Discovery Education Science Techbook for Texas Grade 2

Discovery Education Science Techbook for Texas Grade 2 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 K	100%	100%	100%	100%
Grade 1	100%	100%	100%	100%
Grade 2	In Progress	In Progress	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.

Discovery Education Science Techbook for Texas
Grade 2

- 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.

Discovery Education Science Techbook for Texas Grade 2

Indicator 2.1

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

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

Meets | Score 4/4

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

Materials provide multiple opportunities for students to develop, practice, and demonstrate mastery of grade-level appropriate scientific and engineering practices as outlined in the TEKS. Materials provide multiple opportunities to make connections between and within overarching concepts using 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.

- The materials provide multiple opportunities to develop and practice grade-level appropriate scientific and engineering practices, as outlined by the TEKS. The materials cover several TEKS within each core concept developed through the 5E Framework: Engage, Explore, Explain, Elaborate, and Evaluate. Each concept is introduced through an Engage lesson which connects it to real-world phenomena and specific science themes. Each concept includes multiple Explore lessons with hands-on activities, videos, literacy connections, and interactive activities, providing students opportunities to develop grade-level appropriate scientific and engineering practices. Each hands-on lesson includes a Phenomenon Check-In to help students connect their investigation to the real-world phenomenon presented at the beginning of the unit concept.

Discovery Education Science Techbook for Texas
Grade 2

- Materials provide multiple opportunities for students to develop mastery of grade-level appropriate scientific and engineering practices as outlined in the TEKS. For example, in Unit 3 Weather, Concept 1, Lesson 3, students explain why measuring, recording, and graphing weather information is important and determine the tools used to measure temperature and precipitation. After discussing different types of weather, students engage in an interactive activity in which they read about weather measurement tools and sort them out based on their descriptions. After finishing the interactive presentation, students answer questions about it, and then they summarize their learning about each tool. In the following literacy lesson, students learn how meteorologists use patterns in their collected measurements to predict the weather. In Lesson 5, students watch a video and identify the ways temperature and precipitation are measured. In Lesson 6, students explain what kind of weather information can be collected and recorded, read weather graphs, and explain the importance of measuring, recording, and graphing weather information.
- The materials provide multiple opportunities to show mastery of grade-level appropriate scientific and engineering practices. Lessons throughout the Explore section include formative assessments in the “What Did You Figure Out?” portion. Additionally, students engage in a claim, evidence, and reasoning activity for each core concept within a unit. For example, in Concept 4, Magnification Tools, Lesson 6, students choose which claim best explains the real-world phenomenon of why magnification tools are used. Then students support the claim with evidence they have previously learned. Each core concept is also assessed in the Evaluate lesson, in which students answer questions by recording their answers, performing them, or finding them in their environment. For example, in Unit 3, Concept 1, Lesson 9, students answer the following questions: “What types of weather can you measure? How might we measure temperature and precipitation? Why do we record and graph weather information?”

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

- The materials identify overarching concepts using recurring themes and show how they connect within the materials. In the K-5 Program Guide, the materials identify seven recurring themes that appear throughout the program: patterns, cause and effect, scale, proportion or quantity, systems, energy and matter, structure and function, and stability and change. The materials provide multiple opportunities to use recurring themes in making connections between and within overarching concepts. Materials utilize the recurring theme of patterns. For example, when students are working to understand core scientific concepts about the seasons, they engage in practices such as asking questions, conducting investigations, and developing models, while also using recurring science themes such as patterns and systems.
- Materials utilize the recurring theme of cause and effect. For example, in Unit 1, Concept 3, Investigating Pushes and Pulls, students identify cause-and-effect relationships by investigating what happens when objects are pushed and pulled. In Unit 1, Concept 4, students learn that sound is energy that causes vibrations that travel to our ears. In Unit 2, Concept 2, Earth’s Changing Surface, students learn about the causes of the changes in Earth’s surface as they consider how factors or conditions can cause objects, organisms, and systems to change or stay the same.

Discovery Education Science Techbook for Texas
Grade 2

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

- The materials strategically develop students' content knowledge and skills appropriate for the concept and grade level as outlined in the TEKS. Grade-level content knowledge and skills are taught using SEPs and recurring themes so students can build and connect knowledge and apply it to new contexts. For example, materials for grade 2 integrate SEPs through classroom and outdoor investigations for at least 60% of instructional time to support instruction in the science content standards. For example, in Unit 2, Earth and Sky, Concept 1, which lasts a total of 220 minutes, the time allotted to the specific phases of Engage, Explore and Explain takes a total of 180 minutes (82% of the total time), complying with what TEA states for grade 2.
- The materials are systematically designed to develop and build student skills and content knowledge using phenomena appropriate to the grade level as outlined in the TEKS. For example, Unit 1, Matter and Forces, are divided into four concepts: the first deals with concrete concepts, such as classifying objects by their observable properties. The second concept is more abstract, dealing with changes in matter due to heating or cooling. The third concept deals with the effect of pulls and pushes on different objects. Finally, the fourth concept introduces them to explore sound and how vibrations make it.

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.

- The materials include opportunities for students to ask questions and plan and conduct investigations. For example, in Unit 1, Concept 1, Material Properties, Lesson 1, students classify matter. Students start by sharing what they know about different materials and what they want to learn about them. The teacher writes the questions on an easel to address them later and tells students that during the lesson, they will find out what materials are best to make a hat. Students work in a group to investigate properties of matter like texture, absorbance, and thickness of different materials and decide which material is best for each part of the hat. After experimenting, students make a hat using the materials they chose.
- The materials include sufficient opportunities for students to engage in problem-solving to make connections across disciplines and develop an understanding of science concepts. For example, students ask questions and explain phenomena using appropriate tools and models. In Unit 1, Concept 4, Lesson 4, Make a Telephone, students design and build a device using tools and materials that use sound to communicate over distance and explain that vibrations can travel through matter. In Lesson 5, Making Sound, students answer, "How does a stethoscope help a doctor?"

Discovery Education Science Techbook for Texas
Grade 2

Indicator 2.2

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

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

Meets | Score 4/4

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

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

Evidence includes but is not limited to:

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

- The materials use phenomena as a central anchor that drives student learning across grade-level content in each discipline (earth/space, life, physical science). The Engage lesson introduces real-world phenomena within each unit concept and asks students to make connections and claims about them. The Explore lessons include a check-in to help students connect their investigations to phenomena. During the Explain stage, students synthesize and reflect on how their thinking about real-world phenomena has changed. In the Program Guide, the publisher explains, "In grades K-2, students are not expected to create their own explanation, but to discuss with the class which explanation they can support with the evidence they collected in Explore."
- For example, in Unit 3, Weather Observations, students Engage in the concept by working in pairs as they look at the weather data presented in a chart and describe each day, including temperature and precipitation. In Lesson 2, students measure, record, and graph weather information.
- The materials embed thought-provoking phenomena and engineering problems that require nuanced and appropriate grade-level explanations. Materials provide opportunities for students

to develop, evaluate, and revise their thinking as they figure out phenomena. For example, in Unit 1, Concept 4, Exploring Sound, students investigate how sound is made. After students predict the sounds different objects will make, they explore making sounds with them and learn that the size of an object does not determine if it has a loud or soft sound. Through different exploration activities, teachers guide students to understand that the volume of the sounds is based more on the type of materials and how the instrument is played. Students also explore how sound is related to vibrations and how vibrations can be caused. In Lesson 6, What Is Sound?, students use the evidence from the Explore section to construct and present their scientific explanations of how sound is made.

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

- The materials provide opportunities to leverage students' prior knowledge and experiences related to phenomena and engineering problems. For example, in Unit 2, Concept 2, Lesson 1, How Can We Conserve Earth's Resources?, the slide presentation includes a section on making connections which states, "Elicit students' prior knowledge and experience with the real-world phenomenon by asking students if they have ever seen or experienced examples of Earth's surface changing." If students struggle to think of connections, the educator notes prompt the teacher to give examples such as dirt and rocks being washed away on a hill, rocks broken down and smoothed by water, or a stream that has changed size.
- The materials allow different entry points to learning phenomena and solving problems. For example, in Unit 3, Concept 2, Wind and Weather, students experience the phenomena through various means: images (Lesson 1), hands-on activities (Lessons 2 and 6), video (Lesson 3), interactives (Lesson 4), and reading (Lesson 5).
- The materials guide teachers and students to address potential areas of misunderstanding. For example, in Unit 3, Concept 2, Lesson 3, Make a Flood, the educator notes state, "Students may believe that all heavy rains will cause flooding. Explain that there are many factors that can cause flooding, not just heavy rain. Examples include the amount of rain in recent days, the length of time it rains, etc."

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

- Under Unit Resources, materials include a document titled Background Knowledge. This section provides student and teacher background knowledge on each core concept covered in the unit. For example, in Unit 1, Concept 4, Exploring Sound, the teacher's background states, "Sound is a type of energy. It is made by an object that vibrates in matter—usually the atmosphere. When an object vibrates in the atmosphere, the air particles around it move back and forth. These particles push against other surrounding air particles, which in turn push against their surrounding particles, creating fluctuations in air pressure. This results in a wave of vibrating matter that travels through the air. These vibrations can be caused by various means, including sound itself."
- The materials clearly outline student learning goals behind each phenomenon. At the beginning of each lesson, the materials specify the lesson's objective and what teachers expect students to learn. For example, in Unit 1, Concept 4, Lesson 1, What is sound?, materials specify that the students can "explain different levels of sound, such as loud and soft sounds; describe different

sounds that can be heard in the classroom or at home; and provide examples of sound." Additionally, in the unit resources, the "Unit Planner" summarizes the unit goals (involving multiple core concepts) and a summary of the real-world phenomenon for each core concept, followed by the concept objectives for all lessons.

Discovery Education Science Techbook for Texas
Grade 2

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.

- The materials present content that builds in complexity within and across units and grade levels. The materials include a K–5 Program Navigation Guide and a Vertical Alignment Guide which show how content builds complexity across units and grade levels. For example, the Vertical Alignment document found on the homepage shows the main four units of study of all grade levels as Matter and its Properties; Force, Motion, and Energy; Earth and Space Science; and Organisms and Environment; as well as the specific topics included in each. For example, the Organisms and Environment unit in Grade 1 covers living and nonliving things, Food Chains, and Life Cycles of Animals. In Grade 2, materials extend knowledge of this concept covering how ecosystems support the needs of plants and animals; Producers and Consumers; the Structure of a Plant; and Unique Animal Life Cycles.
- The materials connect new learning goals to previous and future learning within and across grade levels. For example, in the Study of Matter and Its Properties, Kindergarten begins with the classifying of objects. First grade moves on to the physical properties of objects, heating and cooling, and the study of a system and its parts. The second-grade curriculum focuses on changing the physical properties of objects and the properties of solids and liquids.

Discovery Education Science Techbook for Texas
Grade 2

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

- The materials include guiding documents to explain a progression of concrete and then representational before abstract reasoning when presenting concepts that allow for increasingly deeper conceptual understanding. The Program Guide states, “Concepts within each unit are structured with lessons that follow the 5E Framework: Engage, Explore, Explain, Elaborate, and Evaluate. Units, concepts, and lessons are designed to pique student interest and scaffold acquisition of specific scientific ideas as students learn about the world in which they live.”
- Concepts within a unit also reflect a progression from concrete to abstract reasoning. For example, in Unit 1, Matter and Forces, students start with the concrete concept of classifying objects by their observable properties. The second concept is more abstract, exploring changes in matter due to heating or cooling. The third concept explores the effect of pulls and pushes on different objects. Finally, the fourth concept introduces sound and how it is made by vibrations. Additionally, the progression of concrete before abstract reasoning is present within each unit concept. For example, in Unit 1, Concept 3, Investigating Pushes and Pulls, students first explore what happens when objects are pushed and pulled in Lesson 2. By Lesson 7, Helping People Move, students identify STEM careers that use pushes and pulls to help people move and explain that a push or a pull can cause objects to move and that the strength of the push or pull affects how fast and far the things move.
- Materials ensure students experience phenomena before utilizing models as a tool for reasoning. For example, in Unit 1, Concept 3, Lesson 1, Investigating Pushes and Pulls, students demonstrate pushes and pulls using classroom objects and watch a video about pushes and pulls in the game of bowling. In Lesson 2, Push and Pull Investigations, students plan and investigate to demonstrate what happens when objects are pushed and pulled.
- The materials sequence instruction in a way that activates or builds prior knowledge before explicit teaching occurs that allows for increasingly deeper conceptual understanding. For example, in Unit 1, Concept 4, Lesson 2, Loud and Soft Sounds, before explicitly learning about the sound and how it is produced, students build on prior knowledge by sharing what they already know about different instruments and the sounds they make. After discussing their answer, students make connections by responding to questions like “Who has played an instrument before?” “What instrument have you played?” and “What type of sound did the instrument make?”

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

- The materials clearly present grade-specific core concepts, recurring themes and concepts, and science and engineering practices. For example, materials use the 5E (Engage, Explore, Explain, Elaborate, Evaluate) instructional model for sequencing science instruction. During the Engage phase, materials pose a driving question, present a real-world phenomenon, and have students make an early claim which they will adjust as the concept is developed. During the Explore phase, students engage in multiple activities including hands-on investigations and centers, videos, interactive practices, and text analysis. During the Explain phase, students construct explanations based on the evidence of the phenomena. In the following Elaborate phase, materials connect the concept to the real world, using a text focused on STEM careers. During

the final Evaluate phase, materials assess knowledge acquired and provide choices for students to present their understanding.

- For example, in Unit 2, Concept 2, Earth's Changing Surface, during the Engage lesson students activate prior knowledge by discussing examples they have seen of changes on the Earth's surface and making a claim about how the surface of the Earth can change. During the Explore phase, students conduct investigations through videos, texts, and hands-on experiences such as blowing air or spraying water on a mound of sand to describe the changes brought up. In the Explain phase, students explain how the surface of the Earth changes due to the action of wind and water. In the Elaborate phase, students make connections to the real world by explaining the job of geology engineers who study erosion. Finally, in the Evaluate phase, students demonstrate their knowledge by responding to questions like "How does the wind change Earth's surface?" and "How does water change Earth's surface?"
- The materials accurately present core concepts, recurring themes and concepts, and science and engineering practices (SEPs). Across lessons, units, and grade levels, materials are free from scientific inaccuracies. Materials present scientific content that is current and reflects the most accurate and widely accepted explanations. For example, the Unit Resources section contains background information with facts that they need to know for a better understanding of the concepts so that they are prepared to answer any questions with accuracy.

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

- The materials include specific learning targets for each grade level. For example, materials provide unit objectives for each unit and student learning objectives for each lesson. Every unit contains a Unit Planner that provides an overview of the concepts and the grade-level standards. The Unit Planner also provides the overall goal for the unit and the connections between concepts. Each lesson provides the overall objectives and grade-level learning outcomes for the lessons. Each lesson also provides "I can" statements for clarity of objectives in student-friendly language. For example, in Unit 1, Concept 1, Material Properties, the teacher learning objectives state, "By the end of this concept, students will access prior knowledge and previous experience to make an initial claim about the real-world phenomenon, observe materials to gather data about their properties, classify materials using their physical properties, describe and classify objects by their observable properties, identify and describe the properties of matter, identify the properties of solids and liquids, describe how materials are classified based on their physical properties, explain how the properties of materials are applied in a STEM career, and demonstrate understanding of how to classify materials based on properties."
- The materials define the boundaries of the main concepts that students must master for the grade level or course. For example, in Unit 2, Concept 2, Lesson 3, Changing Land, the materials explain that "For this concept, students are only responsible for knowing that wind and water can change Earth's surface both slowly and quickly." Since the video in the lesson mentions weathering, erosion, and deposition, the materials prompt the teacher to explain that these are different ways that wind and water change the surface of the Earth. The notes state, "Review the video with students, and focus on helping them recognize the different ways wind and water contribute to Earth's changing surface."

Discovery Education Science Techbook for Texas Grade 2

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 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 include guiding documents that explain how content and concepts increase in depth and complexity across lessons and units within the grade level. For example, the Unit Planner found in Unit Resources, includes a unit summary with a description of what students will learn through the different lessons. For Unit 1, Matter and Forces, this document states, "In this unit, students will investigate physical properties and how they can change, forces on objects, and sound. While completing the Material Properties concept, students will describe objects based on their observable properties. They will use these properties to classify and compare sets of objects. During the Changing Materials concept, students will apply their knowledge of observable properties to explore how objects can be changed by different processes. They will also describe how materials can be combined to form new objects. In Investigating Pushes and Pulls, students will explain how pushes and pulls affect the motion of objects. They will identify how the force of a push or a pull impacts how far and fast an object will move. Finally, in Exploring Sound, students will explore how sound is produced. They will differentiate between loud and soft sounds and learn how vibrations are related to sound."

Discovery Education Science Techbook for Texas
Grade 2

- The supporting document "K–12 Scientific and Engineering Practices and Recurring Themes and Concepts Vertical Alignment" presents a comprehensive table that showcases which specific skills and standards students should have mastered in previous grades and how learning will progress in the subsequent grades. This document includes tabs categorized by SEPs and recurring themes and concepts (RTCs), biology, Earth and space, and chemistry.
- For example, in the SEPs and RTCs tab, Kindergarten standard K.1.A (ask questions and define problems based on observations or information from text, phenomena, models, or investigations) is shown as covered in Units 1 through 4. In the rest of the grade levels and in the Biology course, the correlating standard is covered in all units as well. In the Earth and space tab, teachers and administrators can see how a topic is covered through the grade levels. Students first learn about seasons in Kindergarten in Unit 3, Concept 2, Wind and Weather, in which they observe and describe changes over seasons. In Grade 1, Unit 2, Concept 3, Patterns in Nature, students are expected to describe and predict the patterns of seasons of the year such as order of occurrence and changes in nature. Then, in Grade 4, students encounter seasons again in Unit 3, Concept 1, Moon Phases and Seasons, in which students collect and analyze data to identify sequences and predict patterns of change in seasons such as changes in temperature and length of daylight.

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 include information for teachers about common grade-level misconceptions that are barriers to students' conceptual development. For example, in Unit 1, Concept 1, Lesson 8, Predicting the Weather, the educator notes include a misconceptions section that states, "Students may confuse weather and climate. Explain to students that weather is the weather conditions over a shorter period of time, such as days, weeks, and months, and that climate is the longer-term weather patterns over longer periods of time, such as years." In Unit 3, Concept 2, Lesson 3, Make a Flood, the misconceptions section states, "Students may believe that all heavy rains will cause flooding. Explain that many factors can cause flooding, not just heavy rain. Examples include the amount of rain in recent days, the length of time it rains, etc."
- Each unit contains a document called background knowledge under unit resources which provides information for teachers and students. For example, in Unit 4, Concept 1, Plant Survival, the teacher background explains that "Unlike mammals, amphibians and insects go through distinct stages, which do not resemble the adult. This process is called metamorphosis from the Greek words meta (change) and morph (from). Metamorphosis is a dramatic change in body form and function. There are two types of metamorphosis: complete metamorphosis and incomplete metamorphosis. Incomplete metamorphosis has three stages instead of four stages. Some animals undergo incomplete metamorphosis during their life span. During incomplete metamorphosis, an animal progresses from an egg to a nymph to an adult. A nymph looks like a much smaller version of the adult. There is no pupa stage for an insect that undergoes incomplete metamorphosis. A praying mantis and a grasshopper are both examples of insects that go through incomplete metamorphosis."

Discovery Education Science Techbook for Texas
Grade 2

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

- Materials provide a purpose or rationale for the instructional design of the program. Materials explain why materials are designed the way they are. The K–5 Program Guide states, “The program is organized into standards-aligned cohesive units that can be arranged in various sequences to meet your district’s needs. Each unit includes concepts that are strategically bundled, ensuring students will uncover all core scientific content. Concepts within each unit are structured with lessons that follow the 5E Framework: Engage, Explore, Explain, Elaborate, and Evaluate. Units, concepts, and lessons are designed to pique student interest and scaffold acquisition of specific scientific ideas as students learn about the world in which they live.”
- The guidance document further states that each concept is “...organized around the research-backed, phenomenon-based storyline learning model.” The phenomenon-based learning model encourages students to collaborate and investigate to explain the phenomena. Materials add, “Units, concepts, and lessons are designed to pique student interest and scaffold acquisition of specific scientific ideas as students learn about the world in which they live. 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.”
- The K–5 Program Guide also explains that each concept is “...organized around the research-backed, phenomenon-based storyline learning model.” The phenomenon-based learning model encourages students to collaborate and investigate to explain the phenomena. Materials add, “Units, concepts, and lessons are designed to pique student interest and scaffold acquisition of specific scientific ideas as students learn about the world in which they live. 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.”

Discovery Education Science Techbook for Texas Grade 2

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 provide a definition of sensemaking and identify specific sensemaking behaviors of students. In the K–5 Program Guide, the materials identify Student Sensemaking as a foundational aspect of using Real-World Phenomena to support student learning. According to the materials, "When phenomena are carefully selected to be relevant to students, the phenomena spark students' curiosity and provide a reason for them to engage in the learning as they make sense of how and why the phenomena occur. Students build their understanding of science ideas through the process of developing and revising explanations."
- Materials consistently provide learning activities that support students' meaningful sensemaking through reading, writing, thinking, and acting as scientists and engineers. For example, for Unit 1, Concept 3, Investigating Pushes and Pulls, students think and act as scientists. Throughout different lessons, they experiment with pushing and pulling different types of balls, read a

passage about the motion of objects after a push or a pull, watch a video about the effect of the strength of pushes and pulls on an object, and then act as scientists and engineers when they design and construct a contraption to have balls move. To evaluate their learning, students write or draw conclusions based on evidence they obtained throughout the unit.

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

- Opportunities for students to engage with scientific texts include activities, such as pre-reading and vocabulary, to help them develop an understanding of concepts. For example, the lessons include activities before, during, and after reading. In Unit 2, Concept 4, Lesson 3, Hubble Space Telescope, students review the vocabulary words telescope and binoculars before reading. They also write sentences that use the words correctly and the teacher provides corrections as needed. During reading, the teacher reads the text aloud, stopping to discuss the images and other key ideas and details. Students listen and circle the magnification tools they see in the images. After reading each section, the teacher pauses to check for understanding of vocabulary by asking questions like “What do telescopes do?” or “What are astronomers?” Another option given is for students to read each section independently, noting any questions they may have and having students work with partners to determine if their questions are answered in the text.
- Materials include the vocabulary at the bottom of the lesson with audio and a picture. Also, under Unit Resources, the materials provide printable flashcards of the vocabulary studied throughout the whole unit with pictures and words on one side and definitions in English and Spanish on the other side.
- Materials provide multiple opportunities for students to engage with scientific texts to gather evidence and develop an understanding of concepts. For example, in Unit 4, Plants and Animals in Ecosystems, students use grade-level texts to specific structures of different animals that help them survive and compare how different structures of animals help them find and take in food and water. Additionally, in every unit, there is at least one interactive lab that integrates scientific text with scientific investigations that engage students while they learn. In Unit 2, Concept 4, Lesson 2, Explore Astronomy, the interactive activity includes scientific text that introduces students to the concepts they need to know before starting their virtual lab. After the students see the sky objects with the tool of their choice, they are shown a comparative chart of the images they could see with the naked eye, binoculars, and a telescope. A pop-up provides facts about the observed object. As they explore, students think about the following questions: “How does the night sky look without using tools? What tools help us see the night sky more clearly?” Students then complete a graphic organizer with drawings of their observations and complete drag-and-drop questions where they sort different views based on the magnification tool used.

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

- Materials provide opportunities for students to communicate thinking on scientific concepts in written and graphic modes. For example, in every unit, the Evaluate lesson asks students to summarize their learning by answering three questions in different ways. For example, in Unit 3,

Concept 1, Lesson 9, Investigating Weather, students answer the questions "What types of weather can you measure?" "How might we measure temperature and precipitation?" and "Why do we record and graph weather information?" To respond to the questions, students may use drawings or words; perform their answers through songs, poems, or skits; or find the answers written in the classroom, in maps, or in textbooks.

- During every hands-on investigation and every virtual lab, students fill out a graphic organizer to log in their observations and reach conclusions. For example, in Unit 2, Concept 1, Lesson 2, Where on Earth, students fill out a three-column graphic organizer where they record an example of a natural resource and a manmade resource. For each of them, students record how we use it, how we can conserve it, and how we can properly dispose of it. In Unit 3, Concept 2, Lesson 2, Making a Weather Calendar, students observe a wind sock for 5 days. They record their observations about the weather on their calendar, noting if it was sunny, rainy, and/or windy.

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

- Materials provide authentic student engagement and perseverance of concepts through productive struggle while acting as scientists and engineers. For example, in Unit 4, Concept 4, Ecosystems, students first engage with the real-world phenomenon of Brigham Sheep in their habitat and make a claim about how environments support organisms. In Lesson 3, students create a food chain and then connect their thinking around their investigation findings to their initial claim. Students share their ideas in small groups while asking each other questions for clarification. The educator notes state, "Remember that as students progress through the concept, they will continue to gather evidence to help explain the real-world phenomenon." In Lessons 4 and 5, students continue exploring ecosystems, food chains, and how animals depend on other living things. They engage in practices including the SOS Strategy "Flip Flop" which allows students to reflect on how their understanding of organisms in an ecosystem has changed. In Lesson 6, students read a text and describe how energy is passed along from one organism to another in a food chain. In Lesson 7, students revisit their claim and provide evidence and reasoning to support it, based on previous lessons.
- Materials support students as "practitioners" while they are figuring out (sensemaking) and productively struggling. Materials prioritize students making evidence-based claims to construct explanations of how and why the phenomena or problem occurs. For example, in Unit 4, Concept 3, Unique Life Cycles, students use an interactive online virtual lab to investigate and describe the life cycle of a frog. Students complete a graphic organizer by numbering the stages in order from beginning to end. Students will then turn and talk with a partner and discuss the following questions: "What are the stages of the frog's life cycle?" and "Do tadpoles look like adult frogs?"
- Materials prioritize students making evidence-based claims to construct scientific explanations. In every Explain lesson for each concept, students make a claim and support it with evidence. Students then present their scientific explanations in a format that works best for the classroom (e.g., oral presentations, writing, or drawing).
- Materials create transfer opportunities for students to take what they have learned and use it flexibly in new situations. For example, in Unit 2, Concept 3, Lesson 2, The Sun Heats Earth, after students have measured the temperature of sand over time and learned how heat affects

matter, students are given the task to create and test a solution that prevents the sand from being heated by the sun.

Discovery Education Science Techbook for Texas Grade 2

Indicator 5.1

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

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

Meets | Score 4/4

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

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

Evidence includes but is not limited to:

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

- Materials provide opportunities for students to develop how to use evidence to support their hypotheses and claims. For example, in Unit 1, Concept 3, Lesson 3, Crazy Contraptions, students record data in a table as they take the time a ball takes to travel a certain path. Students make different trials of the paths and the balls to decide what works best when they build their contraption. The teacher circulates the room to ensure students are recording their data appropriately. Later in the lesson, the students respond to the following questions, based on their collected evidence: "What caused the ball to start, stop, or change direction?" and "How could you change your device to make the ball move faster?" In Lesson 6, the teacher guides students to use the evidence collected throughout the concept to support their claims. The teacher is given the option to scaffold this step by developing the claim together as a class. In Unit 3, Concept 1, Lesson 7, How Can We Learn About Weather?, the teacher will guide students in reviewing what they learned in each lesson and talk about different activities in which they interacted. The notes state, "For example, remind them about the part of the video when the scientists discussed different tools to measure weather and the activity in which they learned about collecting information and graphing it." Then, students work in pairs to answer

the question, “How can we learn about weather?” When students have a claim, the teacher prompts them to turn and talk about how and why the evidence supports their claim.

- Materials specifically prompt students to use evidence when supporting their hypothesis and claims. For example, in every Explain lesson, students make a claim. After setting the purpose of the lessons, the teacher presents a guiding question. Next, in a section labeled “What Is the Evidence?,” students select which claim they think is best and support the claim with evidence gathered from previous lessons. The educator notes state, “Have students select which claim they think is best, and ask them to support the claim with evidence they gathered from previous lessons. Have students write or draw their evidence in the space provided in the student materials.” Students may provide verbal or written responses when sharing with their partners. Then, in a section labeled “Give a Reason,” students turn and talk to a partner about their evidence, explaining how and why the evidence supports the claim they chose.

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

- Materials include opportunities to develop and use vocabulary after having a concrete or firsthand experience to which they can contextualize new terms. For example, in Unit 4, Concept 4, Lesson 3, Create a Food Chain, students learn the word f*ood chain.* First, the teacher asks the students if they have ever heard of a food chain or if they have learned about them before. The teacher explains that a food chain is a model that shows where organisms in an ecosystem get their food. The materials guide the teacher and state, “Expand on your discussion about food chains. Through a guided discussion, help students understand that the sun is the source of food for all living things. Plants use sunlight to make their own food. The energy in the food is passed along in a food chain.” The students make predictions about what comes first in a food chain. Then, the teacher does a vocabulary check-in for the terms f*ood chain*, *producer*, and *consumer* and prompts students to continue using the terms as they engage with the content in the lesson. As students engage in the hands-on investigation, they see the term food chain in the slides. After the activity, they turn and talk to answer, “With what did you begin each food chain? Why?” At the end of the lesson, students summarize their learning by answering the question, “What did you learn about food chains? Write or draw what you learned.”
- Materials present scientific vocabulary using multiple representations. For example, key vocabulary presented in the Vocabulary tab (Next to the lessons tab), at the end of a lesson, and in the glossary is linked to multiple representations. Each word has a definition and a sentence using the word in context. A picture, a real-life video, and an animation are also provided. The glossary also has an immersive reader feature that allows the students to hear all the provided text read aloud to them.

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 develop how to engage in the practice of argumentation and discourse. In every concept, students begin the Engage lesson by interacting with a real-world phenomenon and making a claim based on a question. After students record their answers, they share their ideas with a small group. The expectation is for students to continuously gather evidence to help explain the real-world phenomenon. Materials state, “It is acceptable for the claim to be incorrect at this point. Resist the urge to correct student responses at this initial stage of the lesson.” Students revisit their claim and revise it throughout

the Explore lessons and the Explain lesson. For example, in Unit 3, Concept 1, Lesson 7, How Can We Learn About Weather?, the teacher shows students a data set from the real-world phenomenon found in the Engage lesson. Students work together to explain which kinds of data and information describe the weather. In small groups, students reflect on how their initial understanding of weather has changed after completing the lessons on this concept. Next, students make a claim based on the question, "How can we learn about the weather?" Students work with partners to share evidence from the lessons that supports their claim. Students may provide verbal or written responses. At the end of the lesson, students put together a presentation combining all they have learned about this concept. They may role-play a meteorologist, draw pictures, or write it on a poster board.

- Materials provide opportunities for students to develop how to engage in the practice of scientific discourse. Materials use various teaching strategies, including think-pair-share, clarifying students' ideas, student-to-student discussions, and encouraging student-to-student discussion. For example, in Unit 4, Concept 2, Lesson 2, Surviving in a Changing Environment, after students have conducted a hands-on investigation and collected evidence, they share their findings in small groups. The teacher guides student scientific discourse and informally assesses by utilizing phrases such as, "So you are saying that…" or "I think I heard you say…"
- Materials integrate argumentation and discourse within stages of the learning cycle. In every concept, students begin the Engage lesson by interacting with a real-world phenomenon and making a claim based on a question. After completing the lessons in a concept, students are guided to reflect on how their initial understanding of the concept topic and the real-world phenomenon may have changed. For example, in Unit 4, Concept 1, Plant Survival, students begin the unit by making predictions about how plants survive. Throughout the concept, students collect data through hands-on activities, interactives, videos, and scientific text. The materials guide the teacher to facilitate a brief class discussion for groups to describe their understanding of the investigations, share what they figured out with one another, and ask any further questions that they may have. In the Explain lesson, students revisit their initial claims. Students use the evidence collected to revise their initial claims and present their scientific explanations in the best format for the classroom (for example, oral presentations, writing, or drawing). They are asked to include reasons why they chose the claim and to explain how and why the evidence supports their claim.

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 instruction for how to construct and present a verbal or written argument. For example, in the Explain lesson, the materials offer three possible answers to a question, and students need to select the claim they think is best based on the data they collected throughout the previous lessons. The teacher invites students to share what they have explored about the Supporting Science Theme in the concept. Materials instruct the teacher to accept all ideas and help students to connect their learning across all disciplines collaboratively. After they have chosen their claim, students write or draw their evidence. Students also support their claim with reasons (how and why) the evidence supports the claim they have chosen. At the end of the lesson, students put together a presentation combining all they have learned about this concept. They may present it orally, in writing, or in drawings. The teacher may allow students to choose how they wish to communicate their scientific explanations.

Discovery Education Science Techbook for Texas
Grade 2

- Materials provide opportunities for students to justify explanations of phenomena and solutions to problems using written and verbal arguments. For example, in Unit 3, Concept 1, Lesson 7, How Can We Learn About Weather?, when students make a claim in response to the question "How can we learn about weather?" they write or draw their evidence in the space provided in the student materials. Then, in the slide called "What is the Evidence?" the materials state, "With your partner, share the evidence from the lessons that support your claim." In the following slide called "Give a Reason," the materials direct students to turn and talk with a partner and "discuss the reasons (how or why) the evidence supports the claim." Afterward, students construct and present their scientific explanations in the best format for them (e.g., oral presentations, writing, or drawing).

Discovery Education Science Techbook for Texas
Grade 2

Indicator 5.2

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

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

Meets | Score 4/4

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

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

Evidence includes but is not limited to:

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

- Materials provide teachers with possible student responses to questions and tasks. For example, in Unit 2, Concept 1, Lesson 2, Where on Earth, students make predictions. To support them, the teacher asks, "Which objects are resources in their natural state?" Materials provide the sample response "water, trees." Next, the teacher asks "How do you use these resources in your daily life?" Materials state that student responses will vary, but provide the example "I drink water every day." In the case of responses to tasks, instead of providing textual sample responses, materials indicate what the student answers should include. For example, in the same lesson, the students need to record one example of a natural resource and one of a man-made resource. For each of them, they need to record where they come from, how they are used, and how to conserve and dispose of them. Materials provide some possible student recordings, including: "Natural Resources: water, tree. How I Use It: faucet, writing. How I Can Conserve It: pour extra on plants, use both sides of paper. How I Properly Dispose of It: drain, recycling bin."
- Materials provide teacher responses to possible students' responses, including how to build on students' thinking. Throughout the Engage lessons, materials provide questions to help build students' thinking. The teacher first asks students to turn and talk to a partner to share what

they noticed and what they wondered about the real-world phenomenon. Then, the materials prompt the teacher to encourage students to think with others by asking: “Would anyone like to add to the idea that [student name] is building?” Throughout different lessons, the teacher also helps students deepen their thinking by clarifying their responses to a question. For example, after asking a question the teacher listens to responses and clarifies using the prompts: “So you are saying that …” and “I think I heard you say …”

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

- Materials provide embedded supports for the teacher in how to introduce and scaffold students’ development of scientific vocabulary. Materials provide teachers with Unit Resources which include an overview of the vocabulary students should be able to name and/or identify. For example in Unit 3, Weather Observations, the scientific vocabulary for the first concept, Investigating Weather, includes *precipitation*, *temperature*, and *weather*. The second concept, Severe Weather, includes the vocabulary terms *events*, *flood*, *hurricane*, *region*, *severe*, *tornado*, and *weather*. The Unit Planner also provides Key Vocabulary Strategies and Academic Vocabulary Strategies.
- Materials also provide detailed supports for the teacher in how to introduce and scaffold students’ development of scientific vocabulary within the lessons. For example, in Unit 2, Concept 1, Lesson 1, How Can We Conserve Earth’s Resources?, before going over the Real-World Phenomenon lesson, the teacher introduces the key vocabulary of the lesson. To introduce the concept of *conservation*, the teacher starts by holding up a piece of trash and asking students where it should go. The teacher invites volunteers to share if they have ever seen trash somewhere it should not be. As students discuss, the teacher circulates among the pairs and listens for examples to share with the class. The teacher scaffolds the student thinking by asking “What happens to trash thrown on the ground?” and “Where does the trash on the ground end up?” The teacher allows some time for students to think about their answers and then has them discuss their answers with a partner. Afterward, the teacher discusses the key vocabulary with students. Materials then instruct the teacher to consider creating a class anchor chart with an image for each word and to introduce the word *materials* at this moment. The teacher tells students that in terms of natural and manmade resources, “a material is a substance or object that comes from a resource. Materials can be used to make things.”
- Materials provide guidance for the teacher on how to support students use of scientific vocabulary in context. For example, in Unit 2, Concept 4, Lesson 3, Hubble Space Telescope, before reading a text students review the vocabulary words *telescope* and *binoculars*. Students write sentences that use the words correctly and the teacher provides corrections as needed. As the teacher reads the text aloud, students follow along, stopping to discuss the images and other key ideas and details. As students listen, they circle the magnification tools they see in the images. After reading each section, the teacher pauses to check for understanding of vocabulary by asking questions like “What do telescopes do?” or “What are astronomers?” Additionally, throughout the lessons, after students have built a conceptual understanding of key vocabulary, a section titled Vocabulary Check-In reminds the teacher to prompt students to continue using the key terms as they engage with the content.

Discovery Education Science Techbook for Texas Grade 2

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

- Materials provide teacher questions for supporting student discourse and the use of evidence in constructing written and verbal claims. For example, in Unit 4, Concept 2, Lesson 2, Surviving in a Changing Environment, materials provide teachers with simple questions to ask during a whole class discussion such as “What helps different animals survive?” During the investigation, students draw or write what they see and a place where they can find each material. Materials also recommend that teachers encourage students to use both words and drawings when creating a claim. Materials also prompt the teacher to encourage students to share their ideas in small groups while asking each other questions for clarification. In Unit 4, Concept 1, Lesson 2, Spreading Seeds, as students investigate how seeds are moved through wind, water, clothing, and animals, materials provide questions for the teacher to help students use evidence to construct claims: “If we blow air on the seed, does it float or travel in the air?” “If we pour water on this seed, does it move?” At the end of the lesson, students respond to the following questions based on the evidence they collected: “Which seed would stick to clothes or fur?” and “How do animals move seeds?”
- Materials provide guidance that teachers can use to provide feedback to students while engaging in discourse. For example, in Unit 2, Concept 1, Lesson 2, Where on Earth, while students are filling out a graphic organizer with examples of a natural and a manmade resource, the materials instruct the teacher to circulate the classroom to be sure that students are using the data-collection tool appropriately and to ask the following probing questions to assess and scaffold student thinking “Which pictures show resources in nature?” and “Which pictures show ways you get rid of something?” All the Evaluate lessons of each concept include three questions that students answer in any format they choose. The materials provide suggested answers and specify what information the answers must include, so the teacher can assess the accuracy of the answer and how to provide feedback. Additionally, during small group discussions, materials prompt the teacher to rotate around the room to informally assess student understanding, using the phrases “So you are saying that …” and “I think I heard you say …”
- Materials provide teacher guidance on supporting students in using evidence to support scientific claims. For example, in Unit 2, Concept 1, Natural and Manmade Resources, the teacher guide suggests organizing student-generated questions on a Student Question Board to set the stage for the investigations they will engage in throughout the concept. Later in the concept, students can revisit these questions and answer them using the science ideas they have learned and the evidence they have gathered throughout the concept.

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

- Materials provide teacher support and guidance to engage students’ thinking in various modes of communication throughout the year. In every concept, different lessons consistently include various modes of communication. For example, in every Explain lesson students first write or draw evidence in response to a claim. Then, they share the evidence with a partner. Next, students turn and talk with a partner and discuss the reasons (how or why) the evidence supports the claim. Afterward, students construct and present their scientific explanations in the format that works best for them (e.g., oral presentations, writing, or drawing). In the Evaluate

lesson of the learning cycle, students can share their learning by recording it, performing it, or finding it. The teacher guide gives examples of what each of these modes could look like. For example, in Unit 1, Concept 3, Investigating Pushes and Pulls, students answer the question "What can a push or pull do to an object?" Materials suggest students can write the answer using words or sentences, students can make a poster listing examples of the effects of a push or a pull, students can say the answer out loud, students can demonstrate what pushes and pulls can do using objects in the classroom, or students can find examples in the classroom, outside or in informational texts that show what pushes and pulls can do to objects.

- Materials provide teacher support for facilitating the sharing of students' finding solutions. Materials provide feedback tips and examples teachers can use to support students throughout the learning cycle. Within the Explore phase of each module, materials provide feedback strategies teachers can use to help students share their learning. For instance, in Unit 2, Earth and Sky, students investigate practical applications for a telescope. When students share their models, materials direct the teacher to ask probing questions to help students make sense of the importance of magnification tools, including "How do magnification tools help to investigate objects in the sky?" and "What is your prediction?" Materials also state that teachers can encourage student-to-student interaction after each student shares their ideas in small groups while asking each other questions for clarification of their drawings. In Unit 1, Concept 1, Lesson 1, after students have been sharing what they know about different types of materials, the teacher encourages students to think with others by asking, "How can you add to [student's name] idea? Sample" and "How does hearing your classmates' ideas help you?"

Discovery Education Science Techbook for Texas Grade 2

Indicator 6.1

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

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

Meets | Score 2/2

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

Materials include a range of diagnostic, formative, and summative assessments 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 include informal diagnostic assessments. In the Engage lesson of every unit, materials include assessments that allow teachers to know what skills from previous grades students have mastered. For example, in Unit 1, Concept 1, Lesson 1, How Can Matter be Classified?, the materials instruct the teacher to “elicit students’ prior knowledge and experience with the real-world phenomenon” by asking students what they know about different materials. Examples include soft cotton, scratchy wool, or a heavy winter coat. Then, the teacher asks students, “What do you already know about different types of materials?” Students may provide verbal or written responses
- Materials include formative assessments in a variety of formats to measure student learning and determine the next steps for instruction. Informal formative assessments are frequent and varied across the entire science program. Phenomenon-Check ins and class discussions are included throughout the lessons. For example, in Unit 2, Concept 1, Lesson 2, Where on Earth, the Phenomenon Check-In shows students an image to remind them of their connection to the phenomenon. The teacher poses the question, "How can we conserve Earth’s resources?" The educator notes state, “Next, encourage students to share their ideas in small groups while

asking each other questions for clarification." When students are responding to the phenomenon check-in or engaged in Explore lessons, materials prompt the teacher to circulate around the classroom to informally assess student understanding. Targeted discussion questions are located in the teacher support materials to help check student thinking during each lesson.

- To formally assess understanding of a lesson, materials include a section titled "What did you figure out?" at the end of the Explore lessons, following a hands-on activity, interactive activities, videos, and literacy connections. In this section, students engage in digital or print assessments directly tied to the standards of the lesson to demonstrate their understanding of the standard. The data from this online assessment is fed into an online report that the teacher can access to drive her instruction. For instance, in Unit 1, Concept 3, Investigating Pushes and Pulls, after students have read about pushes and pulls, the teacher asks, "How can you investigate force and motion? How can you make a ball move faster?" Then, the "What did you figure out?" section asks, "How can a blue clay ball change when it is pushed?" Students select from three answer choices: "A: It can move. B: It can become flat. C: It can become red." Students should select A and B.
- Materials include summative assessments in a variety of formats. In the Explain lesson of the framework, students use what they have learned throughout the Engage and Explore lessons to construct and present a scientific claim using evidence and reasoning. In the Evaluate lesson, students show what they learned throughout the concept and respond to the questions provided in a format of their choice, whether in writing, in oral form, or through performance. For example, in Unit 1, Concept 3, Lesson 8, Investigating Pushes and Pulls, students answer the following questions: "What can a push or pull do to an object? What happens when one object runs into another object? How does the strength of a push or pull affect motion?" Suggested ideas for how students can complete the assessment are provided to teachers, along with targeted guidance for evaluating student responses. Materials assess all student expectations over the breadth of the course and indicate which student expectations are being assessed in each assessment.
- Materials formally and informally assess all student expectations by grade level as outlined in the TEKS. In the Science Techbook for Texas, there is a button labeled TEKS on the top right corner that outlines the alignment of all the grade-level TEKS and in which each concept is covered. For example, standard 2.13D, "Investigate and describe some of the unique life cycles of animals where young animals do not resemble their parents, including butterflies and frogs," is taught and assessed in Concept 4.3, Unique Life Cycles. Materials provide a direct link to the concept and lessons based on this standard within this TEKS resource.
- Materials indicate which student expectations are being taught and assessed. In the Table of Contents, materials identify every TEKS covered in each lesson. Also, under Unit Resources, there is a link to "Standards Alignment" that shows a chart indicating which Student Expectations are covered in each concept.
- Materials indicate which student expectations are assessed. Materials provide the TEKS correlation for each assessment item and the answer keys for every assessment. For example, the Evaluate session of every concept within a unit provides a question for teachers to ask that is tied to the concept objectives. This assessment also provides the TEKS correlated with each concept and possible answers for the students. For example, in Unit 1, Concept 1, the Teacher's Guide shows that the Evaluate lesson assesses TEKS 2.6A.
- It should be noted that the K–2 materials offer the Assessment Builder online resource; however, the tool generates the message "No Results" when grade K standards or concepts are selected.

Discovery Education Science Techbook for Texas
Grade 2

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

- Materials include assessments that require students to integrate knowledge and science and engineering practices with recurrent themes appropriate to the student expectation being assessed. For example, in Unit 3, Concept 1, Investigating Weather, students measure and record weather information. Students act as scientists by predicting, investigating, and recording weather and precipitation. Students work in groups to document findings. Students engage in an assessment to demonstrate their understanding of patterns in weather.
- Materials include opportunities for assessment for example, the integration of science and engineering concepts and practices can be demonstrated by students through hands-on activities. In Unit 3, Concept 2, Severe Weather, students act as weather scientists by recording their observations and comparing the effects of light and heavy rain. Then, students engage in an assessment to demonstrate their understanding of floods, using the recorded information.
- Materials establish students' connections by utilizing their prior knowledge and real-world experiences regarding the phenomenon. In Unit 4, Concept 3, Unique Life Cycles, the teacher initiates a discussion, asking students to share how they will change as they age into adulthood. This discussion initiates students' understanding that all living things, including animals, have life cycles. In Lessons 3 and 4, students apply this knowledge as they continue to learn about the specific life cycles of butterflies and frogs. This recurring theme persists in Lesson 6, where students create a model of the life cycle of a frog or butterfly and conclude with a phenomenon check-in.

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

- Materials include assessments that require students to apply knowledge and skills to a new phenomenon or problem. For example, grade 2 students investigate the impact of a flood on the land, people, and towns. Students explain why floods are most likely to occur in regions near water and differentiate between light rain and heavy rains that cause flooding. Students investigate how a flood can impact a town. Students talk about the limitations of their flood model, how creating the model of the flood helps understand how floods affect the land, and how to make the model better. Students apply their knowledge of where floods are most likely to happen and why.
- Materials include assessments that require students to apply knowledge and skills to problems presented in real-world contexts. For example, in Unit 1, Concept 4, Exploring Sound, students investigate sound. Students act as scientists by working in a group to design and build a phone to communicate over a distance. Students then must solve the problem, “How would you change the device to communicate clearly over a distance?”

Materials include informal assessments that require students to apply knowledge and skills to a new problem. For example, in Unit 1, Concept 3, Investigating Pushes and Pulls, students design and create a contraption to move a ball. Students record their data from their trials. They use the knowledge they gained through the investigation and their trials to figure out what they could have changed to make the ball move faster. The lesson concludes with a What Did You Figure Out? section in which the students engage in a one-question assessment to demonstrate their understanding of pushes and pulls. Once everyone has completed the assessment, the teacher is directed to allow students time to share their

ideas and review the questions that students generated in the previous lesson (that were posted on a chart, board, or other location) to see if they were answered.

Discovery Education Science Techbook for Texas
Grade 2

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 include information that guides teachers in evaluating student responses. Throughout the lessons, materials provide sample responses to guide the teacher in evaluating responses and providing feedback. For example, in Unit 2, Concept 1, Lesson 2, Where on Earth, the teacher asks, "Which objects are resources in their natural state?" The sample response is "water, trees." Then, the teacher asks, "How do you use these resources in your daily life?" The sample response provided is "Student responses will vary. Sample response: I drink water every day." In the case of responses to tasks, instead of providing textual sample responses, the materials indicate what the student answers should include. For example, when students record examples and characteristics of a natural and a manmade resource, the materials provide some possible student recordings: "Natural Resources: water, tree. How I Use It: faucet, writing. How I Can Conserve It: Pour extra on plants, use both sides of paper. How I Properly Dispose of It: drain, recycling bin" Materials also provide sample responses for open-ended assessments, including how students can respond to the Evaluate lesson. Every Evaluate lesson poses three questions related to the concept. These performance assessments allow students to record, perform, or find the answers in the environment. Suggested ideas for how students can

complete the assessment are provided to teachers, along with targeted guidance for evaluating student responses.

- Materials guide teachers to look for specific components when evaluating student responses. For example, materials provide a set of questions to assess student levels of understanding before, during, and after the completion of a lesson. Some examples from a lesson about floods include:
    - What do you know about what happens after floods? Ask students, When you are filling a glass with water, and you pour too much in, what happens? [Before]
    - Where in the United States do you think floods occur most often? After our investigation, why do you think floods occur in regions with water sources? What happened when the town experienced a light rain compared to heavy rain? [During]
    - Show students a simple three (3) images: near oceans, rivers, and lakes; in the middle of the United States; near mountains and forests. Ask: Where are floods most likely to happen? [After]
- The materials include resources that support teachers in evaluating student responses, including answer keys for assessments, automatically graded assessments, and automatic feedback in online assessments. In every final section of a lesson, called What did you figure out?, the materials provide the answer key to the question or task provided, and if the task is assigned digitally, the program collects the data from all responses in one report. The online assessments give students up to three attempts to answer. For each unsuccessful attempt at an assessment, students are given scaffolded feedback to help them reach the correct answer. All of the attempts and answer selections made by the students are recorded and visible to the teacher. For instance, in Unit 1, Concept 3, Lesson 5, Push, Pull, and Motion; the What Did You Figure Out? question states, “How can a blue clay ball change when it is pushed?” The materials specify that students should select answers A and B.

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

- The Lesson Data Reflection Techbook for Texas guides teachers on how to reflect and interpret data from formative assessments in grades K-8. This document gives reflection options, such as focusing on specific questions/skills or specific students. Furthermore, it guides teachers on the next steps, such as groupings and how to locate resources that could be used to help students achieve mastery.

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

- Materials provide the Lesson Data Reflection Guidance Book and a scoring rubric for What Did You Learn assessments, yielding relevant information for teachers to use when planning instruction, intervention, and extension.
- The information gathered from the assessment tools, which consist of one-question formative assessments at the end of a lesson, can be used by teachers when planning differentiated instruction. The formative assessment report provides a color-coded list of students, based on

their performance, and can be used to group students according to assessment results. Also, using this data, teachers can go into the lesson and assign or reassign lessons or content.

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

- Student resources include flashcards to review vocabulary; a bank of SOS strategies (Spotlight on Strategies) with different strategies to teach and review concepts; online skills practice activities for students to use at home; and an assessment builder for the teacher to create their assessments with the concepts or standards they want to assess.
- The Lesson Data Reflection Techbook for Texas provides guidance for responding to student data, including directions on accessing tools and content to support reteaching, remediation, and extension. In the section of the document, Tools to Support Student Learning, teachers are given guidance on how to locate resources based on content or lessons.

Discovery Education Science Techbook for Texas
Grade 2

Indicator 6.3

Assessments are clear and easy to understand.

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

Meets| Score 2/2

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

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

Evidence includes but is not limited to:

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

- Assessments contain items for the grade level that are scientifically accurate. For example, in Unit 1, Concept 1, Lesson 9, Material Properties, which corresponds to the Evaluate component of the concept, the materials use the scientific term *properties*, as opposed to *characteristics* or *attributes*, when asking the question “How can you classify materials based on their properties?”
- The materials contain assessments that align with objectives. For example, in Unit 2, Concept 2, Lesson 2, Let It Rain, the objective for the lesson states, “By the end of the lesson, students will be able to use a model to investigate and describe how wind and water can change Earth’s surface…” At the end of the investigative lesson, the formative assessment question relates back to this objective when it asks, “How do wind and rain change the Earth’s surface? Select the correct answer.” It also includes a picture of sand to serve as a visual reminder of what the Earth’s surface can look like.
- Assessments contain items for the grade level or course that avoid bias. Formative and summative assessments include items that present content and examples fairly and impartially with no impact on student performance based on such factors as a student’s home language, place of origin, gender, or race and ethnicity. For example, in Unit 3, Weather Observations, assessments provide images of two children fairly and impartially.

- Assessments contain items for the grade level or course that are free from errors. While reviewing all the questions from the different assessments provided, no errors such as miscalculations, mislabeling units of measurement, or incorrect terminology were found.

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

- The assessments use clear pictures and graphics. For example, in Unit 2, Concept 3, Lesson 6, Moon Model, after students have learned about the sun and the moon, students answer the question, "How do the sun and moon compare?" The materials provide a real-life photograph where both the Sun and the Moon can be seen.
- The assessments use developmentally appropriate pictures and graphics. For example, in Unit 4, Concept 1, Lesson 3, Getting to Know Plants, the interactive presentation uses computer-generated graphics to clarify for students which part of the plant they are pointing at when naming it and what elements it needs to survive. In the formative assessment at the end of the lesson, after students are familiar with the concept, they use different computer-generated images that students must choose from to identify what plants need to live. In Unit 4, Concept 3, Lesson 3, Life Cycles of a Butterfly, the formative assessment contains three developmentally appropriate images of butterflies at various stages in the life cycle.

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

- The materials guide teachers to consistently and accurately administer assessment tools. There is a formative assessment at the end of every lesson titled "What did you figure out?" and one Evaluate lesson at the end of every concept, which allows the teacher to consistently administer assessment tools.
- Each concept assessment provides three questions the students can answer in multiple formats (written response, oral response, performance task). The materials clearly outline what the answers must include. For example, in Unit 2, Concept 1, Lesson 9, Natural and Manmade Resources, materials ask, "What is the difference between natural and manmade resources?" The materials provide the following guidance about the answer: "Answers should mention that natural resources are found in nature while manmade resources are things made by humans. Natural resources may be renewable, such as trees, water, soil, and air, or nonrenewable, such as iron, copper, oil, and coal. Manmade resources are made from natural resources that have been changed." Additionally, specific guidance for the teacher on how to score the three questions included in each assessment and how to reflect on student data after the assessment has been scored can be found in the Scoring Guidance for What Did You Learn resource.
- Additionally, assessments have a section called Setting the Purpose. In this section, the text states, "There are several opportunities for assessment throughout the program. Begin by having students share the key ideas they have learned throughout the concept. Their responses will vary but should reflect an understanding of light. Have students work through the questions individually or in groups. Students may choose the modality they would like to use to show what they learned, or the teacher may want to encourage them to use each modality once. Make notes as students plan and share what they have learned."
- The scoring rubric for the Concept Assessment found in the Evaluate lessons K-2 provides specific guidance for the teacher on how to score the three questions in each assessment and how to reflect on student data after the assessment has been scored.

Discovery Education Science Techbook for Texas
Grade 2

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

- The materials offer accommodations for assessment tools so that students of all abilities can demonstrate mastery of learning goals. For example, every concept assessment provides three questions that the students must answer in any format they want (in writing, orally, with a performance, or finding the answers in the environment), allowing them to demonstrate mastery of learning goals in a way that best adapts to their abilities. Students can also choose to work in groups or individually to complete the task.
- The materials offer accommodations for assessment tools so that students of all abilities can demonstrate mastery of learning goals. For example, in the case of the formative assessments that appear at the end of every lesson under the title “What did you figure out?” the materials give students three attempts to get the answer correct, and every time a student chooses the wrong answer, the materials provide a hint or a suggestion that allows the students to think over their answer and how they can correct their mistake to be successful.
- Materials offer accommodations for assessment tools so all students can demonstrate mastery of learning goals. For example, the formative assessments throughout the program have reduced questioning to one objective-based question. The digital platform of the assessments allows for multiple attempts of the question, with embedded scaffolds.

Discovery Education Science Techbook for Texas Grade 2

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 yet to achieve 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 teacher guidance for scaffolding and differentiation for students who have yet to achieve mastery. For example, in Unit 3, Concept 1, Lesson 4, the educator's notes guide the teacher in supporting approaching learners. The materials suggest rereading the text and providing students with sentence frames, such as “A thermometer measures ___.” In Unit 4, Concept 2, Lesson 2, the instructions state, “Ask the following probing questions as you circulate to assess and scaffold student thinking.” One of the questions is: "How can changes to the environment make some organisms less likely to survive?"
- Materials include SOS (Spotlight on Strategies) strategies to help scaffold learning. For example, in Unit 2, Concept 1, Lesson 5, Natural Resources, materials include the Pause and Play SOS Strategy. Students watch the video once without stopping and then rewatch it, pausing at key points to take notes about the vocabulary term natural resource. As a guiding question, the teacher asks students, “What is a natural resource?” Then, students fill out their graphic organizer as they watch the video. At the end of the video, students hold a class discussion and reference their notes to develop a list of characteristics of a natural resource.
- Materials provide additional resources for targeted instruction and differentiation to support students who still need to achieve mastery. For example, in Unit 2, Concept 1, Lesson 6, How We Help, the materials provide differentiation suggestions for approaching learners: “If students struggle to find the solutions to using less materials described in the video, supply the following problems. Have students write or draw these problems in their graphic organizers: Homes and

schools generate lots of waste. Trash causes pollution. People buy new bags when they go to the market."

- Materials ensure teachers can target instruction to develop precursor skills necessary to access grade-level content. For example, students activate their prior knowledge before instruction and set purposes for reading or watching. During instruction, they stop and make connections, monitor their understanding, and generate questions for sensemaking. After reading, students communicate, respond to, and reflect on scientific ideas.
- Materials provide additional features to support students in successful science learning, including videos with closed captions and transcripts that provide additional language support for students. According to the publisher, "...closed captions are a powerful tool for students to fully understand key concepts, especially when dealing with technical subjects. Closed captions support students with word knowledge, information retention, content recall, nuanced language, and syntax."
- Materials ensure that teachers can target instruction for students who have not yet achieved mastery by using the "My Studio" feature, located within the global navigation on the teacher dashboard. This feature allows teachers to create individualized lessons to reteach skills with various multimodal options such as videos, virtual field trips, images, audio, and text (including an immersive reader-to-read text aloud for struggling readers).
- Materials include teacher guidance for scaffolding instruction using hand gestures, visuals, or concrete objects to support science concepts. For example, students model plant parts in Grade 2, Unit 4, Concept 1, Lesson 4, Parts of Plants. The guide says, "Ask them to stand up and put their arms out. Show them a picture of a tree. Then, ask If you were a tree, what part would be the roots? my feet What part of you would be the stem? my legs and body As you go through each part of a plant, ask students to explain how they are similar to and different from a plant."

Materials provide enrichment activities for all levels of learners.

- Materials provide enrichment activities for all levels of learners that account for learner variability. The K–5 Program Guide states, "The program features a wide variety of content types, including images, video, audio, text, interactives, and hands-on activities. These multimedia resources provide multiple representations of the content and allow teachers to easily provide targeted content and instruction to whole groups or individual students." All concepts include several Explore lessons with at least one hands-on investigation and videos, text, and interactive activities.
- Materials provide enrichment activities through the Elaborate section of each concept. STEM careers lessons allow students to further explore areas of interest beyond the classroom and consider career pathways related to core scientific ideas.
- The My Studio feature within the global navigation on the teacher dashboard embeds suggestions for engaging enrichment activities such as virtual field trips. For example, "From the Ground Up: The Science of Soil Virtual Field Trip" is an enrichment option to partner with Unit 2, Earth and Sky.

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

- The lessons include recommendations for just-in-time scaffolds to develop productive perseverance in learning at the moment. Materials have questions for the teacher to scaffold student learning while conducting investigations. For example, in Unit 1, Concept 1, Lesson 3,

Materials in the Schoolyard Landscape, the notes provide questions to scaffold student understanding as the teacher circulates the class: “Was your prediction correct or incorrect?” and “What properties did you use to describe and sort the objects?” In Unit 3, Concept 2, Lesson 4, Hurricanes, the educator notes state, “Ask the following questions as you circulate to assess and scaffold student thinking and understanding. What are the characteristics of hurricanes? Why do hurricanes happen along coastal and beach regions?”

- Lessons provide support and resources for students ready to accelerate their learning. For example, in Unit 2, Concept 1, Lesson 4, Natural and Manmade Materials, materials provide suggestions for advanced Learners: “Challenge students to identify objects in the classroom and name the natural and manmade resources in them. Have students describe how to conserve the resources they identify.”

Discovery Education Science Techbook for Texas
Grade 2

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 various learning interests and needs.

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

Evidence includes but is not limited to:

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

- Materials engage students in content through a variety of developmentally appropriate strategies. For example, materials include lessons tied to real-world phenomena through images, videos, and experiences. In Unit 1, Concept 1, Lesson 1, How Can Matter Be Classified? students first share their prior knowledge about different materials. The teacher sets the purpose for learning and leaves time for students to ask questions. Then, students conduct a short investigation testing different materials. Materials include video clips and interactive labs to introduce or reinforce specific science concepts. For example, in Unit 1, Concept 1, Lesson 2, students watch a video that investigates and classifies different objects using a Venn diagram. In Unit 1, Concept 2, Lesson 3, Things That Change, students engage in an interactive virtual activity to explore how some physical properties of materials can be changed and how materials can be combined to create new materials.

- Materials also include authentic tasks in which students use tools to measure and collect data. For example, in Unit 3, Concept 1, Lesson 2, Let's Investigate Weather, students draw tables and graphs to measure and record weather information, including temperature and precipitation.
- Under Unit Resources, materials provide “Key Vocabulary Strategies” to introduce vocabulary in a game-like format, developmentally appropriate for Grade 2. For example, in Unit 1, Concept 1, Material Properties, the materials use the strategy “Collage,” in which the teacher first presents a collage of images representing the vocabulary words for the concept and asks volunteers to name what they see in the pictures. Then, the teacher records students' answers on the board, emphasizing that repeated words are a pattern in the images. Then, students work in pairs to predict what the concept will be about. The teacher records predictions and returns them to them throughout the concept to have students ask and answer questions about it.
- Materials also use developmentally appropriate “Spotlight on Strategies” (SOS strategies) to engage students in the mastery of the content. A comprehensive list of all the SOS strategies used throughout the program is in the Educator Supports section (accessible through the menu icon) under the “Instructional Strategies” tab. The list includes strategies for reading, watching videos, developing vocabulary, supporting English Language Learners, summarizing information, comparing and contrasting, and different activities for cooperative learning. For example, in Unit 2, Concept 1, Lesson 5, Natural Resources, materials include the Pause and Play SOS Strategy. In this strategy, students watch the video once without stopping. The second time, the teacher pauses the video at key points for students to take notes about the vocabulary term natural resource. As a guiding question, the teacher asks students, “What is a natural resource?” At the end of the video, students hold a class discussion and reference their notes to develop a list of characteristics of a natural resource.
- Materials include opportunities for students to engage in collaborative learning activities. For example, students complete most hands-on activities with a partner or a small group. In Unit 2, Concept 2, Lesson 2, Let it Rain, the materials state, “Have students work in groups of three or four to predict how wind and water can change Earth’s surface.”

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

- Materials support a variety of instructional groupings (e.g., whole group, small group, one-on-one). For example, during hands-on investigations, the teacher introduces the lesson, outlines the objectives, and gives instructions to the whole class. Then, students work in groups to conduct the investigation, but they record their observations individually. At the end of the lesson, there is always a “Turn and Talk” activity conducted in pairs. For example, in Unit 2, Concept 3, Lesson 2, The Sun Heats the Earth, the teacher starts the lesson whole group by stating the objectives of the hands-on activity. The lesson transitions into a small group investigation on how the sun heats the Earth. The lesson concludes with students independently reflecting on what they have learned.
- Materials offer Turn and Talk partner groupings throughout the Explore lessons within each unit and concept. For example, in Grade 2, Unit 1, Concept 2, Lesson 3, Things That Change, there is a Turn and Talk activity as part of the interactive lesson. In Lesson 4, there is another Turn and Talk opportunity after watching a video. In Lesson 6, there is another opportunity for students to Turn and Talk after reading a text.
- The materials provide teacher guidance on using specific grouping structures based on student needs. For example, in Unit 4, Concept 1, Plant Survival, students work in groups to review and select the claim that best explains the real-world phenomenon and answer the driving question:

"How do plants survive?" Materials state, "If needed, you may scaffold this step by developing the claim together as a class." Throughout the lesson, students work in pairs. When the time comes to present scientific explanations, students present individually. Also, in Lesson 10, Plant Survival, during the Evaluate phase of the unit, materials specify that students may "work through the questions individually or in groups."

- Materials suggest grouping students organically when evaluating content so that there's a variety of voices within each small group. For example, in Unit 4, Concept 1, Lesson 10, Plant Survival, during the Evaluate lesson, students can decide to work individually or in groups and choose the modality they would like to use to show what they learned.
- Additionally, materials support flexible grouping through the use of online tools. The K–5 Program Guide explains how teachers can assign instructional resources to individual students, groups, or an entire class using the "Assign" feature on the Science Techbook website or their preferred Learning Management System (LMS). According to the Program Guide, teachers can tailor instruction and meet the needs of all students by assigning content, strategies, or supports based on specific learning or developmental needs.

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

- Materials provide multiple types of practices throughout the lessons, including modeled, guided, collaborative, and independent practices. For example, during hands-on investigations, the teacher introduces the lesson, outlines the objectives, and gives instructions to the whole class. Then, students investigate groups, but they record their observations individually. After they have finished their investigation, students share their findings with a partner through a "Turn and Talk" activity. To wrap up the lesson, during the "Phenomenon Check-in" stage, the teacher summarizes the concepts to the whole class through a video or slideshow. In Unit 1, Concept 1, Lesson 1, How Can Matter be Classified?, the teacher first guides students through the phenomena activity in which students answer a question independently. Then, the teacher conducts a lab, and students record their observations and ideas independently. In part 3 of the investigation, students work with a partner to test the properties of the materials. Finally, each student makes a hat to protect their face from the sun. In Lesson 3, during a hands-on activity, students work in small groups to sort objects according to their properties. The lesson concludes with an independent check for understanding and a class discussion for groups to describe their insights from the investigation, share what they figured out with one another, and ask any further questions they may have. In Lessons 7 and 9, students work independently to show what they have learned throughout the unit concept.
- Materials recommend frequent and varied learning assessments to ensure that multiple types of practices lead to student mastery. Explore lessons with hands-on activities, including a "What Did You Figure Out?" section in which students have multiple opportunities to show understanding. First, they select the answer to a question in digital or print form, usually by clicking or circling on a picture. Next, the class reviews the questions students generated in the previous lesson to see if they were answered. Then, the teacher facilitates a brief class discussion for groups to describe their understanding of the investigation, share what they figured out with one another, and ask any further questions that they may have. Finally, students answer an open-ended question in verbal or written form.

- Additionally, at the end of every hands-on lesson, materials include Phenomenon Check-Ins in which they repeat the driving question from the Engage lesson to prompt students to think about how their observations and findings help them better understand the real-world phenomenon. The Explain lesson of each concept provides a different assessment of learning using the claim, evidence, and reasoning framework for students to construct and present their scientific explanations through their choice of oral presentations, writing, or drawing. Every concept also includes a final Evaluate lesson in which students answer three assessment questions, choosing to record, perform, or find the answers in the room.

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

- Materials represent a diversity of communities using images that are respectful and inclusive. For example, the children shown in student and teacher material guides portray a variety of genders and races from various abilities. In the cover picture of each lesson, when they display students working on a scientific investigation, they show kids from diverse genders, races, and ethnicities.
- Materials represent a diversity of communities using information that is respectful and inclusive. For example, when you access a lesson, some robots introduce themselves at the bottom of the page using names representing different ages, genders, and ethnicities. These characters change every time you access a page but are always the same set of characters. They are Victor, Disco, Zoe, Eduardo, Abuelo, Mei, and Keiki.
- Materials represent diverse communities using images and information that are respectful and inclusive. The materials positively portray a diverse group of scientists, engineers, and people in the community. For example, in the Evaluate lesson, a STEM career is highlighted at the end of every unit. The adults portrayed are of various genders, ethnicities, and races. In Unit 2, Concept 3, Lesson 8, Space Suit Engineers, the materials depict a space suit scientist as male or female and of different ethnicities.

Discovery Education Science Techbook for Texas Grade 2

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 specific guidance for linguistic accommodations commensurate with various levels of English language proficiency. The teacher manual embeds scaffolds for emergent bilingual (EB) students into lessons, such as visuals, realia, gestures, sentence stems, graphic organizers, anchor charts, and manipulatives. Throughout the curriculum, lessons guide English Language Proficiency Support for Beginning, Intermediate, Advanced, and Advanced High English Language Learners. In Unit 2, Concept 1, Lesson 4, Soil, materials provide suggestions for English Language learners based on their proficiency.
- For Beginner level EB students, materials state, "Prompt students to draw and label a picture of one of the types of soil from the video." For Intermediate level EB students, the materials state, "Provide students images of silt, sand, and clay, and ask them to identify the soil type using listed words." For Advanced level EB students, the script states, "Write/project the properties size, shape, texture, and color on the board. Ask students to pick an object in the room and describe it using each of the four properties." For Advanced High-level EB students, suggestions are the same as the Advanced group but with two objects.
- In Unit 4, Concept 1, Lesson 4, Observing Animal Characteristics, the English Language Proficiency Support for the Beginning level is "Make a T-chart on the board labeled Animal and Structure. Write the word cat and the word claws in the correct columns. Act out how a cat uses its claws to help it survive. Explain that you will be adding to the class chart the animals and structures from the video. Play, pause, and record student oral responses as each animal is

described in sections 0:25 to 0:59. The first time through, just list the animal. The second time through, list the structure. Use generic names, such as fish, bird, insect." For Intermediate students, the guidance says, "Make a T-chart on the board labeled Animal and Structure. Write the word cat, and ask students to describe what part of a cat helps it climb trees and catch food. Add claws to the chart. Play the video, pausing to record students' oral responses for each animal. Accept student language (for example, insect/teeth as opposed to termite/mandible)." For the Advanced level, materials include sentence starters such as "Birds use their beaks to . . ." "Moles use their claws to . . ." and "Beavers use their sharp teeth to . . ." For the Advanced High level, materials suggest students work with a partner to name another animal and one of the structures.

- Materials include a differentiation section that demonstrates ELPS connection by reinforcing the language of the ELPS. Under the Unit Resources tab, each unit consists of a document called "Standards Alignment" that shows the TEKS alignment of the concepts and the ELPS (English Language Proficiency Standards) alignment, marking which concepts explicitly develop these standards. For example, Unit 2, Concept 1, Natural and Manmade Resources, develops ELPS 2.E, 3.D, 3.E, and 4.C. In Unit 2, Concept 1, Lesson 5, Natural Resources, students describe natural and manmade resources and explain how to reduce human impact on resources. The class engages in watching a video, with multiple supports used before, during, and after playing the video, such as the use of the Pause and Play SOS Strategy, allowing for students to watch the video first without stopping and then a second time, pausing to take notes on a graphic organizer. Students listen for a definition, characteristics, and examples to record. At the end of the video, students draw a picture, add a personal connection to their graphic organizer, and verbally share their ideas with the class. Then, they talk to discuss what natural resources they use every day and share what they think would happen if there were no more trees. Materials also provide guidance to support emergent bilingual students.
- Materials include scaffolds for emergent bilingual students, such as visuals, realia, sentence stems, and graphic organizers. The curriculum contains examples of these scaffolds throughout. For example, in Unit 3, Concept 1, Natural and Manmade Resources, materials provide visuals that go along with the terms in Lesson 2. When the slides reference a desk or disposing of trash, pictures show a desk and trash cans. In Lesson 4, students create a graphic organizer to help them as they read. Sentence stems are also provided as an option within this same lesson.

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

- Materials include textbooks or audio/video clips that explain concepts in languages other than English. For example, materials include links to translate the student's first language. Across the materials, an immersive reader within the vocabulary pop-up feature offers reading support in 122 languages. In "present to class" mode, an emergent reader tool option 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 numerous languages.

Materials encourage strategic use of students' first language as a means to linguistic, affective, cognitive, and academic development in English. For example, in every unit, under Unit Resources, there is a tab labeled "Flashcards" where the teacher can find printable flashcards of the vocabulary studied throughout the unit with pictures and words on one side and definitions in English and Spanish on the

other. Some of the terms included are cognates. For example, in Unit 1, Matter and Forces, student materials provide flashcards and a glossary including words such as *combine/combinar* and *flexibility/flexibilidad*. Additionally, in every concept with an interactive activity, students can choose whether to do the interactive activity in English or Spanish to meet their needs best to complete the activity independently. In the Spanish version, the instructions, the information, the buttons, and the immersive reader are all in Spanish.

Discovery Education Science Techbook for Texas
Grade 2

Indicator 7.4

Materials guide 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 partially meet the criteria for this indicator. Materials partially guide 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 communications with caregivers.

Evidence includes but is not limited to:

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

- Materials provide information to share with students and caregivers about the design of the program. For example, under the tab labeled “Course Materials,” there is a document called “Caregiver Course Overview” that provides unit information about key ideas (“I can” statements), key vocabulary, unit phenomenon, and home connection activities. Within the course materials is a parent/guardian letter that provides information about the program and explains some of the program's most relevant features, including real-world observations, videos, labs, digital tools, and game-like activities. The letter also details how to access online course materials.
- Materials provide an overview of science and engineering practices in easy-to-read language. For example, the Parent/Guardian Letter states, “The new standards expect students to act and think like scientists and engineers—and this brand-new curriculum will nurture this behavior. Science Techbook for Texas encourages students to continue to ask questions about the world around them and solve real-world problems.”
- Materials also provide information to students and caregivers about the program's design through the K–5 Program Guide, which can be found in both the Teacher and the Student versions of the Techbook. In this document, the materials provide information about the program, such as course organization, the research-based foundations of the program, alignment to TEKS, and components of the program.

Discovery Education Science Techbook for Texas
Grade 2

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

- Materials provide resources and strategies for caregivers to help reinforce student learning and development. In the Caregiver Course overview, there are extension activities included for each unit. A section called Home Connections lists various activities to do with learners, including Phenomenon in the Home, Conversation Starters, Vocabulary Practice, and a Scavenger Hunt. For example, in Unit 1, Matter and Force, materials suggest caregivers engage with students on a scavenger hunt around their house to locate five areas organized by physical properties and discuss which physical properties are used to manage each area. Caregivers can also start a conversation discussing how the family organizes their clothes. Suggested questions include: “If you have a new piece of clothing, where would the piece of clothing fit in your drawers or closet?” “Is there another way you could organize your clothing?” Additionally, the document outlines one activity to practice vocabulary at home, called Match the Images, where students search in magazines or online for images that meet the vocabulary learned, like texture, combine, loud, etc.
- The Caregiver Course overview for every unit contains a link to vocabulary practice. Parents can use this tool to create games like crossword puzzles, cryptograms, word searches, and other activities to reinforce vocabulary with their children.
- Materials provide a “Parent / Guardian Letter,” encouraging guardians to use it with the students. The letter states, “In this Student Edition, you will find QR codes that take you and your student to corresponding online lessons of Science Techbook for Texas… We encourage you to support your student in using Science Techbook for Texas.”

Materials include information to guide teacher communications with caregivers.

- Materials include a letter for parents and guardians with the Caregiver Overview Course component. This letter includes the following information to guide teacher communication with caregivers under the “Communicating with Caregivers'' heading: *“Invite caregivers to share feedback or questions about the curriculum. At key points in the instructional cycle, reach out to caregivers to communicate student progress updates, using available data from Science Techbook reports, check in on at-home activities, and set up conferences, as needed. At the beginning of the year, communicate with caregivers to indicate how they can access their student’s assignments, progress, and grades to help monitor student progress throughout their science journey of curiosity.*

Teacher guidance within the Caregiver Overview Course also includes information to guide teachers in communicating progress updates in the Caregiver Overview Course. Materials advise teachers as follows: *Consider capturing a screenshot of the student’s assignment dashboard and sending it out to caregivers on a monthly basis to keep them updated on their progress. The lesson and concept summative reports can be used for face-to-face, or virtual conferences with parents to display student proficiency toward the desired learning goals. Sample student responses for items, particularly constructed response items, can be viewed and shared with parents from the lesson and summative report. When conducting parent conferences, encourage them to engage their child in monitoring their own learning.*

Discovery Education Science Techbook for Texas Grade 2

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 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 include a cohesive scope and sequence that show how the scientific knowledge and skills TEKS are addressed over the entire year. On the home screen for the Science Techbook for Texas, there is access to a Vertical Alignment Guide, showing the vertical alignment of the Core Concepts taught in the program throughout the school years.
- The Table of Contents in the grade 2 Science Techbook shows the units and Core Concepts in sequential order. Each Core Concept shows the TEKS that are covered throughout the lessons. This document shows the number of lessons and minutes needed per lesson. Careful pacing, including days and minutes, is provided in the Unit Structure and Pacing document found within Unit Resources. Additionally, at the beginning of each lesson, the specific targeted standards are listed with a concise skill description.

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

- The materials provide teacher clarity in understanding how activities and experiences connect concepts and SEPs. Each concept within a unit explicitly presents a Science Theme in the Engage lesson, with a prompt for the teacher to consider during all the lessons. The science theme is explicitly revisited in the Explain lesson. For example, in Unit 1, Lesson 1 presents the science theme of structure and function, reviewed in Lesson 6. The educator notes state, “Before making a claim using evidence and reasoning about phenomena, invite students to reflect on the Supporting Science Theme for this concept. Say: We have explored Structure and Function as we learned about (Concept). Next, invite students to share what they have explored about

the Supporting Science Theme in the concept. Accept all ideas and help students to collaboratively connect their learning across all disciplines."

- Materials provide teachers with a section called Educator Notes in each unit. This section provides the objective, questions for teachers to ask, potential answers from students, and connections between scientific and engineering practices with a Real-World Phenomenon section. For example, in Unit 1, Concept 1: Material Properties, Lesson 8, students describe how engineers use materials properties to test objects and explain how the properties of materials are applied in a STEM career.

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

- The materials include intentional practice and spiraling of previously taught knowledge and skills from earlier lessons/grade levels and the current lesson's science knowledge and skills**.** In the TEKS alignment document found in the Science Techbook, there is a list of all standards which shows which unit and core concept is aligned with it. For example, materials cover 2.1.A in Concept 1.2 Changing Materials, Concept 1.3 Investigating Pushes and Pulls, and Concept 2.1 Natural and Manmade Resources.
- The practice opportunities build on previously taught science knowledge and skills. Every unit includes a lesson on the 5E model components for each Core Concept, providing intentional practice of the newly learned science knowledge and skills. All units offer multiple Explore lessons, and one or more of the Explore lessons consistently include a hands-on activity, a video, and an interactive practice. The Explain lesson in each core concept follows a Claim, Evidence, and Reasoning format. The Evaluate lesson constantly asks students, "What Did You Learn?" and prompts them to answer questions with the knowledge and skills gained throughout the concept exploration.
- In Unit 1, Concept 1, Lesson 3, the educator notes section connects the lesson to a previous activity. They state, "Help students make sense of their learning from the interactive by returning to the questions you presented in the Interactive part of the lesson. Have students share their answers to the questions with a small group. Circulate and listen to assess how their understanding has changed."

Discovery Education Science Techbook for Texas Grade 2

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.

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

Evidence includes but is not limited to:

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

- The materials include overview documents to support teachers in understanding how to use all materials and resources as intended. The materials provide a *Quick Start Guide for Grades K-5* to support teachers in using the materials. This guide includes a list of materials, recommendations for storage, and tips to prepare for instruction. Additionally, the K-5 Program Guide provides an overview of each program section. It highlights the main features in the print and digital Teacher's Edition, including how to access digital tools, pacing guides, differentiation strategies, assessments, and slideshows. The program guide also elaborates on the course content and instructional strategies, including SEPs, Recurring Themes and Concepts, Core Scientific Topics, Research-based SOSs, and Real-World Phenomena. Other sections in the guide address student discourse, equity and diversity, flexible learning, literacy, differentiation, and STEM certification. For example, the program suggests using Elaborate section lessons on STEM careers as enrichment activities to accelerate and extend learning.

Discovery Education Science Techbook for Texas Grade 2

- The organization of the materials facilitates ease of implementation and use. The materials are available in digital format and print as an optional purchase. The print and digital versions of the Teacher Edition have a table of contents and a pacing guide at the beginning of each unit. In the online Science Techbook, each unit includes a Unit Resources tab that contains Unit Structure and Pacing, Unit Planner, Background Knowledge, Hands-On Lessons: Preparation and Materials, Standards Alignment, and Flashcards.
- The Educator Notes include instructional strategies, tips, and detailed instructions at the lesson level. There is an explanation or note for each slide included in the lessons. For some hands-on activities, teacher videos are also provided for teacher support. For example, in Unit 1, Concept 3, Lesson 3, Investigating Pushes and Pulls, the Educator Notes include a video that shows all the materials needed for the hands-on activity and how they are organized. It also allows a teacher going through the preparation of the materials and demonstrates each step of the activity for both teacher and students. The video also provides questions to ask before, during, and after the activity. The slides and educator notes offer additional support to present and guide the lesson.

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

- The materials include science standards correlations for units and core concepts within the grade level or course context in teacher guidance documents and online resources. Each grade level has a TEKS and ELPS alignment link with a dropdown menu showing cross-content standards. For example, this section shows standard 2.1.A is covered in Concepts 1.2 Changing Materials, 1.3 Investigating Pushes and Pulls, and 2.1 Natural and Manmade Resources. Clicking on these concepts provides access to all the lessons related to that concept. Additionally, the Unit Resources include a Standards Alignment Table, which provides a table showing the grade level standards and how they are covered within the concepts of the specific unit. The student objectives contain the particular standards related to each lesson, which are presented at the beginning and linked to the TEKS alignment.
- The materials include cross-content standards for ELA within the teacher's lesson guide. Across grade levels, materials embed cross-content correlation to ELA. Each unit concept contains at least one literacy lesson, labeled as the Reading Together section within the lesson. Each literacy lesson has different reading strategies. For example, Unit 4, Concept 1, Lesson 6, Animals and Plants, states, "Another option is to allow students to read each section independently, noting any questions they may have. Follow this by reading the section aloud and having students work with partners to determine if their questions are answered in the text."

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

- The materials include a document with a comprehensive list of all equipment and supplies needed to support students, teachers, and administrators during investigations in accordance with and in addition to the grade level. Under Unit Resources, each unit includes a document titled "Hands-On Lessons: Preparation and Materials." For example, for Unit 1, Concept 2,

Lesson 1, How Can Materials Be Changed?, the document provides advance prep notes such as, “Before distributing materials to students, prepare the warm water and other materials for each group. If desired, place the warm water in an insulated container to keep it warm. Consider placing materials for each group in the sandwich bags and the plastic container to make distribution easier.” The Content Kits include a Hands-On Content Kits List, which details all materials needed for the grade-level course.

- Grades K-2 materials include equipment and supplies that support instructional activities for the grade level. For example, for grades K-2, materials include Science notebooks, clay, magnets, flashlights, craft sticks, metric rulers, scissors, pictures, plastic tongs, blocks, balls, string, wax paper, thermometers, rain gauges, different types of soil, and models.

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

- The materials provide teacher and student guidance for safety practices and grade-appropriate use of safety equipment during investigations in accordance with Texas Education Agency Science Safety Standards. The materials consistently include a section titled Safety within the slides and educator notes with guidelines for safety during the hands-on activities. For example, in Unit 1, Concept 2, Lesson 2, Changing Clay and Paper, the Educator Notes state, “Remind students to not put any materials in their mouth during this activity,” “Follow all lab safety guidelines,” and “Clean up any materials that fall onto the floor.”
- For example, in Unit 1, the “Hands-On Lessons: Preparation and Materials” offer teacher guidance on safety in the advance prep notes. It states, “Plastic tongs will be used to squeeze the candy safely.” and “Make sure that each group has a towel to clean up accidental spills.”

Discovery Education Science Techbook for Texas Grade 2

Indicator 8.3

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

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

Meets | Score 2/2

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

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

Evidence includes but is not limited to:

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

- The materials include support for specific scheduling considerations, with guidance for covering required science content for the grade level/course within various schedules. Under Unit Resources, the Unit Structure and Pacing charts provide teachers with pacing information for each concept, including the number of days per lesson and the minutes required for each lesson. An alternative Express Pathway is provided for scheduling considerations. For example, for Unit 1, Concept 1, Material Properties, while the comprehensive pathway suggests 11 days to cover nine lessons and a digital assessment, the express path means teaching five lessons in seven days.
- The materials include guidance and recommendations on required time for lessons and activities with options for various scheduling considerations. On average, each core concept within a unit lasts 9–12 days or 180–280 minutes. The concepts are covered in 5–7 days or 80–140 minutes in the express pathway. All lessons are built within 20-minute segments, with most hands-on exploring lessons designed to require 40 to 60 minutes and be taught in multiple days.
- The lesson plan pacing summary details each part of the lesson by minute and day. For example, in Unit 3, Concept 1, Lesson 2, Let's Investigate Weather, the Intro and Objectives part of the lesson takes five minutes, the Hands-On Activity portion of the lesson takes 45 minutes, the What Did You Figure Out? section takes five minutes, and a Phenomenon Check-In takes five minutes. There needs to be a mention of how this lesson should be divided into two days, as suggested in the pacing guide.

Discovery Education Science Techbook for Texas
Grade 2

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

- Materials provide guidance for strategic implementation that ensures the sequence of content is taught in an order consistent with the developmental progression of science. For example, the materials include a suggested sequence of units that considers the interconnections between the development of conceptual understanding and scientific and engineering practices. The Grade 2 Science Techbook has a vertical alignment document showing how students build knowledge and skills within and across units and grade levels.
- Materials purposely group modules with similar recurring themes and ideas, making it easier for students to connect scientific knowledge. For example, in Unit 1, the three core concepts include objects, motion, and heat.
- The materials delineate the order of units to ensure students learn about precursor concepts first. In grade 2, materials have students investigate Earth's resources in the first core concept of Unit 2 before explaining how wind and water change Earth's surface in the following core concept. In Unit 4, students learn how plants and animals survive before describing how the physical characteristics of environments support living things.

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

- The materials include units, lessons, and activities for a full year of instruction. The table of contents shows all concepts covered throughout the year and the total minutes for each. According to the publisher, "All lessons included in each course do not exceed 160 days of instruction to meet the required course standards." The materials do not include a year-long pacing showing the required weeks.
- The scope and sequence indicate a majority of the lessons support the development of the TEKS, SEPs, and recurring themes and ideas among all areas of the grade level. The units can be reasonably implemented within the time constraints of a school year, and the activities and routines within each lesson can reasonably be completed within the time suggested, with all lessons designed in 20-minute blocks per day.
- The materials provide guidance for adjusting to local time and scheduling constraints. For example, the Unit Structure and Pacing document notes how many days each lesson should take. The Unit Structure and Pacing Guide offers two pathways for adjusting to local time and scheduling constraints: Comprehensive Concept Pathway and Express Concept Pathway.
- For example, the materials provide detailed suggestions for implementing the materials with school years of varying length, varying lengths of time for science instruction, options for the whole class and small group intervention times, and online schools. For example, the express pathway suggests using the read-aloud lessons during the ELA block. Using the videos and Read Together section as station activities further saves time. The 5E model is explicitly listed in the pacing charts to indicate which lessons are Extensions (Elaborate) and can be used for acceleration or omitted under time constraints. In the K-5 Program Guide, the publisher includes a section on Flexibility which explains "teachers can assign instructional resources to individual students, groups of students, or an entire class using the Assign feature or their preferred Learning Management System (LMS)," providing options for the whole class and small group intervention time.

Discovery Education Science Techbook for Texas
Grade 2

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.

- Digital materials include an appropriate amount of white space and an overall design that does not distract from student learning. Margins, edges, and empty spaces around the content are consistent throughout digital materials. Materials use a limited number of fonts. Most student pages include 1–3 sentences at most, combined with a colorful and engaging picture.
- Materials enhance student learning without being distracting or chaotic. For example, in every lesson, there is a slideshow that uses most of the space on the screen. The space around it is sufficiently white to not distract students, and the only information found in this white space, using discrete typography, is the student objective for the lesson and the links to the glossary and the results of the test that students can click to refer to them. Students can amplify the slideshow to fit the screen size. Every slide has a very clean organization, occupying half of it with a picture to illustrate the text, and the corresponding text on the other half, leaving enough white space around the text and margins to not overwhelm the student's view.
- Student materials are appropriately designed to support student learning. For example, each unit is identified with a cover picture, and the number of the unit and its title are easily identifiable by students next to each cover picture. Once a student clicks on a unit, they can see all the lessons either in grid or list form, each one easily identifiable with a picture, number of the lesson, title, and objective. The content is organized in a logical progression. Tools students can use to annotate text (such as highlight, strikethrough, etc.) and pointers while reading digital text. Ancillary student materials, such as glossaries and tools, are easy to find and/or access inside each lesson. When text is read aloud by the computer, each word is highlighted as it is read.

Discovery Education Science Techbook for Texas
Grade 2

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

- Materials embed age-appropriate pictures and graphics that support student learning and engagement without being visually distracting. On the slideshow of every lesson, the slides show photographs that illustrate the text. For example, in Unit 2, Concept 2, Earth's Changing Surface, the Engage lesson includes photographs of wind blowing dirt across rocky terrain and water running over the surface of a rocky surface are included. A magnifying glass is provided to zoom in on the images. In slides that contain graphic organizers, they show an example of the graphic organizer and how it can be filled out. In the case of some slides that only contain a question or an instruction, there is a little character that livens up the design of the slide but is small enough not to be distracting.
- Another place where we can find age-appropriate pictures and graphics that support student learning and engagement without being visually distracting is in the interactive activities found in Explore lessons. These are interactive game-like activities that include computer-generated images that are greatly attractive to students and engage them in solving the activities. The instructions and comments on each image are very clearly defined by placing them inside a white frame so that students can easily locate them, featuring a text-to-speech function that allows students to hear the comments as they read them.

Materials include digital components that are free of technical errors.

- The materials include digital components that are free of technical errors, including the following types of errors:
    - Spelling, grammar, and punctuation errors.
    - Inaccurate content materials or information.
    - Wrong answers or explanations.
- The materials provide digital elements that are complete and without technical errors. For example, in Unit 3, Concept 1, Investigating Weather, concept vocabulary is noted at the bottom with photographs and links to the glossary. Some terms, like temperature, also include colorful images and engaging videos that are free from technical glitches.

Discovery Education Science Techbook for Texas
Grade 2

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

Evidence includes but is not limited to:

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

- Materials integrate digital technology and tools that support student learning and engagement. The program is based on a digital platform that includes all the lessons in a slideshow format along with videos, interactive game-like activities, assessments, flashcards, glossaries, and texts, all embedded into the slideshows. Lessons can also be assigned to individual student devices.
- In every lesson, student digital components include embedded tools, such as a digital whiteboard, in which students can draw and take notes; use a text-to-speech (immersive reader) feature for the lesson slideshow; access a glossary that contains images, videos, and text for every word including the immersive reader option; and take the digital assessments at the end of every lesson. For example, in Unit 4, Concept 3, Lesson 4, Life Cycle of a Frog, the interactive activity consists of students matching images of the frog's life cycle to the stages in the life cycle. Within the student edition of this interactive lesson, materials also provide a video and multiple interactive explorations to support student learning and engagement.

Discovery Education Science Techbook for Texas
Grade 2

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

- Materials integrate digital technology to support student engagement with science and engineering practices. Materials include videos and interactive activities. For example, in Unit 2, Concept 4, Lesson 5, Water on Mars, materials include a short video clip on how a telescope can help scientists look for water on Mars. In Unit 3, Concept 1, Lesson 3, Weather Data, students engage in an interactive activity to learn how scientists use weather data to forecast the weather in a given area.
- Materials provide interactive simulations and models for students to explore science and engineering practices in a virtual environment. For instance, in Unit 1, Concept 2, Lesson 3, Things that Change, students explore physical properties and physical changes of objects through a game-like interactive activity that allows students to understand how objects can change their shape and still be made of the same material.

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

- Materials integrate digital technology that provides opportunities for teachers and/or students to collaborate. For example, in the Student Techbook, the menu includes a feature called Studio, which allows student-to-student collaboration using a digital whiteboard. Students can use and share the whiteboard with others in their classroom or school. Students also have access to open other whiteboards that have been shared with them. The studio feature also allows students to discuss class topics via written responses. Peers can review one another's responses and give feedback. Students can open a chat to communicate with the teacher as well if the teacher turns this feature on.

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

- Digital materials are accessible and compatible with multiple operating systems and devices. Since materials are web-based, students and teachers can access them through any device that is connected to the internet. At the bottom of the main page, there is a link to "Check Requirements" that provides the following information: "Discovery Education works on desktop and laptop computers with a wide range of browsers. We recommend you use the most recent version of the following browsers to ensure the best experience. Google Chrome, Mozilla Firefox, Safari, Microsoft Edge. While we don't support specific devices by name, we do ensure that our products work with devices using the most recent version of the following Operating Systems: ChromeOS, Android, and iOS."
- Materials integrate digital technology that is compatible with a variety of learning management systems. In their Program Guide, materials specify that "Science Techbook is compatible with a variety of learning management systems" and recommend visiting their website to see the latest LMS integrations. On their website, discoveryeducation.com, information states it is compatible with Brightspace, Canvas, Classlink, Clever, Google, Google Classroom, Infinite Campus, Microsoft Teams, MCEdCloud, Microsoft 365, SAML, and Schoology.

Discovery Education Science Techbook for Texas
Grade 2

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.	Y
2	Materials provide teacher guidance for the use of embedded technology to support and enhance student learning.	Y
3	Materials are available to parents and caregivers to support student engagement with digital technology and online components.	Y

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 a rationale for the age-appropriateness of digital and online components. On the DE website, discoveryeducation.com, on the tab labeled “Curriculum,” under “Science,” materials describe how they developed their digital technology and online components in a way that makes them developmentally appropriate for the grade level: “The phenomena and content used in Science Techbook is provided through our dynamic K–12 learning platform. Vetted by curriculum experts and differentiated by grade level, it mirrors students' interests and helps them make relevant, lasting connections between science, the classroom, and their everyday lives.”
- The Program Guide explains how different digital components are developmentally appropriate for the grade level. For example, "… (Science Techbook) provides highly engaging, standards-based content guaranteed to motivate students to delve deeper into science… These include hands-on activities and labs, virtual labs, interactives, videos, animations, images, audio, online models, informational text, and more." It adds, "QR codes within teacher and student materials provide easy access to embedded technology and a seamless instructional experience between the digital and print program."
- Digital technology and online components are aligned with the grade-level scope and approach to science knowledge and skills progression. For example, in the Table of Contents, materials specify the grade-level TEKS covered in each unit and include links to each lesson that targets

the given TEKS. Additionally, every grade level provides a Course Overview section with related TEKS and ELPS for online and digital components within the Teacher's Guide.

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

- Materials provide teacher guidance for using embedded technology to support and enhance student learning. Materials include a video showing how the digital Techbook is structured and how to access all its features. On the main page of the Teacher Techbook, there is another video that shows all the features of the program. Each unit in the Teacher's Edition begins with the concept structure and pacing. Within every lesson, the materials offer clear instructions on how to use the embedded technology. For example, in multiple video lessons, the teacher's guide provides a "Pause and Play" strategy to support students in reflecting on the video content. Also, the program guide has a section called Immersive Reader, which instructs the teacher to use this feature to support struggling readers, English learners, or any student needing more accessible content.
- Materials provide specific teacher guidance for embedding the technology within lessons and assessments. Throughout the Teacher Editions, QR codes and short links directly connect to digital resources to deepen learning through rich media and assessment opportunities.

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

- Materials include resources for parents and caregivers on supporting student engagement with digital technology and online components. For example, under Course Materials, there is a letter for parents or guardians providing information on how to access materials. It explains how to access the digital platform by scanning the QR codes on the students' books and logging in with their student username and password. Also under Course Materials, the Caregiver Course Overview provides ideas to support students' learning at home, including the Discovery Education website that can be used for additional practice. For example, the materials suggest using the website https://puzzlemaker.discoveryeducation.com/ to have access to different games to practice the vocabulary learned.
- Additional resources for families available on the publisher's website address the program access and usability. For example, the Discovery Education Guide for Families describes the product in detail, including how to access it and use tools to organize content. Similarly, the Discovery Education Family Resources includes tools to support navigation of the software; provides additional resources available, including videos, text, audiobooks, and a stress reduction program; and instructions for students to conduct research in DE.