Discovery Education Science Techbook for Texas Grade 4

Discovery Education Science Techbook for Texas Grade 4 Executive Summary

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

Grade	TEKS Student %	TEKS Teacher %	ELPS Student %	ELPS Teacher %
Grade 3	100%	100%	100%	100%
Grade 4	100%	100%	100%	100%
Grade 5	100%	100%	100%	100%

Section 2. Instructional Anchor

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

Section 3. Knowledge Coherence

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

Section 4. Productive Struggle

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

Section 5. Evidence-Based Reasoning and Communicating

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

Section 6. Progress Monitoring

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

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- The materials include guidance that explains how to analyze and respond to data from assessment tools.
- The assessments are clear and easy to understand.

Section 7. Supports for All Learners

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

Section 8. Implementation Supports

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

Section 9. Design Features

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

Section 10. Additional Information

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

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Indicator 2.1

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

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

Meets | Score 4/4

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

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

Evidence includes but is not limited to:

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

- Materials include opportunities for students to repeat skills within a lesson. For example, in Unit 4, Concept 3, Lesson 2, students sort pictures of parents and offspring. In Lesson 5, students revisit how organisms inherit traits from a parent. Furthermore, materials provide ways to practice grade-level appropriate scientific and engineering skills. For example, in Concept 1: Describing Matter, Lesson 8, students preview the text for the passage and make a connection to something they use that might be caused by a potter. The teacher asks questions about the properties of clay and ways that clay can be changed.
- The 5E instructional model integrates TEKS, including scientific and engineering practices, into every lesson authentically. Teachers refer to the Standard Alignment charts in Unit Resources to locate the scientific and engineering practices corresponding to each concept. This chart is

available throughout the school year, and students have the chance to develop their engineering and science skills in different concepts such as in Concept 2: Transferring Energy, Lesson 6: Waves and Energy Transfer, Concept 3: Renewable and Nonrenewable Resources, and Lesson 8: Careers and Renewable Resources.

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

- Materials contain recurring theme concepts throughout. For example, patterns are represented in Concept 1.1: Describing Matter, Concept 2.1: Types of Forces, Concept 3.1: Moon Phases and Seasons, Concept 3.4: Climate, Concept 4.3: Inherited and Acquired Traits, and Concept 4.4: Fossil Evidence.
- In each lesson on each concept, there are supports for the teacher to help connect the recurring themes throughout the lesson. For example, in Unit 3, Lesson 1, there is a portion that guides teachers on how students can look at themes within the unit. The materials provide opportunities for students to look at cause-and-effect relationships. For example, in Unit 3, Concept 4, there are multiple lessons for students to look at cause and effect regarding weather and climate.

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

- Materials strategically and systematically develop students' knowledge and skills in lessons across units. Concepts within each unit are structured with lessons that follow the 5E Framework.
- For example, in Unit 4, Concept 2, students explore plant structures. As the unit progresses, lessons build off each other, with students looking at how structures allow for plant survival. Furthermore, each unit includes concepts that are strategically bundled, ensuring students uncover all core scientific content.
- For example, in Concept 1: Exploring Forces, Lesson 3: Force, students explore a lesson using forces in a video which the teacher then asks the students about connections made after watching the forces in action in the video.

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

- Materials include lessons that facilitate planned questioning. For example, in Concept 1: Food Webs, Lesson 8: Controlling Competition with Agriculture, the teacher asks, "Have you visited a farm? What steps are involved in farming?" There are several opportunities for students to plan investigations, such as in Concept 1.2: Mixing Matter, Concept 2.1: Types of Forces, Concept 2.3: Electrical Energy, Concept 3.3: Renewable and Nonrenewable Resources, and Concept 4.2: Plant Structures.
- Materials provide opportunities for students to explore science through various hands-on investigations that are teacher-led. For example, in Unit 3, Concept 5, Lesson 2, students investigate the water cycle through a hands-on model. Throughout the units, materials teach students to ask questions, make predictions, and plan investigations. For example, in Unit 3,

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Concept 2, Lesson 2, students use a model glacier to explore the changes created. Further examples of opportunities to plan and conduct classroom investigations can be seen in Unit 1: Matter, Lesson 2. Students conduct a hands-on activity exploring many properties of matter. The students can make predictions, and the students can collect data and answer questions.

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Indicator 2.2

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

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

Meets | Score 4/4

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

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

Evidence includes but is not limited to:

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

- The resources allow students to grow, assess, and change their thinking as they engage with phenomena and define/solve challenges. For example, in Concept 3: Inherited and Acquired Traits, Lesson 1, materials allow students to develop, evaluate, and revise their thinking. Materials direct the teacher as follows: "Allow students to quietly think about their answer before they communicate their initial ideas. Next, allow students time to share their ideas with their small group."
- Materials teach grade-level topics through phenomena, as evident in the lessons outlined in the Scope and Sequence. In Unit 2, Concept 1: Types of Forces, Lesson 1, the Engage lesson begins by connecting real-world phenomena using the take-off of an airplane. Students observe different forces and patterns as planes take off and land.
- Materials provide teachers with a lesson where students create evidence to support a claim through the scientific process. For example, in Unit 4, Lesson 7, students give evidence regarding energy within a food web.

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

- Teachers are given guidelines on eliciting students' prior knowledge and experiences relating to the phenomena presented in the Setting the Purpose section of the Educator Notes and the Real-World Phenomenon section of each Engage lesson. In the Making Connections phase of the lecture, students are asked to share any prior knowledge about the phenomenon and engineering problem. Background knowledge on the main scientific ideas, as well as a student's prior knowledge from earlier grade bands and units, is found in the Unit Materials.
- Under unit resources, in the section titled Background Knowledge, teacher background and student background allow the teacher to understand what students' prior knowledge should be and how it relates to a unit. Materials also accommodate different entry points to learning through hands-on activities, text, images, and videos.
- For example, in Concept 4.3, Lesson 4, students view a video on inherited traits. The materials also provide prior knowledge of unit concepts.
- For example, in Concept 2: Weathering and Erosion, Lesson 1, students discuss how a landform was created. The lesson builds on the lesson in grade 3, where the students learn about Earth's changes. Students complete the activity using data and thoughts about the phenomenon.

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

- Materials provide the teachers with a slide deck for a class presentation. The deck includes questions, materials, activities, and lesson vocabulary demonstrating examples of scientific concepts and goals. The Engage portion of each lesson allows students to make a real-world phenomenon connection.
- For example, in Unit 4, students explore constellations in the night sky. Further examples of outline goals are in Unit 1, Concept 1: Matter, Lesson 2: Explore. The teacher has been provided with a slide deck and educator notes which explain the objective, materials, questions, and time stamps for each section of the lesson.
- Materials provide learning objectives and essential vocabulary for each subject in the unit. These are listed in the unit planner, along with a description of the phenomenon in real life. For example, Concept 2: Transferring Energy, Lesson 1: What Happens When Energy Is Transferred provides evidence of the learning objectives behind the occurrence in the actual world. Instructions on how to concentrate on scientific topics and objectives are offered to teachers.

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Indicator 3.1

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

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

Meets | Score 6/6

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

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

Evidence includes but is not limited to:

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

- Materials provide a Unit Planner at the beginning of each unit, there is a Unit Summary that shows how each concept within the unit connects to other concepts within the unit. At the beginning of each new unit, there is a structure and pacing guide that shows how concepts build complexity throughout the unit. The program guide states, “Each concept contains a series of 5E lessons broken into learning activities that follow a logical progression and are designed to build student understanding of the scientific concepts.”
- Materials provided teachers with a TEKS document. Teachers can expand the TEKS document to see which lesson is within the scope and sequence each TEKS will be taught. This allows for the teacher to see the repetition of TEKS across the various units. Furthermore, a unit planner for each unit gives the outline of concepts and lessons for each unit. For example, in Unit 2, teachers can see the concept objectives within the unit. Materials suggest ways to utilize the 5E learning model, students progress through stages of learning (Engage, Explore, Explain, Elaborate, and Evaluation). For example, at the beginning of Unit 1, Concept 2, students are expected to describe and classify samples of matter as solids, liquids, and gasses.
- Materials provide connections of prior knowledge, in Concept 3, *Renewable and Nonrenewable Resources*, Lesson 6, students *Turn and Talk* about examples of renewable and non-renewable

resources. The teacher reminds students about products around the home to identify the resources. This sets up for grade 4 where students will connect and build this knowledge to a discussion of the advantages and disadvantages of the use of Earth's resources.

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

- In grade 4, resources are made available to teachers so they can support students' learning. For example, students are expected to share what they already know about what matter is made of, then gather evidence through activities, and eventually are expected to predict how the matter will behave. In addition, evidence of activating students' prior knowledge can be found in Unit 1, Concept 1, as the teacher asks, "How would you describe the physical properties of sand compared to a sand-and-water mixture?" The teacher then scaffolds learning through a hands-on experience that builds conceptual learning, eventually reaching a more rigorous question of, "How can you demonstrate that matter can be conserved?" Teachers are given resources to scaffold student learning through questioning.
- Materials provide scaffolding of learning in Unit 2, Concept 3, Lesson 1, *How Does Electrical Energy Travel Through Objects*, students explore phenomena with a toaster. Students will share what they notice as well as what they wonder. Furthermore, in Concept 2: *Weathering and Erosion*-Lesson 4 *Soil Erosion*, students perform an interactive lesson. The teacher begins by providing guiding questions before the students begin the activity.

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

- Materials follow a specific scope and sequence that include the grade-level core concepts, recurring themes, and science engineering practices. The Unit Planner feature, which offers an overview while each lesson includes detailed teacher instructions on how to carry out such lessons, is accessible through the Unit Resources tab. The teacher receives thorough instructions on how to present the materials' basic content, recurring themes, and science engineering practices to the students. For example, in Unit 1, Concept 1, the *Supporting Scientific Themes* teacher materials, found in the lesson guide, give the teacher detailed instructions.
- Materials within Concept 2, *Weathering and Erosion,* clearly and accurately present grade-level specific concepts. The Engage section provides opportunities for students to access prior knowledge and make connections on landforms. The teacher guides students through a sugar cube investigation to model the erosion process and discuss the formations of landforms. In addition, in Unit 2, Lesson 6 Gravity and Patterns of Motion, the teacher is provided with a lesson where students are reading an article on gravity as a force. This is aligned with TEKS 4.7A. Furthermore, in Unit 2, Concept 1, Lesson 4 Cars in Motion, materials provide teachers with differentiation strategies. For example, with approaching learners, it is suggested that the students practice multiple times with a toy car and ramp. For advanced learners, it is suggested that students explain why the lesson would not work in outer space.

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

- In the Unit Resources, materials identify the skills students need to master after each lesson. For example, In Unit 4 , Concept 2, Lesson 3 students are given constructed response questions to

answer to demonstrate understanding. An example includes the section, *What Did You Figure Out?* "Think about plant structures and how they help plants survive in their environments. Complete each sentence with the correct answer."

- Materials contain learning objectives that are stated at the beginning of each lesson and contain specific expectations such as, "describe that matter is conserved when mixtures are formed" found in Concept 1, *Describing Matter*, Lesson 6, *No Change in Mass.* In addition, lesson objectives for learning are explicit, student-friendly, and include the required questions. For instance, to help students indicate the boundaries of the study, in Unit 1, Concept 1's learning target states, "I can describe that matter is conserved when mixtures are formed." statement to help mark the parameters of the lesson.

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Indicator 3.2

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

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

Meets | Score 6/6

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

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

Evidence includes but is not limited to:

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

- Materials support teachers in understanding the scope and sequencing that covers the key ideas, recurring themes and concepts, and scientific and engineering practices for each unit and grade. The Unit Planner feature, which provides an overview and detailed teacher instructions for each lesson, is accessible through the Unit Resources tab. The learning objectives contain the verbs in the TEKS and key vocabulary terms. In addition, within the Unit Resources, Unit Structure, and Pacing, each page identifies the unit, the 5E structure, lesson title, type, and time. Teachers have support for understanding the alignment and can use the planner to sequence lessons and plan materials.
- In support for teachers to understand the vertical alignment, materials provide teachers with the different scientific concepts across K–5 grade levels. Using this document, teachers can see how each science concept will be expanded in the upcoming grade or how it was addressed in previous grades. In addition, materials provide teachers with an additional support document for example, in the horizontal and alignment document the teacher can access science and engineering practices and recurring themes and concepts by clicking on the tab labeled "SEP &

RTC." The teacher can view their grade level horizontally and can view recurring themes and concept alignments vertically.

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

- The teacher guidance materials provide guidelines for addressing misconceptions and adding clarification to the content is found. The location of where the misconception needs to be addressed is posted in the teacher's instructions. For example, in Unit 1, Concept 2, the text states, "Students may believe that the mass of a mixture is less than the combined mass of its parts. This misconception is addressed in Part 3 of the activity." Furthermore, the unit resources provide background knowledge for teachers. In this document, teachers are given information regarding what students should be familiar with when discussing force such as push or pull and motion. The materials provide teachers with common misconceptions. For example, in Unit 2, Concept 1, Lesson 1, How do forces affect objects? students may think that forces only start motion and do not stop motion.
- In grade 4, materials provide explanations and examples of misconceptions. In Concept 2, *Weathering and Erosion*, Lesson 2, *Earth's Changing Surface*, students create models of erosion using materials. Materials describe misconceptions that the students may have, such as they may think that glaciers do not move. As students collect data during the investigation, the teacher is provided with guiding questions, such as asking students about how their model demonstrates a glacier. In addition, in Unit 4, Concept 1, Lesson 2, *Create a Food Web,* student misconceptions are listed to guide the teacher in recognizing and resolving the misconceptions. For example, the materials point out that students may think that organisms at the top of the food web have the most energy because energy "grows" as it travels up the food web. Materials offer many examples and illustrations that accurately demonstrate science concepts while using real-world contexts. These examples help teachers visualize the concepts and provide concrete applications that can be shared with students. By using relatable and engaging examples, materials make science content more accessible and understandable for students.

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

- Materials provide a Discovery Education Texas TechBook that is an overall program guide. The initial section of the guide is a program overview. This outlines the philosophy and how that translates into the course structure, the 5E model, and the hands-on learning mindset. Materials explain the purpose of the design in that each unit, "includes concepts that are strategically bundled ensuring students will cover all core scientific content."
- The program guide for each lesson provides information regarding phenomena-based learning. Materials illustrate how this type of learning drives student-centered instruction. For example, in Unit 2, Concept 2, Lesson 2, *What Happens When Energy is Transferred?* students are "working as detectives to determine what moves or changes when related to energy, " sharing their ideas and supporting them with evidence. Furthermore, in the interactive *Moon Phases* Lesson 6, the teacher sets the purpose by having students draw moon phases. There are specific scaffolding questions that move students to the goal of the lesson to identify patterns and analyze data.

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- Materials include explanations of the program's deliberate, research-based instructional design, which was created specifically for the TEKS and ELPS, and are included in the *Program Guide for Science Techbook. For example, in the section of the Techbook discussing the overall design, the materials state the specific design of the program is "a series of 5E lessons broken into learning activities that follow a logical progression and are designed to build student understanding of the scientific concepts."*

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Indicator 4.1

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

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

Meets| Score 4/4

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

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

Evidence includes but is not limited to:

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

- Materials allow students to classify materials as renewable or nonrenewable by gathering resources for the hands-on activity in Unit 3, Concept 3, Lesson 3. Students can make their observations based on how humans use and depletion. The data collected during the lab activity is used to organize their thinking to determine whether materials are renewable or nonrenewable. In addition, in Unit 3, Lesson 2, students build upon the previous hands-on lesson to extend their knowledge of renewable and non-renewable resources. Before the students explore, the teacher shares background knowledge about fossil fuels, natural resources, and conservation. Students can share their ideas in the Turn and Talk and the completion of the graphic organizer. Furthermore, in Concept 2, Lesson 4, *Explaining Mixtures*, students are provided with text that discusses the differences between making homemade lemonade from scratch and buying lemonade mix from the store. To create connections to

scientific thinking, class discussions, reading accompanied by literacy strategies (such as annotations, question development, and writing components), and quality questioning are used.

- Materials provide opportunities to act and think like a scientist. In Unit 4, Concept 4, *Fossil Evidence*, Lesson 6, *Learning From Fossils,* students are asked to describe a situation in which a paleontologist might conclude that an area had a past environment that was a large forest. This lesson aids students in acknowledging the valuable work of scientists and the significance of scientific research and innovation in society. Following the reading motivates students to pinpoint instances of scientific breakthroughs within the mentioned field. Prompting them to discuss the impact of these discoveries on society. Subsequently, it tasks students with identifying the problems that engineers strive to solve in the given field. Finally, encourage students to propose inventive solutions to these problems while explaining their ideas to a partner or small group.

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

- In grade 4, Unit 1, students are immersed in activities designed to classify matter's physical properties. Through hands-on experiences, practice exercises, and reading articles about STEM careers, students engage with scientific texts that deepen their understanding of the topic. Furthermore, incorporating graphic organizers allows students to record their thoughts, aiding in the organization and synthesis of information.
- Materials provide opportunities for students to engage with scientific tests. In Unit 2, Concept 3, Lesson 6, *Throw It, Push It, Press It*, the teacher sets the purpose of the lesson by having students conduct a picture walk of images, headings, and text features before reading about circuits and currents of electricity.
- Materials provide suggestions for engaging with grade-level-appropriate materials such as in, Unit 3, Lesson 1, where students are introduced to renewable and nonrenewable resources. The teacher sets the purpose with materials and samples of the earth's natural resources. The students can use the information in the text to group resources by advantages and disadvantages. In addition, in Unit 3, Lesson 6, students use the video and information background text to discuss our needs for natural resources. Students use an anchor chart to record their responses on renewable and nonrenewable resources based on the video and graphic organizers. Furthermore, in Unit 4, Concept 2, *Plant Structures,* Lesson 6 *Structures for Survival,* students read text on adaptations. Incorporating interactive images and tables will bolster students' learning experience by providing visual aids and facilitating their ability to convey their findings visually. To facilitate students' sensemaking process, their comprehension is aided by employing literacy strategies like paired reading, graphic organizers, allocated time for student questions, and the mandatory practice of annotating text.

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 found in Concept 1, Lesson 3, provide opportunities to describe and classify matter based on its observable physical properties. Students have an opportunity to measure the mass of objects and record the results on a table. Students share their findings in small groups by

referring to the table. Furthermore, in Unit 2, Concept 3, Lesson 4, *Race to the Castle*, students go through an interactive activity as they work to find conductors and insulators. While doing this, they complete a data table comparing the different properties of each.

- Materials provide graphic modes of communication in Unit 3, Lesson 2, *Earth's Changing Surface.* The teacher determines students' knowledge level about glaciers and elicits discussion about the features of the landform. The students then create a model to demonstrate the movement of a glacier. Students make and revise their predictions and conduct the experiment. Students explore different types of soil by passing around the sample and identifying similarities and differences. The teacher shares the background information about the changes in Earth's surface over time and follows up with questions and engagement. In Concept 2, Lesson 4, the teacher describes to the students the process of completing the interactive lesson, followed up by bringing the students together to discuss their findings and complete the data tables.

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.

- In grade 4, Concept 1, Lesson 2, materials provide hands-on activities in which students will classify and compare the physical properties of matter using tools such as a mass balance, magnets, and a laser thermometer. During this exercise, students formulate a claim based on the scientific experiences they have gained throughout the unit. Students may find this challenging and may require scaffolding by developing a claim together as a class and by answering probing questions such as, "What happens when matter is mixed?" Students will work in pairs or groups to collect evidence from graphic organizers from previous lessons and develop a claim about what happens when matter is mixed. A variety of presentation methods, such as posters, slideshows, and videos, are used to present claims.
- Materials allow opportunities for students to act as scientists. In Unit 2, Concept 2, Lesson 7, *What Happens When Energy is Transferred?* the students are revisiting previous science themes that have been presented in an earlier lesson. Students are looking for evidence and reasoning while working in groups. The question of "What happens when energy is transferred?" is revisited and students are encouraged to organize thinking into a table. In addition, in Unit 4, Concept 4, *Fossil Evidence*, Lesson 4, *Fossil Tracks*, the lesson allows the students to think and act like paleontologists as they identify animal characteristics using fossils from past environments and compare fossils to determine characteristics of past environments. The real-world experiences integrated into materials establish a strong connection with students, allowing them to readily relate to the content.

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Indicator 5.1

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

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

Meets | Score 4/4

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

Materials prompt students to use evidence to support their hypotheses and claims. Materials include embedded opportunities to develop and utilize scientific vocabulary in context. Materials integrate argumentation and discourse throughout to support students' development of content knowledge and skills as appropriate for the concept and grade level. Materials provide opportunities for students to construct and present developmentally appropriate written and verbal arguments that justify explanations of 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 in this indicator prompt students to use evidence to support a claim such as in Unit 1, Concept 1, Lesson 7, where students use observable physical properties to describe and classify matter. Students develop a claim about how matter can be described, working together to discuss their reasoning and support their claim with evidence. Students communicate their scientific explanations through oral presentations, writing, or drawings. Similarly, in Unit 1, Concept 2, Lesson 7, students create a claim about what happens when a matter is mixed. The teacher provides scaffolding to help students develop a class claim, and students work in groups or pairs to identify evidence from previous lessons. Students present their evidence and reasoning, showcasing their findings through posters, slideshows, or videos.
- Materials include opportunities for students to gather evidence. For example, in Unit 2, Concept 2, Lesson 6, *Waves and Energy Transfer*, students complete an assessment independently, answering a question about how sound travels. A classroom discussion follows, where students explain their chosen answer choice. In addition, in Unit 3, Concept 1, Lesson 2, students explore an interactive lesson to identify the advantages and disadvantages of renewable and nonrenewable resources. Students can record data, describe the outcomes of their

investigation, and analyze the results. Furthermore, in Unit 4, Concept 4, *Fossil Evidence,* students read together as a whole group, write facts on sticky notes, and complete a summary frames chart. They engage in turn-and-talk activities, answering questions and discussing the physical characteristics of extinct animals, providing reasoning and supporting evidence.

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

- Materials provide opportunities to develop scientific vocabulary such as in Unit 1, Concept 1, Lesson 1, where students compare matter based on density, volume, temperature, and magnetism. Students respond to verbal and written questions that allow them to use their vocabulary to describe and classify matter. By Lesson 4, students can measure and explain the tools used to measure density, volume, and temperature. Vocabulary integration is emphasized throughout the lesson sequence, including the evaluation portion. A glossary of vocabulary words is provided with each concept, offering an interactive experience for students to learn pronunciation, definitions, context, and animations. These vocabulary words are used throughout the 5E model in the learning sequence, helping students develop scientific vocabulary. The term "mixture" is used in various contexts in Unit 1, Concept 2, such as hands-on labs, literacy exercises, videos, and interactive digital labs involving the creation and separation of mixtures. Similarly, in Unit 2, Concept 2, Lesson 1, *What Happens When Energy is Transferred?* the teacher introduces the word "transfer" and poses questions to students regarding their understanding of energy. Students have time to think about their answers and engage in turn-and-talk activities with their partners. As the concept progresses, students revisit these questions, answering based on the evidence they have gathered. In Lesson 2, *Let's Investigate Forces*, students are encouraged to continue using vocabulary words like distance, gravity, friction, magnetism, and object throughout the lesson.
- Materials suggest ways to develop scientific vocabulary such as in Unit 3, Lesson 2, Concept 1, students work in groups to identify relevant parts of the globe, setting the purpose for the lesson on seasons and patterns of change. Lesson notes guide vocabulary checks once students have built conceptual knowledge of key terms. Key terms are highlighted and hyperlinked with animations, videos, and examples for students to explore and listen to. In Unit 4, Concept 1, Lesson 4, *Setting the Purpose*, the teacher reviews vocabulary by asking students to think about the meanings of the words "primary" and "producer" concerning energy. Students engage in partner discussions to share their ideas about the meanings and connections of these words. They then find different partners and repeat the activity multiple times. In addition, in Unit 4, Concept 2, Lesson 5, students watch a video about life cycles. As they watch, the teacher prompts them to listen for the words "pollination" and "pollen." The video is paused for students to create drawings or diagrams illustrating how flowering plants grow to survive. After the video, students engage in turn-and-talk activities with their partners, discussing the vocabulary and answering questions about pollination and its role in a flowering plant's survival.

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

- Materials provide suggestions for integrating argumentation and discourse to support student's development such as in Unit 1, Concept 1, Lesson 1, where a mini-demonstration of floating and

sinking matter is presented. Teachers facilitate prediction-making and discussion before the mini-lab demonstration begins. Turn-and-talks and teacher questions are used to develop conceptual understanding. The use of a student question board reinforces discourse and argumentation, provoking peer discussion and argumentation. In addition, in Lesson 8, *How Can Patterns of Force Be Explored?* students work with a partner and use a provided sentence starter. Students discuss claims regarding patterns of force and use a table to compare and organize their data. After recording their evidence, they discuss with their partner why the evidence supports their claim.

- Materials guide students to make claims; for example, in Unit 3, Concept 1, Lesson 6, students explain how soils are formed by processes of weathering and erosion. They make claims using evidence and reasoning and present their claims and evidence to the class, utilizing flow charts, illustrations, and photos. In Lesson 7, students describe how volcanic scientists study active volcanoes and rocks from ancient volcanoes. The students read the text with guiding questions, paying attention to evidence. Students reflect on their learning and evidence with written responses. Furthermore in Unit 4, Concept 1, *Food Webs*, the teacher presents images of a food chain and food web in the same ecosystem. Students reflect on the relationship between the terms "ecosystem" and "energy" and use evidence from the images to support their arguments. Whole group discussions and partner conversations allow for sharing insights and perspectives.

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

- Materials provide opportunities for students to present evidence and support hypotheses and claims such as, in Unit 1, Concept 1, Lesson 7, students are presented with the driving question, "How can we describe matter?" They gather evidence throughout the concept lessons and reflect upon the driving question. They provide scientific explanations through oral and written presentations to support their claims. Similarly, in Unit 1, Concept 1, Lesson 9, students summarize their understanding of how matter is described. Students answer questions about the standards of the concept and present their explanations in formats such as recording, performing, or finding examples. Students provide evidence and reasoning in various ways, such as finding examples in the classroom, conducting experiments, or creating drawings. In Unit 2, Concept 3, Lesson 8, *How Does Electrical Energy Travel Through Objects?* students work with a partner to support the question of how electrical energy travels through objects. They draw diagrams to explain their evidence.
- Materials provide opportunities for students to make a claim. For example, in Unit 3, Concept 1, Lesson 6, students explain how soils are formed through weathering and erosion. They make claims using evidence and reasoning and present their findings to the class, utilizing flow charts, illustrations, and photos in their presentations. In addition, in Unit 4, Concept 3, *Structure and Function*, students collaborate with a partner to exchange evidence and address the main question of how organisms rely on structures for survival. They identify supporting evidence from lessons, use a chart to structure their evidence, and articulate their claims in written form. Students can choose the format for presenting their scientific explanations, such as oral presentations, written work, or illustration.

Discovery Education Science Techbook for Texas
Grade 4

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 students' 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.

- Teacher guidance materials provide opportunities for anticipating student responses for example in, Unit 1, Concept 1, Lesson 2, demonstrates that mass and matter are conserved when mixtures are formed when students classify the physical properties of matter. Questions are provided for the teacher to use before, during, and after the lab. For example, the teacher may ask, "How does the mass of the mixture compare to the mass of the pure substances you used to make it?" Materials provide a sample student response: "If you add the masses of the substances, it equals the mass of the mixture."
- During a hands-on activity with energy, materials provide opportunities for teachers to ask students questions to deepen their thinking. In Unit 2, Concept 2, Lesson 2, *Energy and Everyday Objects*, the teacher will ask students, "When you hit a table tennis ball with a paddle, what forms of energy will you observe? How will the energy be transferred?" while they work in pairs.
- Materials provide teachers with support such as in Concept 1, Lesson 5, *Moon Phases and Seasons*, where students learn about moon phases with an interactive lesson. In the interactive portion of the lesson, the teacher is guided to ask specific answers to questions such as, "In what sequence are the Earth, sun, and moon in a full moon?" Materials provide the sample response of the sun, Earth, and moon. The lesson continues with targeted answers and ends

with a turn-and-talk with the students describing the difference between the first quarter phase and the third quarter phase.

- Materials in Unit 4, Concept 3, *Inherited and Acquired Traits,* provide the teacher with access to various resources that offer question examples to engage students and enhance their learning experience. These questions are designed to promote critical thinking and encourage active participation. Additionally, accompanying each question are suggested student responses, which aid the teacher in identifying potential misconceptions and assessing the level of comprehension among students. For example, in Lesson 6 the teacher will ask the students, “What have you learned about the traits of organisms?” Student responses will vary. Sample response: “I learned that organisms have different physical traits that may be passed down from their parents. Traits can also be influenced by grandparents.”

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

- Teacher guidance materials include how to scaffold and support students’ use of vocabulary context such as in, Unit 1, Concept 1, Lesson 1, where students compare matter according to its mass, temperature, volume, density, and magnetism. Teachers set the purpose of the lesson through a mini-experiment in which students make a prediction and then the teacher conducts a demonstration to test the prediction. After the mini-experiment, the teacher discusses the key vocabulary terms by prompting students with statements such as, "For floating or sinking, discuss density and briefly explain how it relates to floating and sinking. Objects are considered more dense than water if they sink. They are considered less dense than water if they float.” Afterward, students are encouraged to ask questions and record their notes for easy reference.
- Materials provide opportunities for the teacher to scaffold. In Unit 2, Concept 3, Lesson 1, *How Does Electrical Energy Travel Through Objects?* prior to hands-on activity, the teacher scaffolds by having students think about a toaster and how it works. The teacher then goes on to plug it, press the button down, and the element then proceeds to glow.
- Teacher guidance materials provide opportunities for student development in scientific vocabulary. For example, under Explore, Lesson 2, *Moon Phases and Seasons*, the students have a vocabulary check-in after building a conceptual knowledge of the content. The teacher is prompted to continue to use the vocabulary as they continue the lesson. Students utilize the vocabulary in their graphic organizer to guide their thinking in completing the interactive lesson.
- Materials in the Unit Resources include academic vocabulary strategies for teacher reference. One of these strategies involves introducing the words “investigate," "explain," and "describe" to the students. While introducing other vocabulary words, the teacher prompts students to identify connections between the three aforementioned terms—how they relate to each other in different contexts. For instance, students recognize that they can investigate a food web to describe the process of energy transfer. When describing a process, they use words or visuals to depict what occurs. When explaining a process, they often provide explanations for the "why" behind their investigations.

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

- Teacher guidance materials explain how to prepare students for discourse and support their use of evidence such as in Unit 1, Concept 1, Lesson 7, where students describe matter, classify

matter, and make a statement based on evidence and reasoning regarding how matter can be characterized. Teachers facilitate successful conversations among students and assist them in presenting their findings in the classroom. For example, students may identify evidence from the lessons that support their claims and may use the sentence starters in the student materials to begin their sentences. In addition, students should provide reasons (how and why) their claim supports the driving question, "How can we describe matter?" using sentences that link their evidence to the claim. Science explanations can be constructed and presented in various ways, including oral presentations, written reports, and drawings.

- Materials in Unit 2, Concept 1, Lesson 7, *How Do Forces Affect Objects?* provide teachers with strategies for before, during, and after reading. One of the strategies includes students stopping while reading to fill in a graphic organizer. During this time, students are also encouraged to turn and talk with a partner about teacher questions, such as, "What is friction and what does it do?"
- Teacher guidance materials provide the support needed to prepare students. For example, in Unit 3, Concept 1, Lesson 1, *Moon Phases and Seasons*, students discuss patterns in seasons by discovering the pattern of Orion in July. Students discuss with their groups the observed patterns and collect data. The lesson returns to the initial thoughts of the real-world phenomenon by making a claim. They continue to gather evidence to help explain the phenomenon to make a claim.
- Within the unit lessons, educators are provided with diverse collections of questions aimed at nurturing student discussions and facilitating the incorporation of evidence during the development of written and oral assertions. These insightful questions motivate students to validate their claims by employing relevant supporting evidence in their verbal exchanges and written compositions. To exemplify, as students delve into the realms of ecosystems and environments, the instructional materials equip teachers with pre-designed question templates intended to guide students in effectively utilizing evidence when expressing claims about environmental biotic and abiotic factors.

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

- Materials provide opportunities to facilitate student thinking. For example, the teachers receive educator notes guiding them on how to facilitate student discussion. Additionally, it provides students with the opportunity to share and analyze data in order to develop solutions. The students are required to determine which objects can be classified according to their properties in Unit 1, Concept 1, Lesson 2. Through guided questions, such as "Which substances could be magnetic?" "Which are not magnetic?" and "How can you describe and classify matter?" Teachers facilitate student thinking. Students then conduct a hands-on investigation in order to determine what is magnetic and how it can be classified. Teachers provide turn-and-talk questions to facilitate student thinking and discussion.
- In the formative assessment in Unit 2, Concept 1, Lesson 10, *Types of Forces*, students are assigned the "Concept Summative Assessment." Materials allow for the students to complete individually or in groups which allow students to discuss ideas. Materials also suggest that students make notes as they plan to share what they have learned.
- Materials guide teachers to support students' thinking to finding a solution, as seen in Concept 2, Unit 3, *Weathering and Erosion*, where students investigate weathering and erosion with sugar cubes. The students are provided with a graphic organic to collect data. For example, one of the questions asks students to count the edges of the sugar cube before and after the

investigation. After the students have completed 200 shakes they are prompted to draw what the sugar cube looks like.

- Materials guide teachers to support students in finding a possible solution such as the interactive lesson in Unit 4, Concept 2, Lesson 4, *Plant Structures*, where students explore the varying structures of plants found in deserts, rainforests, and temperate forest environments, and understand how these structures contribute to their survival. To begin, students will be asked to choose one of the three environments: desert, rainforest, or temperate forest. They will then construct a plant by dragging a leaf, stem, and root into designated boxes. As students hover over each choice, they will receive clues about the function of each structure. Once students successfully assemble a plant, they will watch a video about plants specific to their chosen environment. Following this, the teacher will prompt students to engage in discussion with a partner. Possible questions might include: "Why do plants growing in different environments exhibit distinct appearances?" A sample response could be: "Plants possess diverse structures that enable them to adapt and thrive in various environments."

Discovery Education Science Techbook for Texas
Grade 4

Indicator 6.1

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

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

Meets | Score 2/2

The materials meet the requirements 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 and indicate which student expectations are being assessed in each assessment. Materials include assessments that integrate scientific concepts and science and engineering practices with recurring themes and concepts. Materials include assessments that require students to apply knowledge and skills to novel contexts.

Evidence includes but is not limited to:

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

- Materials provide opportunities for a range of assessments. For example, in Unit 1, Concept 2, Lesson 9, students will explain what happens when matter is mixed, compare different types of mixtures, and explain how mixtures are made using different states of matter. Individual or group responses are based on the students' understanding of matter. Students may choose from various methods in order to demonstrate their understanding, such as recording a presentation or giving a performance. Following the completion of the Evaluate page in their student materials, students will take the Concept Summative assessment.
- Materials suggest ways to assess students, such as having students complete an assessment called, *What Did You Figure Out?* at the end of each lesson. After exploring an interactive game in Unit 2, Concept 1, Lesson 3, *Friction*, students independently complete an assessment about friction. In addition, at the end of each concept, materials provide a summative and formative assessment. In Unit 2, Concept 3, students complete a summative assessment as part of the Evaluate piece of the 5E model. The questions are aligned with TEKS from the unit.
- Materials in Unit 3, Concept 1, Lesson 10, *Moon Phases and Seasons*, explain that there are several opportunities for assessment. Students share the key ideas they have learned. They work in small groups or individually to work through the questions. After students complete the

Evaluate page in their student materials, students complete the Concept Summative assessment. In the *Weathering and Erosion*, Lesson 2, *Earth's Changing Surface*, students do a hands-on activity on erosion and weathering caused by glaciers. After the activity, students will engage in an assessment to demonstrate their understanding of weathering and erosion caused by glaciers. For example, in the *What Did You Figure Out?* section, materials ask the question, "How do glaciers cause erosion?" The teacher reviews the answers and facilitates a class discussion on the phenomenon.

- Materials suggest ways to assess student understanding. For example, Unit 4, Concept 1, Lesson 9, *Food Webs* allows students to showcase their understanding through chosen activities. They can decide how to respond to three specific questions by recording, performing, or finding the answers. Additionally, in Lesson 5, there is a more formal assessment where students are required to write the answer to the question "Which organisms aid in the transfer of nutrients from deceased plants and animals into a form that can nourish other plants?"

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

- Materials have a Standards Alignment PDF document on the Unit Resources tab of the unit that identifies which TEKS are included. Students' expectations are identified in the materials. Lessons assess science and engineering practices either formally or informally. For example, in Unit 1, Concept 2, Lesson 2, a graphic organizer is used to assess 4.1D (Use tools, including hand lenses; metric rulers; Celsius thermometers; calculators; laser pointers; mirrors; digital scales; balances; graduated cylinders; beakers; hot plates; meter sticks; magnets; notebooks; timing devices; sieves; materials for building circuits; materials to support observation of habitats of organisms such as terrariums, aquariums, and collecting nets; and materials to support digital data collection such as computers, tablets, and cameras, to observe, measure, test, and analyze information). The concept summatives and the lessons assess the concept standards. For example, the concept summative for Concept 2, *Mixing Matter,* assesses the standard, 4.6B.
- Materials provide the opportunity to assess all students. For example, in Unit 2, Concept 2, Lesson 2, *Energy and Everyday Objects*, standards 4.8A and 4.1C are listed and are covered within the lesson. At the end of the lesson, students complete a *What Did You Figure Out?* in which they apply what they have learned to recognize the transfer of energy. For Unit 2, Concept 2, students will complete a Concept Check-In, Types of Forces: Summative Assessment. Standard 4.7 and its description are listed at the beginning of the assessment well as with each question.
- Materials list the TEKS to be taught during the unit under each concept in the Table of Contents. For example, under Unit 3, Earth, Moon, and Seasons, Concept 3.1 lists the TEKS and each lesson assesses each of the TEKS listed using various types of assessments. For example, in Concept 1, Moon Phases and Seasons, Lesson 1, students engage in a lesson on 4.9A and 4.1F. The TEKS are assessed using formative assessments at the end of the lesson. The Table of Contents lists the TEKS at the beginning of each concept. The summative assessments test student knowledge of the content.
- Materials include a Table of Contents that outlines the structure of the lessons and aligns them with the assessments. The TEKS are presented prior to the lesson content, serving as a guide. For example, in Unit 4, two of the listed TEKS are assessed through the provided assessments. In Unit 4, Concept 4, the summative assessment focuses on assessing specific TEKS (Texas Essential

Knowledge and Skills). In this concept, the assessed TEKS is 4.12.C: “Identify and describe past environments based on fossil evidence, including common Texas fossils.” In Concept 3, the assessed TEKS is 4.13.B: “Differentiate between inherited and acquired physical traits of organisms.” In Concept 2, the assessed TEKS is 4.13.A: “Explore and explain how structures and functions of plants, such as waxy leaves and deep roots, enable them to survive in their environment.” In Concept 1, the assessed TEKS are 4.12.A: “Investigate and explain how most producers can make their own food using sunlight, water, and carbon dioxide through the cycling of matter” and 4.12.B: “Describe the cycling of matter and flow of energy through food webs, including the roles of the Sun, producers, consumers, and decomposers.” In the assessment for Concept 1, each question specifies whether it aligns with TEKS 4.12.A or 4.12.B.

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

- Materials provide opportunities for assessments to integrate standards. For example, in Unit 1, Concept 1, Lesson 7, students describe matter using observable physical properties, classify matter based on observable physical properties, and explain how matter can be described using evidence and reasoning. In connecting lessons within the concept, students analyze images, videos, complex texts, and authentic data. Based on this analysis, a student-generated claim is established. Using a Claim-Evidence-Reasoning framework, students demonstrate proficiency in analyzing evidence for accuracy and reliability.
- Materials suggest ways to assess standards. For example, while exploring Electrical Energy in Unit 2, Concept 3, there are a variety of assessments. After completing a hands-on activity in Lesson 2, *Make It Light*, there is a Phenomenon Check-In where students revisit a toaster from Lesson 1 and revise or add to drawings that incorporate what was learned in Lesson 2. Students explore the different types of forces in Unit 2, Concept 1. Throughout the concept, students are assessed with Phenomenon Check-Ins, *What Did You Figure Out?* as well as Claim-Evidence-Reasoning assessments. For example, in Lesson 4, *Cars In Motion*, students complete a brief *What Did You Figure Out?* as well as a Phenomenon Check-In after exploring how gravity can affect a toy car's distance traveled.
- Materials provide science and engineering practices within the lesson in the hands-on activity. Students describe factors that affect weather in different climate zones. Students collect data and summarize the concept with a turn-and-talk about the questions. Students connect their thinking around their investigation findings to real-world phenomena with the world map.
- Materials provide suggestions during Unit 4, Concept 4, for students to delve into the exploration of fossils and their formation. In Lesson 8, *How Do We Use Energy Every Day?* students are tasked with developing a claim that provides the most fitting explanation for the real-world phenomenon, addressing the driving question: "What can we learn from fossil evidence?" They then collaborate in groups or pairs to fill in a sentence starter using evidence obtained from the lessons. Ultimately, students construct and present their scientific explanations in a format that suits them best, whether it be through oral presentations, writing, or drawing.

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

- Materials allow students to apply knowledge and skills to novel contexts within assessments. As part of Unit 1, Concept 1, Lesson 4, students will describe and compare the properties of matter

using a literacy activity. Discussions include items that are familiar to students, such as toothpaste and clothing, as well as cooking. In order to support students while reading, they are advised to use literacy strategies throughout the text. After reading, students are instructed to use the strategy, Sticky Backs, to record their applied knowledge. The teacher assesses their progress. In Unit 1, Concept 2, Lesson 9, students explain what happens when matter is mixed, and apply their knowledge and skills in new contexts. The students discuss the key ideas they have learned throughout the concept. Although their responses will vary, they should demonstrate an understanding of the concept of mixing matter. Students can work individually or in groups to answer the questions. Students may choose between written, verbal, or performance-based assessment tasks to demonstrate their learning. The materials provide suggestions for students to apply knowledge to context. For example, the students complete a graphic organizer in Unit 2, Concept 1, Lesson 6, *Gravity and Patterns of Motion,* before, during, and after reading a text. The teacher informally assesses student knowledge with a variety of questions. At the end of the lesson, students complete an assessment item independently in which they fill in the blanks of a phrase with words from a bank. In Unit 2, Concept 1, Lesson 4, *Cars in Motion*, the teacher reminds students of a video from the Engage lesson at the beginning of the concept. Materials provide the following question, "How can patterns of forces be explored? Write or draw your response." Students are given the choice of how to respond.

- Materials provide opportunities to include assessments such as in Concept 3, *Renewable and Nonrenewable Resources*. In this lesson, students will access their prior knowledge of materials used to make everyday objects around them, identify the origin of materials from natural resources, and classify materials as either a renewable or nonrenewable resource. Students collect materials and make predictions about the origin of the materials to classify them as renewable and nonrenewable. For example, Sample response: “The wood came from a tree, the graphite came from a rock, and the rubber eraser and metal are made from different materials that are natural but they do not come from materials that can be easily replaced.”
- Materials in Unit 4, specifically within Concept 4 on Fossil Evidence, Lesson 8, play a pivotal role in fostering students' appreciation for the contributions of scientists and the significance of scientific research and innovation in society. Following a reading activity, students are prompted to identify notable scientific discoveries in the field of paleontology. The teacher then encourages students to explore and discuss the impact of these discoveries on society. Moreover, students are challenged to identify the problems that paleontologists strive to solve and to propose innovative solutions to these problems, sharing their ideas with a partner or in small groups.

Discovery Education Science Techbook for Texas
Grade 4

Indicator 6.2

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

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

Meets | Score 2/2

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

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

Evidence includes but is not limited to:

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

- Materials provide information and or resources that provide guidance for evaluating student responses. Materials suggest resources such as when evaluating a student's response to a formative or summative assessment, teachers use a key, rubric, or suggested response. For example in Unit 1, Concept 1, Lesson 3, the teacher asks the question, "How do you think the balance in the interactive is used?" Sample response: "The object we measure goes onto one side of the balance. Weights go onto the other side. We add or take away the weights until the sides are equal." The materials provide information or guidance for analyzing student responses. Some evidence is present such as in Unit 2, Concept 3, Lesson 8, *How Does Electrical Energy Travel through Objects?* materials provide the teacher with a sample response that students may give in response to, "What type of material carries electrical energy?" A sample response is "a calculator."
- Materials provide tools to aggregate data and guidance in evaluating student responses. Some evidence of the tools provided can be seen in Concept 1, Lesson 3, *Moon Phases and Seasons,* where students collect data in a table for four days and analyze the data. The Results tab at the end of the lesson provides the correct answer. Materials offer educators direction on evaluating questions in the STAAR redesign, particularly those involving constructed responses. For

example, within the summative assessments, teachers can assess student replies to items requiring constructed responses by following a sequence of steps accompanied by a scoring guide.

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 provide suggestions for how to support the teacher's analysis of data. Some evidence of data analysis can be seen in The Assessment Guide K–5 on the Discovery Education Techbook main page, which describes the summative assessment: "Scores will be available for each student, and a view will be automatically generated based on student and class performance in the Concept Assessment Results. Teachers can use the data to understand individual and group needs, and differentiate instruction or modify lessons to support every learner."
- Materials provide teachers with guidance to analyze assessment data and address the specific needs of individual students across all science domains. Some evidence is clear; for example, in the Assessment Guide, under *What Did You Figure Out?* materials explain that "each digital question is machine-scored and provides students with scaffolded feedback. Student responses populate in lesson results and guide teachers' use of data to support the cycle of learning."
- Materials provide guidance on responding to student needs based on progress. The materials' assessment tools provide support through data teachers can easily analyze and interpret. For example, in the *Results*, there is a grid and color-coded legend to determine student mastery of each response.
- Materials support teachers' analysis of assessment data and provide guidance and direction to respond to students' individual needs. For example, in the educator notes, an overview is provided of the concepts that students are expected to master when selecting their method for responding to each question, be it written or verbal. Teachers evaluate detailed or partial answers to specific questions. Within the Evaluate lesson, adaptations for student responses are integrated. For example, students may choose to Record it, Write it, or Find it in the assessment guide.

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

- With the materials' provided assessment tool, teachers can plan instruction, intervention, and extension based on scores and standards. Information is provided in these lessons concerning expected student responses, misconceptions, and extension activities that can be used to plan instruction, interventions, and extensions.
- Materials provide suggestions for intervention and extension activities and provide teachers with the "Spotlight on Strategies" tool. This tool is a Visual Walkabout, found within Unit 2, Concept 2, Lesson 5, *Types of Energy*. There are suggested extensions and modifications. For example, it is suggested that the teacher project images while students complete a t-chart.
- Materials provide suggestions to teachers on how students can demonstrate their science knowledge and skills. Interactions with students and informal conversations provide insight for teachers. As a result, teachers can examine student work and determine whether reteaching,

remediation, or enrichment is needed. For example, in Concept 3, Lesson 8, students answer guiding questions throughout the lesson to gauge mastery.

- Materials provide assessment tools to provide student scores, which can be utilized to guide instruction, intervention, and extension activities. The concept summative data materials do not offer teachers suggestions regarding potential interventions, differentiation strategies, whole-class reviews, or reteaching requirements.
- Materials in the assessment tools provide the teachers with the data to concentrate on a specific question that garnered numerous incorrect responses from students, analyze the progress of a single student, or devise a strategy for categorizing students to address reteaching, remedial, or advanced instruction based on the added tool. Additionally, teachers can employ the provided guiding questions to shape forthcoming lessons.

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

- Materials provide a variety of resources to support educators and respond to student data. In the Assignment Manager, a teacher can click on assessment results. Once there, the teacher can change the view of the results to group questions by standards. Materials provide directions as to how activities can be leveraged to respond to student data.
- Materials provide resources and teacher guidance to respond to data. Materials provide video clips for teachers to illustrate concepts that students struggle to understand. For example, in Concept 1, *Moon Phases and Seasons,* Lesson 5, the materials provide differentiation for approaching, ELL, intermediate, and advanced response to student responses.
- Teacher materials provide guidance on utilizing activities to address student data and respond accordingly. To facilitate direct instruction, materials do offer a range of student resources, including teaching of science concepts, flashcards, interactive elements, and practice exercises.
- Materials provide a Lesson Assessment Report that facilitates an evaluation of student achievements as well as the lesson's learning objectives. For example, the "What Did You Figure Out?" data shows formative student data is used for tailoring instruction. Materials provide supplementary formative items within the Checks for Understanding section, to aid in reflecting on student comprehension.

Discovery Education Science Techbook for Texas
Grade 4

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 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.

- The assessment materials showcase scientific accuracy and avoid bias. For instance, as part of the Unit 1 concept summative, Describing Matter, question 3 provides accurate information regarding units of measurement. For example, the question states, "Megan is making a salad. She uses 100 grams of lettuce, 50 grams of tomatoes, and 30 grams of salad dressing. What is the mass of the salad? Answer Choice D. 180 grams." As part of the assessment for Unit 1, Mixtures and Solutions, the assessment is free from bias. It includes age-appropriate questions, such as new question types representative of STAAR. The assessment contains various questions requiring different levels of student engagement to ensure a comprehensive understanding of the material.
- The evaluation section of materials is free from errors. For example, the summative assessments consist of evaluation components that align with the specified objectives and provide grade-level content and precise concepts. In the grade 4 summative assessment for Unit 4, students are assigned to describe the process by which nutrients, or matter, cycle through the food web.
- The formative assessments consist of assessment items that provide content and examples in an equitable and unbiased manner, ensuring that factors such as a student's home language, place of origin, gender, or race and ethnicity have no influence on their performance. As an illustration, in Unit 4, there is a summative assessment question labeled as #1, “What is the role of the sun in any food chain?”

Discovery Education Science Techbook for Texas
Grade 4

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

- Assessment materials contain questions with clear pictures and graphics. For instance, Assessment materials include a variety of pictures and graphics that are clear and easy to see. For example, in Unit 2, Concept 1, Types of Forces: Summative Assessment, the spring scale on question 1 is easy to see and the block is also easy to identify without the need for a label. However, the spring scale is not listed with its unit of measure, Newtons. In the Summative Assessment for Unit 2, Concept 3, there are several pictures with graphics. For example, on question 7, each answer choice is a different circuit. The wire for the circuits is a lighter color. Materials provide a magnifying glass for students to click on and zoom in on the entire picture. However, when zoomed in, the picture is fuzzy but still clear enough to see all of the components for the circuit.
- Materials' assessments offer developmentally appropriate pictures and graphics; for example, within the concept summative of Unit 1, *Describing Matter*, there are several clear pictures and graphics that are developmentally appropriate, such as question 1, which shows images of containers filled with water that are appropriately labeled. This can also be found in question 2 and question 8, in which the pictures and graphics are colorful and proportional. Several formatting errors have been detected in the Unit 1 Concept Summative, Describing Matter. The assessments utilize pictures and graphics that are suitable for the developmental stage in the Concept Summative on Inherited and Acquired Traits. For instance, question 1 displays a photograph of a pilot whale and its offspring, while question 4 features an image of a dog with a visible scar.

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

- Materials offer guidance to ensure consistent and accurate administration of assessment tools. For instance, in the unit summative, the Table of Contents suggests times an assessment should be completed can be seen. You can digitally assign or print the assessments by using simple drop-down menus and selections within the materials. Materials guide the administration of assessment tools to ensure consistency and accuracy. The Google documents offer substantial assistance to teachers regarding test assignments and administration. The Assessment Administration Guide furnishes comprehensive support on the process of test assignments, provides a scripted guideline for communicating with students, offers insights for digital administration, and also presents guidance for grading the constructed responses.
- Materials provide opportunities for ensuring consistent administration of testing. For example, materials include a two-page Assessment Guide with an overview of the different built-in assessment opportunities, such as What Did You Figure Out? and Concept and Summative Assessments. In the Help Center, teachers can find support by clicking on the Science Techbook Assessment Builder. Here, teachers can see step-by-step directions on how to build an assessment. However, there is limited information that details the scoring.

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

- Materials demonstrate efforts toward providing accommodations for assessment tools, such as the accessibility tools (text-to-speech), which are integrated into the digital platform for lessons. The materials provide audio of vocabulary words within texts. Students can click on a blue

underlined word to hear the definition and examples read aloud. However, this is limited to only a select set of words. Upon completion of the Summative Assessment, students get their results immediately. Results are color-coded based on no points, some points, all points, and no answer.

- Materials provide suggestions for accommodations, such as the incorporation of video clips to provide students with visual and auditory exposure to scientific vocabulary within relevant contexts. In Unit 4, for instance, there are voice settings available for vocabulary that pronounce the words and accompanying text. Furthermore, the Assessment Administration Guide furnishes comprehensive support on the process of test assignments, provides a scripted guideline for communicating with students, offers insights for digital administration, and also presents guidance for grading the constructed responses.

Discovery Education Science Techbook for Texas Grade 4

Indicator 7.1

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

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

Meets | Score 2/2

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

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

Evidence includes but is not limited to:

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

- Materials include opportunities for teachers to provide scaffolding such as in Concept 1, Lesson 8. Teachers support students by focusing on one familiar and one unfamiliar property, such as mass and texture, and asking them to describe familiar objects. It is recommended that teachers ask students to describe familiar objects, and then have approaching learners quiz each other on the descriptive terms they have used. In addition, in Concept 2, Lesson 4, students receive literacy strategies through the use of graphic organizers to record examples of mixtures. Support is also provided by the hands-on lab in Concept 1, Lesson 2. The workload of the lab testing may be reduced to assist struggling students, with Part 3 becoming a demonstration. Materials provide support for students who have not yet achieved mastery, such as in Unit 2, Concept 2, Lesson 4, *Energy Makes It Happen*, where the interactive game reads the material to students if they click on the speaker button within the game. In Unit 2, Concept 3, Lesson 8, *How Does ELectricity Travel Through Objects?* students are guided to make a claim about electricity traveling through objects, with scaffolded questions provided to develop their claim.
- Materials provide opportunities in Concept 1, Lesson 7, for the teacher to guide students with questions either as a class or as individual students to develop their claims, evidence, and reasoning. The teacher directs students to work in their groups and utilize the sample claim examples. Furthermore, in Unit 4, Concept 4, *Fossil Evidence,* teachers proactively prepare synonyms or explanations in advance to aid comprehension of potentially confusing words or phrases. Visual aids, sentence structures, and graphic organizers are provided throughout the course to enhance comprehension and assist in structuring students' thoughts. Tools like Venn diagrams, Frayer models, and 3-2-1 pyramids are used to visually map out the learning process.

Discovery Education Science Techbook for Texas
Grade 4

Materials provide enrichment activities for all levels of learners.

- Materials provide enrichment activities for all-level learners. For example, in the Elaborate lesson of each concept, students will have the opportunity to extend their learning through investigations into STEM careers. In Concept 2, Lesson 8, students will explain how mixtures are made and used to make products. In this activity, students will explore a scientific career through an investigation of a text supported by literacy strategies and a video segment. In addition, the Caregiver Course Overview provides opportunities for families and students to extend their learning at home. Examples include locating magnetic objects, comparing magnetic and non-magnetic materials, and engaging in conversation starters to facilitate dialogue.
- Materials provide teachers with additional activities for all learners. For example, in Unit 2, Concept 2, Lesson 2, *Energy and Everyday Objects*, advanced learners can visit the statement about energy and revisit data at various stations to understand energy transformation. In Unit 2, Concept 3, Lesson 6, *Throw It, Push It, Press It,* struggling students can be provided with a pre-made model to assist them in completing the task of creating a model. Further examples can be seen in Unit 3, Concept 4, Lesson 8, where students explore climatology with a computer model of a climate and learn about tools used by climatologists. Background knowledge is built through a web-based text and a video. Furthermore, in Unit 4, Concept 2, *Plant Structures*, the teacher is provided with a way to extend learning by using hands-on experience showing irrigation techniques used in the real world.

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

- Materials in Concept 2, Lesson 6 provide the learners with opportunities to re-engage after completing a literacy activity on classifying solids, liquids, and gasses. Materials provide teachers with a just-in-time scaffold by asking students to predict the volume of different states of matter and challenge them to devise a method for measuring or estimating each state's volume. Another example can be seen in, Concept 2, Lesson 4, where materials provide a just-in-time scaffold for students. For example, they are challenged to come up with additional examples of mixtures, classify them based on separability, and identify the separation process. Furthermore, in Unit 2, Concept 2, Lesson 2, *Energy and Everyday Objects,* students explore how energy moves from one object to another. The teacher moves around the room and asks questions provided by the materials, such as asking students about the correctness of their predictions and identifying forms of energy in the investigation.
- In Lesson 5, Concept 1, *Moon Phases and Seasons* lesson, materials explain how the teacher can prompt students' prior knowledge and address misconceptions. Materials provide the teacher with the purpose of the activity and models for the students. Materials provide a graphic organizer that assists the teacher in monitoring student progress and possible student answers. Further examples can be found in Unit 2, Concept 3, Lesson 2, *Make It Light*—while students work on building circuits, the teacher provides a just-in-time opportunity by guiding students to think about the purpose of the plastic coating on the wire and its effect on the flow of electricity.

Discovery Education Science Techbook for Texas
Grade 4

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. Materials consistently support multiple types of practices and provide guidance and structures to achieve effective implementation. Materials consistently support multiple types of practices 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 such as in Unit 1, Concept 1, where students analyze matter in terms of mass, temperature, volume, density, and magnetism using a real-world example. Students participate in an interactive authentic lab where they determine the physical properties of objects and make comparisons. Through a hands-on activity, students discover the conservation of matter when mixtures are formed. Materials also offer opportunities for students to explore STEM careers related to the topic. Additionally, in Unit 1, Concept 2, students make observations about the mixing of matter. Students engage in hands-on activities to explore their own discoveries and are presented with scientific explanations through multimedia videos. Multimodal opportunities are provided for students to demonstrate their understanding.
- Materials include opportunities for students to master content, such as in Unit 2, Concept 3, Lesson 2, *Make it Light*, the teacher engages students with a teacher demonstration in which he/she places one end of a wire on a battery and the opposite end to a candle. In addition, in Unit 2, Concept 3, Lesson 1, *How Does Electrical Energy Travel Through Objects?* the teacher

asks students to think about a toaster. Materials suggest showing an actual toaster or a video of one. Furthermore, Unit 4, Concept 3, *Inherited and Acquired Traits,* uses videos, class discussion, and turn-and-talks. These different instructional approaches help the student master the content. Additionally, the teacher ensures that students comprehend vocabulary, provides support for scientific themes, and customizes instruction to meet the needs of English language learners.

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

- Materials provide opportunities for flexible grouping such as in Concept 1, Lesson 6, where students work in different-sized groups as they describe how matter is conserved when mixtures are formed. Initially, students discuss their claims and participate in a pair-share activity about their prior knowledge. Following this, the students are placed in small groups or continue to work with their partners. Once this has been completed, students will return to the whole class setting to participate in a large group discussion. Furthermore, Unit 2, Concept 1, Lesson 8, *Careers That Use Forces and Motion*, incorporates reading and a video into the lesson while students explore force and motion. Materials provide differentiation strategies for the teacher to use with approaching learners and students can access prior knowledge by using a pantomime game.
- Materials in grade 4, Unit 4, Concept 1, *Food Webs*, suggest ways for the teacher to begin with a whole group setting, by watching a video about food webs. Students then move to small groups sharing what they know about food webs. Students will work in different groups to develop a claim based on a real-world phenomenon. Students will then present independently through oral presentations, drawings, or writings. Additionally, in the *Intro and Objectives* section of every lesson, the teacher establishes the learning objectives and encourages students to share their prior knowledge and ideas with their classmates. As the lessons progress, students are expected to engage in independent work, collaborate within small groups, and participate in whole-group activities.

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

- Materials provide opportunities to support practices, such as in Concept 1, Lesson 7. For example, students are taught how to describe and classify matter based on its physical properties. In preparation, the students had already been exposed to a real-world phenomenon activity, hands-on activity, interactive opportunity, and a literacy component that supported this activity. Students collaborated and worked independently with teacher supervision during these activities.
- Throughout each lesson, the teacher provides ongoing support by actively circulating the classroom, attentively observing for any misconceptions, and offering assistance during group discussions. The teacher stimulates learning through thought-provoking questions and facilitates hands-on activities. When necessary, the teacher demonstrates labs to ensure a clear understanding of their purpose. Students are presented with abundant opportunities to participate in both whole-group and small-group discussions, as well as to complete tasks independently or in collaboration with partners. Furthermore, in Unit 2, Concept 1, Lesson 4, *Cars in Motion*, materials prompt the teacher to show a picture or short video of an astronaut

floating in outer space. Students are then given an opportunity to discuss their ideas with the rest of the class.

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

- Materials provide opportunities for diversity such as in, unit one, concept summative assessment focuses on classifying and describing matter using observable physical properties and demonstrating the conservation of matter in mixtures. The assessment includes diverse identities, such as races, ethnicities, national origins, and male and female names, in its questions. Throughout Concept 1, Lesson 8, real-world examples and connections are drawn from communities across the U.S. and around the world, including rural, urban, and coastal communities. Places are described respectfully and inclusively, emphasizing the strengths, resources, and unique characteristics of the community.
- Materials in Unit 2, Concept 3, Lesson 5, *Current Electricity*, reflect the diversity within a school community and real-world examples. The video presenter is the same age as the students, and relatable examples like electricians, hair straighteners, batteries, turbines, and solar panels are provided. The student building a circuit in the video adds diversity as they are of different sex and race. Furthermore, materials visually represent diversity within communities by labeling vocabulary related to physical traits and asking questions about characteristics like dark or light hair. The accompanying pictures feature males and females from different ethnic backgrounds, ensuring inclusivity and representation. In addition, Unit 4 offers a comprehensive representation of both rural and urban areas in its lessons, providing students with exposure to diverse communities. Materials also celebrate the diversity of the students themselves, showcasing various characteristics like race, skin color, and gender.

Discovery Education Science Techbook for Texas
Grade 4

Indicator 7.3

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

1	Materials include guidance for linguistic accommodations (communicated, sequenced, and scaffolded) commensurate with various levels of English language proficiency as defined by the ELPS.	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 grade-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 provide students with opportunities to observe various kinds of mixtures as part of Unit 1, Concept 2, Lesson 5, through a video-based lesson. Emergent bilingual students are provided scaffolding support for English language proficiency at the beginning, intermediate, and advanced levels. To support emerging bilingual students, vocabulary words such as mixture, solution, combined, and separate are written on the board. In this activity, students are shown pictures that represent each of the words. Intermediate, advanced, and advanced high students are also supported through sequenced and scaffolded learning activities. Similarly, in Unit 2, Concept 2, Lesson 3, *Forms of Energy*, materials provide ELPS support for teachers. Students are working collaboratively with peers. For example, beginner learners are encouraged to use captions and texts with pictures to aid with understanding. Advanced High learners work with partners but are also encouraged to read the text individually while filling in the graphic organizer.
- Materials provide support to teachers with English Language Proficiency Support. For example, in Unit 2, Concept 2, Lesson 2, *Energy and Everyday Objects,* materials provide teachers with several suggestions that are not limited to but may include, providing beginning students with a picture of each form of energy. For advanced high learners, students are provided with a word wall and asked to predict the different forms of energy that are found in the stations.
- Materials include suggestions on linguistic accommodations, such as in Unit 3, Concept 5, Lesson 1, where students make real-world connections to environmental impact. To assist ELPS

students, the teacher creates an illustrated word wall to access terminology that students will need for recording their observations and ideas. Students are provided with extended time to process and share with a partner. Furthermore, in Unit 4, Concept 3, *Inherited and Acquired Traits*, the teacher is given English Language Proficiency Support for beginner, intermediate, advanced, and advanced high English Language Learners. For example, intermediate learners are asked to work in small groups to choose pictorial evidence and written evidence as they work together to write their claims. They will then choose one group member to share orally with the class. The advanced students will work with a partner instead of a small group to do the activity.

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

- Materials promote the strategic utilization of students' first language to foster their linguistic, affective, cognitive, and academic development in English. For instance, in each Unit, within the Unit Resources section, there exists a "Flashcards" tab containing printable flashcards with vocabulary studied throughout the entire unit. These flashcards display pictures and words on one side and their corresponding definitions in both English and Spanish on the other side. Some of the words included are cognates. In Unit 1, *Matter,* the flashcards and the glossary feature words like "composed/compuesto" and "liquid/líquido." Furthermore, for any interactive activity, students can complete it in either English or Spanish, ensuring they can best comprehend and independently engage with the activity. In the Spanish version, all instructions, information, buttons, and the immersive reader are presented in Spanish.
- Materials include textbooks or audio/video clips that explain concepts in languages other than English. For example, materials include links to translate content into the student's first language. Across the materials, there is an immersive reader, within the vocabulary pop-up feature, that offers reading support in 122 different languages. When in "present to class" mode, there is an emergent reader tool option that will translate the presentation into multiple languages. Materials also include video clips that explain concepts in languages other than English. All videos included in the materials can be closed captioned in multiple languages. When changing languages, it may be difficult for some users to understand how to change the language.

Discovery Education Science Techbook for Texas Grade 4

Indicator 7.4

Materials provide guidance on fostering connections between home and school.

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

Meets | Score 2/2

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

Materials provide information to be shared with students and caregivers about the design of the program. Materials provide information to be shared with caregivers for how they can help reinforce student learning and development. Materials include information to guide teacher communication 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 opportunities for information about the program to be shared with students and caregivers such as in the Caregiver Course Overview, located within the Course Materials. As part of the Program Guide, caregivers and stakeholders are provided with information that includes but is not limited to, a general overview of the program, TEKS, real-world phenomena, assessment, active science classrooms, student discourse, equity and diversity, flexible learning, literacy, differentiation, and STEM.
- Materials provide a Parent/Guardian Letter that can be found in all units under course materials. The letter includes a screenshot of the Grade 4 Science Techbook so that families understand what the program will look like upon signing in. Outside of the "Parent/Guardian Letter," there are no more resources that would give parents information about the design of the program.
- Materials provide suggestions for sharing information; for example, in the Caregiver Course Overview, materials provide caregivers with key unit ideas and phenomena to review with students. For example, in Unit 3, *Star Patterns*, students will explain patterns of change in the appearance of the moon and stars from Earth. They will also analyze data and explain patterns of change in seasons, such as changes in temperature and length of daylight.
- Materials in the Caregiver Course Overview included in the grade 4 Course Materials presents details to caregivers. Such as, “Your child’s teacher is using Discovery Education in their classroom to engage students in their everyday learning through a variety of resources—video, image, audio, interactive activities, and more. Your child can sign in anytime to engage with exciting digital activities and resources across a variety of subjects, grades, and topics of interest. Elementary school students are natural scientists. Their determined curiosity makes

them well-equipped to engage in a year of scientific discovery with their science class. Science Techbook for Texas encourages students to continue to ask questions about the world around them and solve real-world problems. This year, we will be exploring the four units of study: • Matter and Mixtures • Force and Transfer of Energy • Earth, Moon, and Seasons • Organisms, Past and Present. More details on what we are exploring, along with some suggested ways you can support student curiosity at home, are provided for each unit. Allowing students to make observations of the world around them encourages them to continue to ask questions about the real-world phenomenon we are uncovering in each unit."

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

- Materials provide the teacher with opportunities to relate information to caregivers. In the course materials, a parent/guardian letter provides information about how caregivers can support their students' learning at home. This letter contains a link to the student materials. Materials state, "You and your student can access the resources by signing in to www.discoveryeducation.com. In this Student Edition, you will find QR codes that take you and your student to corresponding online lessons of Science Techbook for Texas." Furthermore, materials provide vocabulary flashcards for the grade level.
- In Unit 2, under Unit Resources, teachers can find a PDF document with vocabulary flash cards. The document can be printed, cut apart, and sent home with students to reinforce learning at home. Materials provide vocabulary flashcards for each unit. The flashcards provide the words in both English and Spanish. For example, in Unit 2, the flashcard contains "circuit" and "circuito." The flashcard then provides the definition in both English and Spanish.
- Materials provide the teacher with suggestions on providing caregivers with information to help reinforce student learning for example in the Caregiver Overview. The overview provides Home Connections and links to Phenomena in the Home. For example, "Over the course of a month, track how the moon changes on a calendar. Look for a pattern in how the moon changes. Consider using a StarGazer app or website to track how the stars in your area change during different seasons."
- Materials provide a parent letter for teachers' convenience, which contains information regarding the textbook, program, TEKS, and guidelines for accessing the online textbook. Additionally, the letter offers a comprehensive overview of the engaging components such as dynamic content, videos, digital tools, hands-on activities, labs, and interactive game-like activities that actively engage the students.

Materials include information to guide teacher communications with caregivers.

- Materials provide suggestions on how teachers can communicate with caregivers. Examples of this indicator can be seen in the Parent letter and Caregiver Overview. In addition, the *Family Resources* in the Help Center will be beneficial for parents to support students at home while using Discovery Education. The *Discovery Education Guide for Families* includes screenshots of how families can log in, navigate the home page, find assignments, search for resources, and work in the studio. Resources are user-friendly and specific.
- Guidance for teachers to communicate with caregivers can be seen under the course material's parent letter. The letter provides parents and guardians with details about the engagement in the content. For example, "This innovative program uses real-world observations of events

easily observed by students to increase engagement and help them master key scientific concepts." Furthermore, The Discovery Education Help Center provides evidence of support materials to educators, caregivers, and students. This assortment includes the *Discovery Education Family Resource* page and the *Discovery Education Guide for Families*. For example, the resource page offers Discovery guides, navigation assistance, and resources tailored for caregivers.

Discovery Education Science Techbook for Texas Grade 4

Indicator 8.1

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

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

Meets | Score 2/2

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

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

Evidence includes but is not limited to:

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

- Materials provide TEKS-aligned scope and sequence information through the course page. The material's guide directs teachers through the units, concepts, and lessons, including detailed pacing instructions. The grade level scope and sequence include a side-by-side document showing the TEKS, a concise skill description, needed student materials, and the location of teacher materials.
- Materials in each unit are in a sequential order that aligns with the order of the TEKS. Each unit contains the lessons, components, and time pacing for each part. For example, each unit includes the same elements, such as Engage, Explain, Explore, etc. Also, the unit resources component offers a pacing guide and a planner on how each element should be taught, for how long, etc. Teacher resources include daily lessons that teachers can view, print, save, post, and add to a digital playlist for teachers and students through the Unit and Pacing page within the teacher resources.
- Each unit outlines the lessons, complete with skills, vocabulary, and course materials to teach each lesson. Various ways to provide the information include text, embedded technology, enrichment activities, research-based instructional strategies, and scaffolds to support and enhance student learning.

Discovery Education Science Techbook for Texas
Grade 4

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

- Materials suggest ways to guide students before, during, and after a reading activity connected to STEM careers. Under teacher resources, the teacher is given specific questions to facilitate student discussion. For example, in Unit 3, Lesson 5, the guide has a What Did You Figure Out? piece that allows students to complete a quick assessment. In this lesson, it guides the teacher in differentiation for learners.
- Student-made connections are evident in lessons. For example, in a lesson on matter, in the explore portion of the lesson, students are provided with materials and recording templates for their observations. Furthermore, in a later lesson, Let's Investigate Forces, students use materials, and the teachers use guiding questions to facilitate student connections.

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

- Materials provide review and practice throughout the year support in each lesson. For example, there is a section for the teachers to recall prior knowledge by making connections. This section is evident in the Engage portion of Unit 1 Lesson 1: How Can We Describe Matter? In addition, each lesson includes vocabulary components such as but not limited to videos, images, animation, and details that reinforce concepts and give opportunities for review and practice of gained knowledge.
- Materials foster mastery and retention by using concept check-in opportunities for content spiraled back and reviewed by students while practicing the new STAAR-aligned question types.

Discovery Education Science Techbook for Texas
Grade 4

Indicator 8.2

Materials include classroom implementation support for teachers and administrators.

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

Meets | Score 2/2

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

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

Evidence includes but is not limited to:

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

- Materials in the Teacher's Edition include conceptual structure and pacing for each unit. In grade 4, they have two pathways per concept that offer to support the diverse scheduling needs of teachers. The structure and pacing outline displays the connection between instructional days, 5E phases, lesson titles, lesson type, and time frame for each lesson. Furthermore, materials provide a Background Knowledge page to familiarize teachers with the lesson activities. Teacher resources provide directions to facilitate lessons. For example, in Lesson 2, Let's Investigate Forces, in the advance preparation, the passage includes, "Collect all objects before the start of class including a tennis ball, feather, and a wooden block."
- Materials provide suggested time for each component of the lesson. For example, Unit 3, Lesson 6 suggests a total time of 20 minutes. The lesson guide provides the specific minutes needed for each lesson section. For example, the lesson guide's introduction titled, "What did you figure out?" takes five minutes, and the video lasts about ten minutes.
- For lessons that involve interactive technology, Unit 2, Lesson 3: Friction, there is a gaming icon on the instructional slide deck. The teacher's directions explain the rationale and a timestamp

for the activity. The interactive lesson closes with the teacher asking probing questions about the activity.

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

- The TEKS are unpacked in materials found in Renewable and Nonrenewable Resources, Lesson 8, and the purpose statements are provided. The lesson connects STEM careers to the content about renewable and nonrenewable resources. Teachers can view standards correlations listed within the lesson. Additionally, each lesson in the guide provides teachers with student objectives and standards. For example, in Unit 3, Lesson 4, the teacher can click on the individual standard and view the entire descriptor. The unit planner gives the teacher a summary and overview of each lesson. The unit planner allows support using the ELPS.

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

- Teachers can view detailed lists of materials for lab investigations within the lessons, such as in Unit 2: Forces and Energy, Lesson 2: Lets Investigate Forces. The Unit Resources tab contains the material list, and the teacher uses the Hands-On Lessons Preparation and Materials lists to prepare all activities. The materials are available in both print and digital formats.
- Materials provide safety procedures, a material list, and clearly displayed directions for the teacher to follow. Furthermore, a comprehensive list of supplies needed can be found in educator notes. The educator notes also explain the station preparation, followed by a video of the activity.

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

- In the Hands-On Lesson Preparation and Materials, the materials state, “Post the materials list and safety precautions on the board for students to refer to during the lesson.”
- Materials provide detailed instructions on how teachers and students should follow safety guidelines during investigations under the course materials document labeled “Safety in the Classroom.” The document includes specific information such as, “Eating and drinking are not allowed during an investigation. If asked to observe the odor of a substance, do so using the correct procedure known as wafting, in which you cup your hand over the container holding the substance and gently wave enough air toward your face to make sense of the smell.” In addition, the course materials include the safety poster. This document contains general safety guidelines that can be displayed in the classroom by the teacher, such as “Tie back long hair” and “Clean up and wash your hands.”
- Materials provide a K-5 Safety Letter to follow standard safety practices for classroom investigations. The letter provides guidelines for appropriate dress, essential steps for accidents, and safe investigation behaviors. For example, “During the Investigation, be sure to follow the steps of the procedure exactly. Use only directions and materials that have been approved by your teacher.”
- Materials allow students and teachers to apply safety practices during investigations in grades 3–5. For example, in grade 4, Unit 1, Concept 2, Lesson 2: Energy and Everyday Objects, the

following safety guidelines are given to students and teachers, “Follow all lab safety guidelines. Be careful using electrical devices. Keep water away. Be careful when hitting the table tennis ball. Hit the ball so that it rolls across the table. Wear proper safety attire, including safety goggles.”

- Grade 4 materials for Unit 2, Concept 3, Lesson 2: Make It Light, provide the teacher with safety guidelines such as, “Do not touch the part of the wire not covered in the plastic covering.”

Discovery Education Science Techbook for Texas Grade 4

Indicator 8.3

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

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

Meets | Score 2/2

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

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

Evidence includes but is not limited to:

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

- Materials provide teachers with a pacing guide. The guide is presented in a comprehensive pathway as well as an express guide. Within each unit, the guide provides teachers with a suggested time for each lesson component. A concept structure and pacing are also presented at the beginning of each unit in the Teacher's Edition. For each concept, teachers can select from two pathways to meet their scheduling needs. An outline of the structure and pacing demonstrates the connection between instructional days, 5E phases, lesson title, lesson type, and time frame. Each lesson has a projected completion date posted, but teachers may assign work digitally for asynchronous learning. On each lesson page, the assign button is in the top right corner.
- Furthermore, each unit lays out the lessons by Engage, Explore, Explain, Elaborate, and Evaluate. In each section, the teacher can see the parts of the lesson, how long each section will take to teach, and what activities are in each section.

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

- Materials provide teachers with a K-5 Program Guide. This guide gives the progression of the scientific concepts and how they progress at each grade level. The guide offers a vertical alignment document that outlines the TEKS for each unit and how they align across the different grade spans.
- Under the teacher resources, each unit has a visual scope and sequence to ensure the material is taught strategically. No matter which concept pathway a teacher chooses (the Comprehensive

Concept Pathway or the Express Concept Pathway), the sequence of the material remains the same. At the beginning of each unit a concept structure and pacing is presented in the Teacher's Edition. Multiple lesson pathways provide connections between the instructional days, 5E phases, the lesson title, lesson type, and the timeframe for each lesson on the outline of the structure and pacing. The materials include a program guide, with the rationale and sequence of the content explained and demonstrated for all of the lesson components.

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

- Materials allow teachers to assign virtual lessons. The lessons can be completed at a teacher's discretion or, if needed, student's pace. Teachers may use the pacing guides and the suggested time for each lesson within the unit. The pacing of the whole grade level is intended to be completed in one academic school year.

Discovery Education Science Techbook for Texas
Grade 4

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 provide a good balance between the white space, the color, and the neatness of the material design elements. All of these elements come together to create a visually pleasing, yet organized look. Materials include an appropriate level of white space and a design that does not distract students from learning. For example, in Unit 1, *Matter and Changes in Matter*, each lesson is separated by white space.
- Materials include the right amount of graphic design such as when clicking on the drop-down menu in Unit 2, Concept 1, Lesson 6, *Gravity and Patterns of Motion,* there is adequate space between each individual section as well as titles being put in bold font. The design of materials is not distracting for student learning. All headers and titles have the same font and color scheme so that it is consistent across all units. For example, the Engage tile is green with white font across all three of the concepts in Unit 2.
- Digital materials include an appropriate amount of white space and overall design that does not distract from student learning. For example, titles and headings are prominent and clear; sections are clearly marked with subheadings. In Unit 3, *Earth and Space*, the lessons and 5E titles are clearly labeled with subtitles. For example, the landing page of *Earth's Surface,* Lesson 1 shows "Engage" and describes Real-World Phenomenon.
- Materials are thoughtfully crafted with meticulous attention to spacing and layout, resulting in lessons that are easily readable and comprehensible. The design of the materials fosters a user-friendly and informative learning experience, catering to the needs of students. The skillful incorporation of white space, color, and neatness achieves a harmonious visual presentation.

Notably, these design elements are intentionally implemented to prevent any distractions for teachers when locating specific lessons.

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

- Materials include age-appropriate visuals and graphics that aid student learning and engagement without causing any visual distractions. For example, a live-action video about magnetism is presented to students in Unit 1, Concept 1, Lesson 5. In the presentation, there are small robot-type characters. Age-appropriate graphic organizers include white space, blue borders, and purple titles.
- Materials provide age-appropriate visuals such as in the slide deck for Unit 2, Concept 3, Lesson 2, *Make it Light,* and include robots throughout the slide deck that the teacher will present to the class. In addition, Unit 2, Concept 1, Lesson 7, *Friction Affects Motion,* includes age-appropriate pictures that support learning. The picture for the Lesson 7 title is of a rubber-soled shoe walking on concrete.
- Materials embed age-appropriate pictures and graphics that support student learning and engagement without being visually distracting. For example, In Unit 3, Lesson 1, materials use real-world pictures of rapid changes to the Earth's surface such as landslides and volcanic eruptions. Materials use icons to demonstrate the type of lesson. For example, in Concept 1, *Earth's Surface,* the Explore lesson has a game icon to show that it is an interactive lesson. The icon is consistent throughout all interactive lessons.
- Materials include opportunities for age-appropriate visuals, such as Unit 4, which comprises concepts with lessons featuring title page pictures showcasing school-aged children demonstrating the application of force. These lessons incorporate age-appropriate visuals and graphics, thoughtfully integrated to enhance student learning and engagement, while maintaining a balanced visual presentation that avoids unnecessary distractions.

Materials include digital components that are free of technical errors.

- Materials in the Unit 1 vocabulary section contain no technical errors, as demonstrated by this excerpt from the Key Concepts portion of the *dissolve* card. "Do you like sugar in your tea? When you add the sugar and stir, it looks like the sugar has disappeared. How do you know that the sugar is still there? Take a sip. Yes, it is sweet. The sugar has dissolved into the tea, which makes the tea sweet." In Unit 1, Concept 2, Lesson 1, the student presentation does not contain errors. As an example, the following is an excerpt from a slide about mixing matter. "What happens to the materials when they are mixed together? How does the water change? Can it be changed back into just water?"
- Materials include a video in Unit 2, Concept 3, Lesson 5, *Current Electricity,* that is embedded in the slide deck and plays without any technical errors. In Unit 2, Concept 2, Lesson 6, *Waves and Energy Transfer*, the text that students are exploring has keywords that are underlined and in blue. The reader can click on the word so that a new window opens with the word, definition, image, and option to be read out loud in English or Spanish.
- Materials are free of inaccurate content or information. For example, materials provide outlines that describe what is to be taught and the appropriate pacing in the *Unit Planner.* Materials contain accurate content and information provided in Educator and student notes.

Discovery Education Science Techbook for Texas
Grade 4

- Each concept within Unit 4 seamlessly integrates digital components, guaranteeing their impeccable functionality without any technical imperfections. The lessons within Unit 4 are enriched with age-appropriate visuals and graphics, purposefully designed to enhance student learning and foster active participation. Materials in Unit 4 introduce Concept 4, which focuses on Fossil Evidence. Within this concept, there is a noteworthy inclusion of a genuine photograph and an “I can” statement that is meticulously crafted, free from any grammar or spelling errors.

Discovery Education Science Techbook for Texas Grade 4

Indicator 9.2

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

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

Not Scored

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

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

Evidence includes but is not limited to:

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

- Teacher materials guide how to use simulations, interactives, and related activities to support student learning. Guidelines for teachers provide suggestions regarding time and pace, as well as methods for assisting students with making observations, asking questions, collecting data, and participating in discussions. For example, in Unit 1, Concept 2, Lesson 3, the teacher uses approximately 10 minutes to explain the purpose of the interactive activity to determine which types of matter form a mixture, gives a brief demonstration to students, and asks probing questions for turn and talk discussions. Digital technology and tools can be projected onto a large screen or on a student's device, and accessed using touchscreen technology or a keyboard and mouse. Materials guide integrating digital technology and tools in various settings, including whole groups, small groups, and individual sessions. For example, in Unit 1, Concept 3, Lesson 3, students implement an interactive digital investigation to explore matter and how it is measured.
- Materials use digital technology to support learning and engagement. In Unit 2, Concept 3, Lesson 4, Race to the Castle, students advance their players through the game as they locate various insulators and conductors. In Unit 2, Concept 3, Lesson 4, *Race to the Castle,* materials provide additional similar activities that support the same standard. Materials provide PhET Lab, Circuit Construction Kit, that allows students to interactively build various circuits.

- Materials guide integrating digital technology and tools in whole group, small group, and individual settings. Digital technology and tools can be projected on a large screen or individual student device and utilized with touchscreen technology or a keyboard and mouse. For example, in Concept 2, *Weathering and Erosion*, Lesson 4, *Soil Erosion*, materials explain how teachers introduce the content. “Demonstrate the interactive by first having students read the introduction, and then click the Continue button.” The embedded technology within materials supports the print and does not replace it. For example, in Concept 2, Lesson 3, *Weathering and Erosion,* the interactive lesson can be assigned to a student or class. The students can do activities that are aligned with the content and digital lesson.
- Materials incorporate digital technology by utilizing video lessons. In Unit 4, Concept 4, Lesson 5, *Why Fossils Matter*, students can watch two videos. The first video, which lasts approximately 4 minutes, is designed for the teacher and focuses on spotlighting strategies. The second video, lasting around 3 minutes, is specifically created for students and aims to demystify fossils. To ensure student engagement, materials also give the teacher strategies to implement before, during, and after the video.

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

- Materials provide opportunities to integrate digital technology; for example, as part of the Recurring Themes and Concepts standard 4.5.A, students make observations, answer questions, and develop claims using digital data tables. This claim is then discussed with the class about how matter can be compared based on mass, temperature, volume, density, and magnetism. Teacher materials state, “Scale, proportion, and quantity is a supporting science theme that can help us to classify and learn about the matter. In this concept, students learn that magnetism, temperature, mass, and density are observable properties that help to describe matter. As students investigate, they will recognize that matter can be measured in standard units to describe and compare it.”
- Materials in Unit 2, Concept 2, Lesson 2, *Energy and Everyday Objects*, provide a hands-on activity in the slide deck that supports the standards. The teacher and/or students can manipulate the slide deck to complete the hands-on activity with tennis balls, paddles, foil, water, straws, and ice cubes. Materials provide digital components that support engagement as well as the TEKS. In Unit 2, Concept 3, Lesson 6, *Throw It, Push It, Press It,* the students manipulate the slide deck to read about electricity while completing a KWL Chart with a partner.
- Materials provide opportunities for students to obtain, evaluate, and communicate information using digital tools such as the interactive Lesson 3 in *Earth’s Resources,* where students can complete two activities exploring natural resources. Materials provide digital tools for students to engage with recurring themes and concepts; for example, in Concept 1, Lesson 5, *Moon Phases and Seasons,* students complete the Moon Phases interactive activity.
- Materials provide opportunities to integrate digital technology; for example, In Unit 4, Concept 3, Lesson 6, *How Do Traits of Organisms Compare?* materials actively facilitate student engagement while they make claims, gather evidence, and provide reasoning. Within the slide deck, there is a dedicated slide labeled “Support Science Theme” that prompts students with the question, "As you explored, what patterns did you identify that help describe phenomena?" Students are encouraged to interact with the slide deck, manipulating it to formulate their claims and locate supporting evidence to substantiate their assertions. Following the viewing of a video and the completion of a graphic organizer, materials afford students the chance to

engage with the content through a response activity. This involves the use of quick writing, where students employ their writing skills to construct a concise paragraph that summarizes the main ideas and key points conveyed in the video.

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

- Materials integrate digital technology that provides opportunities for teachers to collaborate, such as an application called *Studio. Studio* is described in Discovery Education's Help Center. Students and teachers can collaborate on projects via this interactive feature. Among the functionalities of the *Studio* application is a chat feature, which facilitates communication between users. Virtual whiteboards are included within materials, allowing students and teachers to share ideas, engage in activities, and share thoughts, clips, and photos. Through the use of a virtual whiteboard, teachers can engage their students in the learning process.
- Materials provide opportunities for students to collaborate, such as in commonly occurring "Turn-and-Talk" activities. In Unit 2, Concept 1, Lesson 7, *Friction Affects Motion,* students are reading a text, discussing, and completing a digital Bubble Map graphic organizer.
- Materials provide suggestions for digital technology that allow for collaboration; for example, a teacher can use real-time video conferencing with students. Materials guide how teachers can use the platform for office hours. For example, teachers can create boards or slideshows that support students in analyzing information from various multimodal resources and evaluating their value as they design their boards in *Studio*.
- Materials provide students and teachers with the option to utilize a video conferencing platform or existing platforms to elevate student engagement in group projects and discussions. A noteworthy illustration is the Discovery Education Studio, which equips students and teachers with a comprehensive toolkit for synthesizing their learning experience. This includes the creation of interactive boards, where students can effortlessly incorporate multimedia content from diverse sources, such as Discovery Education materials, personal resources, and a range of artifacts like videos, images, illustrations, and original text.

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

- Materials provide suggestions for digital technology integration, such as access to Discovery Education grade 4 materials, available online via a variety of devices with internet access, including Chromebooks, iPads, PCs, Apple computers, and/or smartphones. Teachers can also download and print the materials, allowing them to provide students with a hard copy of the text, organizer, and activities. In the absence of an internet connection, PDFs can be stored on a device. Although images and videos can be downloaded for offline use, interactives, virtual labs, boards, and other web-based interfaces can only be accessed online.
- Materials allow teachers to share resources directly from Discovery Education to Microsoft Teams. Teachers can find a resource and share it with students. The Help Center that is available for educators gives step-by-step guides. Districts that use Schoology as a learning management system can share studio boards and slideshows. Materials provide directions within the Help Center on how teachers can embed and give students access.
- Materials allow downloading of a PDF of specific activities and videos. For example, in Concept 3, *Changing Landforms*, Lesson 6, the lesson can be printed in PDF form. In addition, the “check requirements” at the bottom of each unit’s materials is where the information on operating

systems and accessible/compatible devices is. Materials check the requirements of the device in use and send a report.

- Materials can be easily accessed online using any device equipped with internet connectivity. Discovery Education is compatible with various browsers on desktop and laptop computers, ensuring a versatile user experience. To optimize your experience, we recommend utilizing the latest versions of popular browsers such as Google Chrome, Mozilla Firefox, Safari, and Microsoft Edge. In addition, Discovery Education provides online access to its materials, which can be conveniently reached through a diverse range of internet-connected devices including Chromebooks, iPads, PCs, Apple computers, and smartphones. Moreover, materials offer convenient download and print buttons, allowing teachers to distribute physical copies of texts, organizers, and activities for offline use. In scenarios where internet connectivity is not available, PDF versions of the materials can be saved on a device. While images and videos can be downloaded and accessed offline, interactive components, virtual labs, boards, and other web-based features necessitate online access.

Discovery Education Science Techbook for Texas Grade 4

Indicator 9.3

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

1	Digital technology and online components are developmentally appropriate for the grade level and align with the scope and approach to science knowledge and skills progression.	Yes
2	Materials provide teacher guidance for the use of embedded technology to support and enhance student learning.	Yes
3	Materials are available to parents and caregivers to support student engagement with digital technology and online components.	Yes

Not Scored

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

Digital technology and online components are developmentally appropriate for the grade level and align with the scope and approach to science knowledge and skills progression. Materials provide teacher guidance for the use of embedded technology to support and enhance student learning. Materials are available to parents and caregivers to support student engagement with digital technology and online components.

Evidence includes but is not limited to:

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

- Materials provide suggestions for technology and online components. For example, a developmentally appropriate digital literacy activity is included in Unit 1, Concept 1, Lesson 4. Students use an interactive graphic organizer to record evidence that describes matter using physical properties that can be observed within the activity. Materials include live hyperlinks to other online resources to ease planning and access. Teachers are provided with links to tutorials on how to facilitate parts of the lesson, such as a Spotlight on Strategies called *Sticky Back,* which will be used as an after-reading literacy strategy.
- All materials are developmentally appropriate for students. The vocabulary words are aligned with the TEKS and the Scope and Sequence align with the progression of skills. Within Unit 2 for Grade 4, materials progress through the following concepts, *Types of Forces, Transferring Energy, and Electrical Energy.* Standards are aligned and built off of each other.
- Materials provide related TEKS and ELPS for online and digital components within the Teacher Guide. For example, in Concept 1, Lesson 2, *Moon Phases and Seasons*, the interactive activity is offered in both English and Spanish to support language development. Materials include guidance on how to effectively integrate the components into lessons, and suggestions for evaluation of student learning via digital components.
- Grade 4 materials offer an insightful rationale for the appropriateness of interactive activities. These materials also provide differentiation strategies for students with diverse learning

approaches. For instance, approaching learners who may find the interactive activity overwhelming can be given additional time to navigate each section. If a student continues to face difficulties, it is recommended to have them complete one of the two parts of the interactive instead. Materials include a digital planning guide that features live hyperlinks to other online resources, which facilitates planning and enhanced user-friendliness. For example, the Unit Planner provides a comprehensive overview of each unit and concept lesson, with convenient links to access the associated lessons and activities.

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

- Materials include examples of best practices in the form of multimedia integration and technology integration to differentiate instruction. Upon adding the topic of digital vocabulary to the interactive Help Center, the bot provides hyperlinks to resources such as a video, PDF, and graphic organizer, as shown in the following excerpt. "To support the development of social and academic vocabulary, images are a great way to introduce vocabulary. Concept Circles is a teaching strategy used to help students analyze the relationships between content words by using a circle organizer to determine the concept of study. Students identify and discuss vocabulary and its relationship to content and then represent their analysis in the organizer."
- The materials offer instructional support for educators on leveraging integrated technology to foster and enrich student learning. For example, Features and Tools of Science Techbook can be found within the Help Center. Materials state, "Discovery Education Science Techbook provides teacher preparation information, suggested instructional pathways and strategies, and model use of Discovery Education digital resources." A "Present to Class" button is present in all lessons. In Unit 2, Concept 1, Lesson 5, *Introduction to Forces*, the "Present to Class" button is blue and allows the teacher to make the slide deck full screen.
- Materials provide recommendations for teachers on which days to use technology with students using the 5E model with directions and timestamps for each activity. For example, in Unit 3, *Earth, Moon, and Seasons,* the unit has three Explore lessons with two interactive lessons that align with the content. Materials include best practices for using embedded technology for differentiating instruction and using technology to promote collaboration. For example, in Concept 1, *Moon Phases and Seasons*, materials provide teachers with questions to help differentiate and scaffolds to assist various levels of learners. For example, “If students struggle with the concept that the tilt of Earth’s axis affects the amount of sunlight striking Earth’s surface, use a globe to demonstrate the concept.” and “ Have students model the rotation of Earth’s axis, then model the evolution of Earth’s axis as Earth travels around the sun using their bodies. Students may act this out with the left hand pointing down as the sun and the right hand at a tilt, revolving around it.”
- Materials include practical examples that showcase effective strategies, demonstrating how multimedia and technology can be seamlessly integrated to support differentiated instruction. When exploring the topic of digital vocabulary in the interactive Help Center, the bot provides useful resource links, such as videos, PDFs, and graphic organizers.

Discovery Education Science Techbook for Texas
Grade 4

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

- Materials provide suggestions for parents and caregivers who can support student engagement with online and digital technology resources. The Parent/Guardian Letter states, "You and your student can access the resources by signing in to www.discoveryeducation.com. In this Student Edition, you will find QR codes that take you and your student to corresponding online lessons of Science Techbook for Texas. QR code readers are available for phones, tablets, laptops, desktops, and virtually any device in between."
- Parents and caregivers have access to resources that aid in promoting student involvement with digital technology and online elements. Students may click on a vocabulary word within each lesson for support. For example, in Unit 2, Concept 2, Lesson 2, *Transferring Energy,* the student can click on the vocabulary word, "light energy." This gives the student the option to read details about the word, watch a video, and view an animation of the word.
- Materials provide caregivers with an introduction letter and course overview in the Course Materials. For example, materials summarize the programs and the following information to guide them to the link, “You and your student can access the resources by signing in to www.discoveryeducation.com.” Materials detail information in the Parent/Caregiver letter that demonstrates where to find the curriculum. For example, in this Student Edition, you will find QR codes that take you and your student to corresponding online lessons of Science Techbook for Texas. QR code readers are available for phones, tablets, laptops, desktops, and virtually any device in between.
- Materials provide program access for students, parents, and caregivers where they can click on the Program Guide for a comprehensive overview of the materials. It's worth noting that this guide is identical to the one provided to teachers, allowing parents to gain insight into what they can anticipate from the program. The document emphasizes that each unit incorporates carefully grouped concepts, guaranteeing that students will explore all fundamental scientific content. Furthermore, it elaborates on how each unit follows the 5E model for instruction.