World of Chemistry, Activities, and Lab Manual*, there are suggestions for the amount of time needed for each lab. On page 5 of the Activities and Lab Manual, there is a suggested time of 50 minutes for the lab on that page.

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

- The materials provide a planning guide for teachers to use for different lessons and activities that can be scaffolded to support instruction, For example in Chapter 1 section 1.2 in Teaching Tips, there is guidance for the teachers about solving everyday problems in this section. In this same chapter in section 1.1 in Active Learning, the teacher guidance provides opportunities for students to work collaboratively.
- The materials provide guidance on strategic implementation on the order of content that needs to be taught and follow a developmental progression of science with the content in the layout of

the chapters. The chapters are arranged purposefully and consider the connections between the development of conceptual understanding and skill development. The material includes a Scope and Sequence that provides the TEKS and time allotments for the sections and activities in the chapters. For example, section 2.1: "The Nature of Matter" should take one 50-minute class period, followed by the "Hands-on Chemistry: Air Matters!" activity (covering TEKS 1.B; 1.E; and 3.A), which should take approximately 25 minutes. The content is aligned generally with the order recommended by TEKS Resources, which occurs in logical developmental progression. For example, students learn about measurements and calculations before they learn about chemical quantities.

- The planning guide displays the strategic implementation of content by first introducing the content (explore/explain), followed by an activity, a reading, then a demonstration and finally culminating in a lab. This repetitive order follows Bloom's taxonomy and increases rigor in logical increments.
- The sequence of content is in a specific order that would follow the developmental progression of a chemistry class. For example, the chapter about chemical nomenclature is taught before chemical reactions to ensure students know how to identify chemicals and their names to be able to write a chemical reaction as the TEKS suggests.
- Materials group topics with similar recurring themes, and make it easier for students to connect with previously acquired knowledge and skills. For example, the study of empirical formula, molecular formula, molar mass, and percent composition are in the same Unit 6. All of those topics use the concept of mole and atomic mass.

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

- The materials include lessons and activities to complete within one school year with flexible options for including additional learning experience options. For example, in Section 6.2, students can complete either the Team Learning Worksheet or the Bean Lab to explore more about Mole.
- There is flexibility for the materials as demonstrated in the teacher edition ebook with the optional activities for instruction. For example, the Matter chapter has additional activities and demonstrations that can be used such as the challenge project or phases of matter demonstration. This could help with teachers who have ample time left in class or can be eliminated without disrupting the course sequence if there are scheduling constraints.

The EBK teacher edition has materials that include units, lessons, and activities for a full year of instruction that can cover the entirety of the course. The materials also provide a scope and sequence that provides timing considerations to teachers making the materials flexible. This document provides teachers with some guidance saying that "as you allocate time, consider your students' backgrounds and their available resources... Choose among these based on how you want to promote understanding…" indicating that the materials are flexible. Additionally, with the sequencing added, teachers can determine which activities and assignments need to be skipped to ensure that the curriculum is completed within a year. There are various activities that can be included or omitted at the teacher's discretion. For example, an early classroom project activity listed on page 6 makes the content flexible and able to be completed in one school year.

Cengage Learning World of Chemistry Texas Edition

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.

- Materials include an appropriate amount of white space and a design that supports and does not distract from student learning. For example:
    - In the student's ebook in Chapter 3, Section 3.1, the headings are clearly labeled for Key Terms and Core Ideas and Skills. The title of the Section is bold and clearly defined. The subheadings are also clearly defined and easy for students to see. Checkpoints and Math Tips are set apart in different colors to draw students' attention to these parts of the materials. Example problems are worked out for students step by step so that students can see how to work each part of the problem.
    - The content is laid out linearly and cleanly with appropriate white space and links to graphics and images embedded within the text. For example, in Chapter 4.1, there is a link to an animation that provides a more detailed visual account of Rutherford's experiment. On the first page of Chapter 10 - Energy, there is an image and only three paragraphs on one page so that students can focus on the reading.

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

- Materials embed age-appropriate pictures and graphics that support student learning and engagement without being visually distracting. For example:
    - In Chapter 4, the materials include pictures of scientists who contributed to the modern atomic theory, pictures of models of atoms, compounds, and elements, and an easy and engaging periodic table. The materials also include pictures of phenomena throughout

the ebook that engage students. Additionally, in Chapter 4.3, students learn about the different models of the atom throughout history, specifically the model developed by Ernest Rutherford. The online platform contains animation that further explains Rutherford's experiment with the cathode ray and illustrates what is happening on a molecular level, resulting in his model. This in-depth explanation with a visual gives students a deeper understanding of the content.

- Furthermore, the start of each chapter includes a relevant picture that aligns with the main topic, effectively setting the stage for the chapter's content. For instance, Chapter 5 opens with a picture of a short-tailed pterosaur found in the Solnhofen Limestone. Chapter 5 discusses compounds, so limestone, a compound that students can relate to, is pictured as a way to engage students. Chapter 10 - Energy opens with a picture of windmills. Finally, Chapter 18 - Oxidation-Reduction Reactions and Electrochemistry features a picture of a ship stranded on a reef near the Polynesian Kingdom of Tonga, showcasing the rusting of steel. The formation of rust is an example of a redox reaction, and the picture provides students with a real-world problem they can relate to.

Materials include digital components that are free of technical errors.

- Materials include digital components that are free of technical errors. Materials include a teacher's ebook, a student's ebook, a lab ebook, and an assessment ebook. Teachers can conveniently access all the embedded links for videos, animations, and handouts directly from the online resources. The navigation buttons to move through the different pages work appropriately, and the content loads quickly without error. The teacher edition ebook is easy to navigate, with a clickable sidebar to jump to a specific chapter. At the bottom of every page, there is an arrow to move forward or backward within the book. For instance, in Chapter 18.3 of the online resources, teachers can easily access the embedded link for the Galvanic Cell Chemistry Animation, providing valuable visual content to enhance student understanding.
- Additionally, teachers can open "Electrochemistry: Introduction" in a separate window, allowing for simultaneous reference and exploration. Teachers also can effortlessly view and download all available handouts from the Chapter 18 Resources section. These handouts, such as the Team Learning Worksheet, Chapter Review, and Chapter Test, offer valuable support materials in various instructional contexts. The materials facilitate a smooth experience for teachers, enabling them to access the necessary resources without encountering technical issues.

Cengage Learning World of Chemistry Texas Edition

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.	No
4	Materials integrate digital technology that is compatible with a variety of learning management systems.	Yes

Not Scored

Materials are somewhat 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 do not integrate digital technology that provides opportunities for teachers and/or students to collaborate. Materials integrate digital technology that is compatible with a variety of learning management systems.

Evidence includes but is not limited to:

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

- Materials integrate digital technology and tools that support student learning and engagement. For example, in Chapter 2, the materials integrate the video of the SEPARATION OF WATER, SAND, AND COPPER SULFATE. This video demonstrates the mixture and separation of two liquids and a solid and asks students, "What step could be taken to recover the liquid water from this mixture?" In the same chapter, there is a video of the separation of a homogenous mixture of ink using paper chromatography. Both of these examples are engaging for students and help them understand the content of properties of matter.
- The materials integrate digital technology and tools that support student learning and engagement. For example, in Chapter 5, Figure 5-5 is a flow chart for naming binary ionic compounds. The flowchart is interactive in that students can click on it a view an image that now takes up the whole page, allowing for each image to carry more minute details that can be zoomed in on. Additionally, for each example problem (like example 5.3), there is a step-by-step solution. Instead of having the solution on display, students must now click the drop-down button to display it. This encourages students to attempt the problem before opening the solution.
- Materials integrate digital technology and tools that support student learning and engagement. For example, Chapter 10, Energy Section 10.1, contains a section about the real-world application of energy and the people who work in the fields. The book provides reading and information about some scientists, but it also has a clickable link to the national geographic

website for students to research this applicable field. This digital component supports students' learning by providing the real-world connection of what they are about to learn in the chapter and engages students in how it affects their everyday lives.

- The materials employ digital technology and simulations to enrich student learning and engagement. They skillfully incorporate animations, figures, and graphs throughout the lessons, particularly in lessons, to facilitate students' comprehension of complex concepts and encourage connections between different aspects of knowledge. For example, in Chapter 19, Section 1 of the online materials, there is an interactive animation called "Uranium Decay Chains." This animation effectively illustrates the decay chains that uranium-238 may undergo. By visually representing the process, students can better understand that a radioactive nucleus cannot attain a stable (nonradioactive) state through a single decay event. Instead, a series of decay processes occur, leading to the formation of a stable nuclide. This visualization aids students in understanding the concept of decay series and its implications.

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

- Materials integrate digital technology to support student engagement with science and engineering practices and course-specific content. For example, in Chapter 2, Section 2.2, Properties of Matter in the student materials, students have digital animations of models of water molecules in ice and then changes in the state of water. Students can play these animations of these models over and over and compare these different states and how water changes states of matter, so not only does this digital technology embed the content but also has the SEP C.1G of Develop and Use Models embedded.
- The materials integrate digital technology to support student engagement with the science and engineering practices and course-specific content. For example, in Chapter 6, students use a modeling tool that displays the 3-D ball and stick structure of Glucose, Benzene, and Cisplatin. Not only do these models directly connect to the content of the chapter- learning to write formulas, but they also cover the SEPs- developing and using models (SEP C1.G).splay it. This encourages students to attempt the problem before opening the solution.
- Materials integrate digital technology to support student engagement with science and engineering practices and course-specific content. For example, in Chapter 10.2 Assessment Calculations practice, the students are asked to calculate energy, SEP 2C.
- The digital materials utilized in this curriculum leverage technology to enrich student involvement in science and engineering practices and subject-specific content. Specifically, in Chapter 19.1 about Radioactivity, materials feature an animation called "Uranium Decay Chains." This animation effectively illustrates the various decay processes that uranium-238 can undergo. By employing this model, students can comprehend that a radioactive nucleus cannot achieve stability through a single decay event. The decay process culminates when there is a formation of the stable isotope lead-206.
- In addition, materials incorporate the Science and Engineering Practices (SEPs) C.4B and C.4C, which encourage students to conduct research and explore various resources. The also materials align with the Texas Essential Knowledge and Skills (TEKs) 14. A for describing the unique properties and behaviors of alpha, beta, and gamma radiation. These practices enable students to delve deeper into the subject matter and enhance their understanding of the characteristics associated with alpha, beta, and gamma radioactive decay. This animation helps students engage in critical thinking, data analysis, and communication, all fundamental components of scientific exploration and engineering design. These materials thus offer a

comprehensive approach to fostering students' understanding and mastery of the subject matter.

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

- While the materials provide opportunities for students to collaborate, for example, through student investigations such as the Chapter 1 investigation in the Hands-on Activities and Laboratory Manual Ebook, here the students work in a lab group to answer the question "Why is it important to keep careful records of your data and observations during an investigation? " The materials do not integrate digital technology opportunities for teachers and students to collaborate.
- The materials integrate digital technology to support student engagement with the science and engineering practices and course-specific content. For example, in Chapter 6, students use a modeling tool that displays the 3-D ball and stick structure of Glucose, Benzene, and Cisplatin. These models directly connect to the chapter's content- learning to write formulas- and cover the SEPs- developing and using models (SEP C1.G).
- Materials do not allow students to collaborate with other students online. Students can collaborate in person in Active Learning 10.2 on a worksheet; however, this is not on a digital platform.
- The current materials lack digital technology integration that fosters opportunities for collaboration among teachers and students. In the online resources of Chapter 20, there is a case study focusing on addressing the problem of plastic waste. Students are assigned to research the plastic disposal systems within their communities. Materials do not provide an online platform that enables teachers and students to engage in collaborative activities, share resources, collaborate on projects, and facilitate timely feedback. Furthermore, within this chapter are Team worksheets facilitating group learning. However, it's worth noting that these resources are not available in online formats. For example, Chapter 18 provides three team learning worksheets corresponding to Sections 18.1, 18.2, and 18.3, which can enhance student collaboration. However, the materials lack integration into the online platform for these specific opportunities.

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

- Materials integrate digital technology that is compatible with a variety of learning management systems. System requirements for the materials require broadband internet access and supported web browsers and plugins. The materials work on PCs, Macbooks, and Chromebooks.
- The materials integrate digital technology that is compatible with a variety of learning systems. For example, the page titled " System Requirements for Cengage Learning Platforms" states that " Cengage web-based learning platforms require broadband internet access and supported web browsers and plugins" and work on the following browsers: chrome, firefox, edge, and Safari. By creating a platform that is readily accessible via a variety of browsers, students are more likely to have access to the content they are learning the support provided at home, which should result in higher achievement and content mastery levels.
- Materials integrate digital technology that is compatible with a variety of learning management systems. The System Requirements guidance section says the program will work on various browsers, including Chrome, Firefox, Edge, and Safari.

Cengage Learning World of Chemistry Texas Edition

- The materials seamlessly incorporate digital technology across different learning management systems. Each chapter in the online materials provides downloadable resources for students, including chapter reviews, summaries, and investigation worksheets. Students can easily print or download these resources from any technology device, allowing them to access and utilize them according to their needs.

Cengage Learning World of Chemistry Texas Edition

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.	Yes

Not Scored

Digital technology and online components are 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. 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 materials include developmentally appropriate animations for the course and align with the scope and approach to science knowledge and skills progression. For example, in Chapter 2, Section 2.2, the animations of the structure of water in ice and the animation of the changes of states of water are developmentally appropriate for first-year chemistry students and align with the scope of chemistry where students are learning about the properties of matter.
- Additionally, the materials include simulations that are developmentally appropriate for the course and align with the scope and approach to science knowledge and skills progression. For example, in Chapter 6.2, students learn about molar mass, molar conversions, and percent composition. After a checkpoint in which students compare the mass of several different elements to each other, they look at a simulation called "Mass, Moles, and Molecules." While watching this simulation, students observe how molar mass and percent composition is determined by a compound's formula and the masses of its elements. Not only is this concept appropriate and within the scope of the course, but it is also a key step in understanding stoichiometry and many other math-related topics in chemistry. Students must first be able to calculate molar mass before completing most calculations.
- In Chapter 10- Energy Section 10.1, there is an online simulation available of a bomb calorimeter. This simulation is developmentally appropriate for students learning about energy and how scientists can measure the energy in items and food using bomb calorimeters. This aligns with the scope and approach to knowledge and is an appropriate learning progression

after students learn what energy is and then dive deeper into how to measure energy. Moreover, the materials incorporate videos that are appropriate for the course, aligning with the developmental needs of students and supporting the progression of science knowledge and skills. For instance, in chapter 18.1 of the online platform, which focuses on electron transfer reactions, the materials include a video of the reaction between sodium and chloride. This video helps teachers reinforce introducing two crucial terms, "oxidation" and "reduction."

- Students also access a video showcasing the reactions of lithium, sodium, and potassium in water. This video effectively illustrates the occurrence of oxidation-reduction reactions involving Group 1A metals. By watching this video, students can predict the pattern of activity among Group 1A metals, allowing them to deduce that the reactivity of metals increases as one moves down the periodic table.

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

- The provided materials include comprehensive teacher guidance on utilizing embedded technology to support and enhance student learning. Within the online platform, in the sidebars, teachers are provided with Teaching Tips and Checkpoints alongside animations and videos to ensure the delivery of clear and impactful instructions. For example, in Chapter 2, Section 2.2, in the Teacher's Ebook, the Teaching Tip in the sidebar states, "To help them understand the difference between physical and chemical changes, have students compare the water and steam depictions in Figure 2-10, which represent a physical change from liquid water to gaseous water, to the molecular diagram on this page showing the chemical change that occurs when liquid water is electrolyzed to produce the gasses H2 and O2." The animations are listed below for teachers to use with these tips.
- Additionally, in Chapter 19.1, which focuses on Radioactivity, the materials feature an animation showcasing a Geiger Counter to model the concept of half-life. Before watching this animation, the Teaching Tips suggest using the analogy of a tortoise that consistently covers half the distance to the finish line in one minute. This analogy helps students to recall the concept of half-life from their earlier science classes. After watching the animation, the materials further guide teachers to explain that the Geiger counter detects the current flow in a sample of argon ions and electrons. This information helps students understand the relationship between high-speed particles resulting from nuclear decay and the detachment of electrons from argon atoms.

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

- Materials are available to parents and caregivers to support student engagement with digital technology and online components. In the Help & Support for Students, parents, and caregivers also have access to support their students with Student Start Guides that will take both student and Parent/Caregiver through the process of accessing online components of the materials. The student or parent/caregiver just chooses the product and follows the online directions to get started.
- The materials also provide an Assignment tab in the drop-down menu at the top left of the online resources. This tab allows students to access all the assigned materials with their corresponding timelines. The materials include printable scientific texts, such as chapter reviews

in both English and Spanish and valuable case studies that can effectively support student learning.