Great Minds PhD Science Texas Grade 1

Great Minds PhD Science Texas Grade 1 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	100%	100%	100%	100%

Section 2. Instructional Anchor

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

Section 3. Knowledge Coherence

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

Section 4. Productive Struggle

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

Section 5. Evidence-Based Reasoning and Communicating

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

Section 6. Progress Monitoring

- The materials include a variety of TEKS-aligned and developmentally appropriate assessment tools.
- The materials include guidance that explains how to analyze and respond to data from assessment tools.

- The assessments are 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 mostly designed to engage and support student learning with the integration of digital technology.
- The digital technology or online components are developmentally and grade-level appropriate and provide support for learning.

Section 10. Additional Information

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

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Indicator 2.1

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

1	Materials provide multiple opportunities for students to develop, practice, and demonstrate mastery of grade-level appropriate scientific and engineering practices as outlined in the TEKS.	M
2	Materials provide multiple opportunities to 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 include multiple opportunities for students to develop, practice, and demonstrate mastery of grade-appropriate scientific practices as outlined in the Texas Essential Knowledge and Skills (TEKS). Lesson Clusters cite where each standard is introduced, addressed, or mastered. For example, TEKS 1.11A is introduced in Module 2, Lesson 1, addressed in Module 2, Lessons 4–6, and mastered in Module 3, Spotlight Lessons on Earth Materials. The module provides multiple checks for understanding to support the mastery of TEKS 1.11A.
- The materials provide multiple opportunities to develop grade-level appropriate scientific and engineering practices, as outlined in the TEKS. For example, in Module 3, Spotlight Lesson 5, students investigate the effects of heating on chocolate. Students record their observations of

the chocolate's properties before and after heating. Students discuss the property changes as a class and revisit their predictions.
- Materials include an End of Module Assessment to allow students to demonstrate mastery of grade-level appropriate scientific practices. For example, in Level 1, Module 1, Lesson 23, students apply their understanding of how pushes and pulls can move objects. Materials state, "The End of Module Assessment is a way for students to show all the knowledge they have developed throughout the module."

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

- The materials provide multiple opportunities to make connections between overarching concepts and recurring themes. The Implementation Guide lists seven recurring themes, "...patterns, cause and effect, scale and proportion, systems, energy and matter, structure and function, and stability and change." For example, the recurring theme of patterns is found in all modules and Spotlight Lessons.
- The materials provide multiple opportunities to make connections between overarching concepts and recurring themes. For example, in Module 3, Spotlight Lesson 8, students answer the question, "What are some ways we use energy and matter to understand how heat can change the properties of objects and materials?" The Teacher Note in the sidebar suggests the teacher "...should help students reflect metacognitively on links between phenomena, ideas, concepts, and practices in science and engineering."
- Materials include a Reflect on Recurring Themes section that provides opportunities to make connections between and within overarching concepts. For example, in Module 1, Lesson 24, students are asked to "...share other phenomena that the lens of cause and effect helps them understand, such as phenomena from Kindergarten modules or outside of school."

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 are systematically designed to develop and build student skills and content knowledge using phenomena appropriate to the grade level as outlined in the TEKS. The materials provide a Storyline that outlines the progression of each unit and essential questions that align with the TEKS. For example, in Module 3, students learn that plants and animals are living things and have external parts. At the end of the module, students "...are able to apply their understanding of the properties and functions of animal body parts to analyze and interpret information about the way animals use their body parts to survive in their environments."
- Throughout the materials, students engage in a Content Learning Cycle to strategically and systematically build content knowledge and skills. According to the Implementation Guide, the five stages of the content learning cycle are "...wonder, organize, reveal, distill, and know." During the "Wonder" stage of the learning cycle, students ask questions and develop an initial explanation of the anchoring phenomenon. During the "Organize" stage of the learning cycle, students investigate various supporting phenomena to understand the anchoring phenomenon better. During the "Reveal" stage of the learning cycle, students return periodically to the anchoring phenomenon to apply evidence they gather during investigations and data analysis to revise their explanations. During the "Distill" stage of the learning cycle, students reflect on the conceptual understanding they have developed and used to explain multiple phenomena in a

Socratic Seminar. During the "Know" stage of the learning cycle, students apply knowledge to explain a new phenomenon in the End-of-Module Assessment. Each time students participate in the learning cycle, they engage in elements of the 5E instructional model to make sense of phenomena.

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 multiple opportunities for students to ask questions and conduct classroom observations to develop an understanding of science concepts. For example, in Module 1, students use information about how tugboats help cargo ships through the harbor to generate questions about push and pull. The questions are recorded on sticky notes and placed on the Driving Question Board. During the module, "Students will revisit the Driving Question Board to build a coherent understanding of how tugboats move cargo ships."
- Students are provided opportunities to plan and conduct classroom investigations. For example, in Module 3, Lesson 20, students create an investigation plan with a question, claim, materials needed, and the process of investigation to explore "...whether radish plants respond to light in their environment." Students conduct their investigation following their plan.
- 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, in Module 3, students use ELAR concepts such as writing and drawing while working with different fasteners. Students use their writing to discuss academic vocabulary orally.

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Indicator 2.2

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

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

- Materials include a Curriculum Map that identifies anchor phenomena, supporting phenomena, and student-generated phenomena in each module. For example, the anchoring phenomenon in Module 3, Spotlight Lessons on Earth Materials, is Mata Ortiz pottery.
- Materials embed problems across lessons to support students in developing knowledge through engineering practices. For example, in Module 1, students learn about push and pull and build a model representing the movement of tugboats and cargo ships through the New York Harbor. Students also participate in a Socratic Seminar to answer the essential question, "How do tugboats move cargo ships through a harbor?"
- Materials allow students to build knowledge of phenomena through authentic, grade-level application across lessons. For example, in Module 3, students explore the Phenomenon Question, "How do pond animals use their body parts to survive?" In Lesson 4, students use models, observe photographs, and view videos to describe ways animals use their body parts to perform different functions. In Lesson 5, students describe animals' protective body parts and determine the relationship between the properties of a body part and its function. In Lesson 6, "...students apply their new knowledge to explain how animals' body parts work together to help the animals survive."

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

- Materials intentionally connect prior knowledge related to phenomena. For example, Module 3, Lesson 17, guides the teacher to "[e]licit students' prior experiences to develop a list of five human senses." The teacher asks questions such as "Do you think other animals sense their environment? and "Why do you think that?" The teacher connects students' prior knowledge to summarize that animals also use their senses.
- The materials provide multiple opportunities to leverage students' prior knowledge and experiences. For example, in Module 2, Spotlight Lessons on Water, students "...identify a way they use water at school" before learning about how humans depend on natural water sources.
- Materials include a "Driving Question Board" where the essential question is revisited throughout the lesson. In Module 3, Lesson 10, students are asked, "How do plants and animals plants and animals use their body parts to survive in a pond environment?" Teacher guidance suggests allowing students time to review their Science Logbook pages to leverage prior knowledge while reviewing the essential question.

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

- The materials include an "Introduction Section" to introduce phenomena and recurring themes that engage students in science content. For example, in the Spotlight Lesson in Module 3, students explore how humans use natural resources to make pottery. The student learning goal is to identify the effects of heating and cooling objects.
- The materials include a Pacing Guide with the anchoring phenomenon, an essential question, a goal statement, and TEKS alignment for each cluster. For example, in Module 3, the anchoring phenomenon is Life at the Pond, and the essential question is, "How do pond plants and pond animals survive in their environment?" The focus question is "How do plants and animals use their body parts to survive in their environment?" and the goal is for students to understand that plants and animals use their body parts in ways that help plants and animals survive.

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Indicator 3.1

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

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

Meets | Score 6/6

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

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

Evidence includes but is not limited to:

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

- Materials are vertically aligned and designed for students to build and connect their knowledge and skills within and across units and grade levels. The Texas Essential Knowledge and Skills (TEKS) Content Development Progression identifies when TEKS are developed and mastered. For example, kindergarten students observe and describe weather changes (K.10B), in first grade, they will describe and record observable characteristics of weather (1.10D), and in second grade, students will measure, record, and graph weather information including temperature and precipitation (2.10.B).
- The materials provide a Spotlight on Knowledge and Skills section to describe how lessons are vertically aligned and designed for students to build and connect their knowledge and skills within and across units. For example, in Module 2, Lesson 1, the materials state "In Kindergarten, students find out that all animals need food, water, and shelter. Students also determine that many animals need air. In this module, students use this information to figure out why there are fewer gopher tortoises now than there were in the past."
- The materials present content in a way that builds in complexity within and across units and grade levels. The progression of complexity through each module is described in narrative format in the "Introduction" section. For example, in Module 3, students learn about plant and

animal survival. Students begin the module learning how plants and animals use their body parts to survive, and the unit ends with students learning how parents help their offspring survive.

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

- Materials are intentionally sequenced to scaffold learning in a way that allows for increasingly deeper conceptual understanding. In Module 1, students explore how pushes and pulls cause objects to start moving, and examine a model of how tugboats help push and pull cargo ships through a harbor. In Concept 2, students explore how pushes and pulls cause objects to change direction or stop. At the end of the module, students engage in a Socratic Seminar to "... reflect on the knowledge they built of how tugboats use pushes and pulls to help move cargo ships."
- The materials include a progression of concrete then representational before abstract reasoning when presenting concepts that allow for increasingly deeper conceptual understanding. For example, in Module 3, students explore how plants and animals survive in their environments. Students investigate the response radish plants have to light before analyzing photographs of other plants responding to light. Through this intentional learning sequence, students "...understand how plants and animals interact with living and nonliving things in their environments."
- Materials include a Building Content Knowledge section that provides an overview of how students will engage in the content through groups of lessons, known as concepts, that build in complexity. For example, in Module 1, students engage with the anchor phenomenon: pushes and pulls. Students create a model to explore how one object can move another, and complete a Conceptual Checkpoint in which they apply their understanding of pushes and pulls in a new context.

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

- Materials present scientific content that reflects the most current and widely accepted explanations and are free of scientific inaccuracies. The Teacher's Edition provides Teacher Note sidebars with clarifying information related to science terms and concepts. For example, in Level 1, Module 2, Lesson 1, the Teacher Note clarifies the classification of tortoises. The note states "Tortoises, along with terrapins and other kinds of turtles, belong to the taxonomic group Testudines. All these animals have a shell covering the back of their body. However, tortoises are land animals, whereas other turtles are often aquatic. Differences in shell and limb shape help the animals live in either an aquatic or a terrestrial environment (Kuiper, n.d.)."
- The materials accurately present core concepts and recurring themes and concepts. For example, in Module 3, students learn how plants respond to light in various positions. The Teacher Note gives suggestions to clearly present the grade-level-specific core concept that allows students to understand that "Unlike plants, animals make conscious choices about how to respond to information around them. Because plants do not have a brain, their response of growing toward light is entirely automatic."
- The materials clearly present science and engineering practices through the 7E Model. In the Explore phase "...students plan and conduct investigations, collect and record information and data from observations, analyze and interpret data, represent the natural world by using models, construct explanations, and propose solutions." In Module 3, Lesson 7, students learn

about food chains through a text about pond animals and food chain linking cards. Students draw a model of an animal food chain and explain how the food chain works.

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

- The materials provide mastery requirements within the boundaries of the grade level. For example, the Implementation Guide provides a Texas Essential Knowledge and Skills (TEKS) Content Development Progression component that outlines when learning targets are expected to be mastered in grade 1 and standards that students will develop in future grades. Within the component, the bold text identifies standards students should master, and italicized text identifies standards students will master in later lessons. For example, the TEKS 1.6C, "*...students are expected to demonstrate and explain that a whole object is a system made of organized parts but understanding that a toy can be taken apart and put back together*" is italicized to indicate the concept will be developed further to gain mastery.
- The End of Module Assessment rubrics define student outcomes to meet grade-level expectations. The materials list the TEKS associated with the tasks and learning outcome statements. For example, in Module 3, Task 1D, students explain why koalas need eucalyptus trees. The learning statement for mastery states, "The student explains that koalas need eucalyptus trees (1.5D) to get food and water (1.12B)."
- Mastery requirements are included through specific learning targets for each grade level. The materials identify TEKS that are expected to be mastered through the use of bold font and specify in which module this concept will be taught. For example, TEKS 1.12C "...observe and describe the pattern that animals communicate to help themselves and others survive" is identified as a "TEKS for mastery" and will be taught in Module 1, Concept 2.

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Indicator 3.2

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

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

Meets | Score 6/6

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

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

Evidence includes but is not limited to:

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

- Materials support teachers in understanding the vertical alignment guiding the development of grade-level content, recurring themes and concepts, and scientific and engineering practices. For example, the teacher guidance in Module 3 asks the teacher, "Why don't students learn about gravity as a pull?" The materials reference the Texas Essential Knowledge and Skills (TEKS) alignment, from kinder-grade 3, stating "Young students need to experience science through concrete, hands-on examples. To help students develop an understanding of fundamental concepts, each of the interactions in this module involves a pair of concrete and accessible objects. By comparison, the concept of gravity is more abstract because gravity acts at a distance and is not visible; only its effects are visible. Students will develop an understanding of gravity in Level 3 after they develop foundational knowledge about how pushes and pulls can cause movement."
- The materials support teachers in understanding the horizontal and vertical alignment guiding development of grade-level content, recurring themes and concepts, and scientific and engineering practices. For example, materials include a Horizontal and Vertical Alignments guide that outlines when scientific and engineering themes are included in each grade-level module strand and across grade levels.

- Materials support teachers in understanding the horizontal alignment guiding the development of grade-level content, recurring themes and concepts and scientific and engineering practices. Materials include a TEKS Content Development Progression, which outlines TEKS taught within each grade level and module. The bold text indicates the standards that are mastered in the module and italicized text indicates standards to be mastered in later lessons. For example, in Module 2, Weather, the TEK 1.11C is italicized to identify the TEK as being developed but not expected to be mastered in this module.

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

- The materials contain explanations and examples of science concepts, including grade-level misconceptions to support the teacher's subject knowledge and recognition of barriers to student conceptual development as outlined in the TEKS. The materials include a Common Levels K–5 Misconceptions section that includes common misconceptions students may have in each module and grade level, as well as an appropriately developed understanding of the concept. For example, in the Level 1 Module, a common misconception is, "Some objects can move without a push or pull." The developed understanding is, "...all moving objects need a push or a pull to start moving."
- Materials contain explanations and examples of science concepts to support the teacher's subject knowledge and recognition of barriers to student conceptual development as outlined in the TEKS. The materials include a section titled Additional Reading for Teachers. The section provides articles and other reading options to support teachers' pedagogical and content understanding. For example, in Level 1, Module 2, focused on environments, three additional reading options are presented for teachers:
    - "Together, We Can Make a Difference" infographic about trash from the Environmental Protection Agency (http://phdsci.link/1881)
    - "Longleaf Pine Forests: A Southern Treasure" article from The Nature Conservancy website (http://phdsci.link/1882)
    - "The Gopher Tortoise" article from The Nature Conservancy website (http://phdsci.link/1883)
- Materials contain explanations and examples of science concepts to support the teacher's subject knowledge and recognition of barriers to student conceptual development as outlined in the TEKS. In Module 2, Lesson 1, an explanation about the anchor phenomena is provided in the sidebar Teacher Notes. The science concept is "Tortoises, along with terrapins and other kinds of turtles, belong to the taxonomic group Testudines. All these animals have a shell covering the back of their body. However, tortoises are land animals, whereas other turtles are often aquatic. Differences in shell and limb shape help the animals live in either an aquatic or a terrestrial environment (Kuiper, n.d.)."

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

- The materials explain the intent and purpose of the instructional design of the program. The Foundations section in the Implementation Guide provides an overview of the instructional

elements found in the materials. This section states, “Great Minds believes that every child is capable of greatness. The mission of PhD Science Texas is to help teachers provide their students with a science education that is as limitless as science itself. To achieve this goal, students rigorously engage in learning that builds their coherent understanding of scientific knowledge.”

- The Implementation Guide includes three sections, Introduction, Foundation, and Research in Action, to explain the intent and purpose of the instructional design of the program. The Introduction section provides an overview of the importance of science and how the materials engage students in science and other curriculums. The Foundation section explains how “...students rigorously engage in learning that builds their coherent understanding of scientific knowledge.” The Research in Action section is divided into three parts and explains what research says about science, what students need and how the materials respond to the current research by putting “...research-based best practices into action.”
- The materials provide a purpose or rationale for the instructional design of the program. The Implementation Guide includes the section “Content Learning Cycle,” which explains the instructional design of the materials and how it relates to the 7E model phases. The purpose of this design is to “...help students understand important differences between academic disciplines as well as patterns they can apply to learning in any context throughout their lives.”
- The Implementation Guide explains the instructional design of the program as “Students participate in investigations, discussions, and activities that build enduring scientific understanding and competence.” Across modules and levels, students revisit fundamental science concepts, developing a deeper understanding of those concepts and applying them to make sense of new phenomena. For example, in Module 1, students explore how pushes and pulls cause objects to start moving. Students examine a model of how tugboats help push and pull cargo ships through a harbor. Students investigate what causes objects to start moving by exploring ways they can make a set of toys start moving. In a Conceptual Checkpoint, students apply their understanding of how pushes and pulls can start movement (1.7A, 1.7B).

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Indicator 4.1

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

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

Meets | Score 4/4

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

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

Evidence includes but is not limited to:

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

- The materials consistently provide learning activities that support students' meaningful sensemaking through reading, writing, thinking, and acting as scientists and engineers. The materials provide a description of sensemaking as part of the foundation of PhD Science Texas and identify specific sensemaking behaviors of students in the different components of the curriculum. The Implementation Guide explains, "Students participate in investigations, discussions, and activities that build enduring scientific understanding and competence. Across modules and levels, students revisit fundamental science concepts, developing a deeper understanding of those concepts and applying them to make sense of new phenomena." Students also build coherence with sensemaking because modules weave "…a storyline through which students make sense of compelling phenomena. Each lesson builds on previous lessons, allowing students to reflect on their learning, generate new questions, and investigate related topics."

- The materials consistently provide learning activities that support students' meaningful sensemaking through reading, writing, thinking, and acting as scientists and engineers. In Level 1, Module 2, students begin sensemaking through phenomena and explore a video of the environment where gopher tortoises live. After viewing the video, students record their observations in their Science Logbooks. Students share their observations with the class and use verbal and nonverbal signals to compare and contrast observations. Students continue developing sensemaking using data from graphs, video clips, photographs, and conversations to create a model showing how gopher tortoises interact with their environment and why there are fewer tortoises now than there were in the past.
- The materials consistently provide learning activities that support students' meaningful sensemaking through reading, writing, thinking, and acting as scientists and engineers. For example, in Module 3, students explore outdoors and record observations of their environment in their Science Logbook. Students observe a photograph of a pond and make a prediction of what they might see in a pond environment. The text, *Over and Under the Pond,* also supports students in identifying components of a pond environment. Students work together to sort pictures of animals and plants to create a chart and create an anchor model of pond plants and animals. Students engage in meaningful sensemaking as they share ideas to be added to the model and "...justify their agreement or disagreement."

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

- When studying texts related to scientific concepts, the materials provide multiple opportunities for pre-reading activities and vocabulary development. For example, in Level 1, Module 1, students explore the text, *Tugboat,* to build background knowledge to support student understanding of how tugboats help cargo ships move. To support vocabulary development, the materials state, "After reading an important, unfamiliar word that the students cannot define through context or morphological clues, pause to provide a familiar synonym or to define the word and use it in an example sentence. Then, reread the sentence containing the word, and continue reading the text aloud. Important, unfamiliar words in *Tugboat* may include dock, cargo ship, port, barge, and ocean liner." The materials also provide a Teacher Note in the sidebar to clarify the difference between a boat and a ship, but explain that students at this age do not need to make this distinction and may use the words interchangeably.
- The materials provide opportunities for students to engage in purposeful and targeted activities with grade-level appropriate scientific texts. Each module has a Knowledge Deck that includes posters of reading passages and pictures to develop an understanding of concepts. For example, the Module 2 Knowledge Deck provides two reading passages, *Disappearing Longleaf Pine Forests* and *The Problem with Trash,* that support understanding of the module anchor phenomena of life in a longleaf pine forest. In Module 2, Lesson 12, the teacher reads *Disappearing Longleaf Pine Forests* to develop student understanding that human impact contributes to disappearing forests. Students discuss what they learned from the passage to draw conclusions about how humans are impacting the forests.
- The materials provide multiple opportunities for students to engage with scientific texts to gather evidence and develop an understanding of concepts. For example, in Module 3, Lesson 1, the teacher engages in pre-reading strategies before reading the book, *Over and Under the*

Pond. The materials provide a Teacher Note to explain, “Observing the front and back covers of a book helps students formulate ideas about the book's content.” Before reading, the teacher also instructs students to use a thumbs-up signal each time they recognize a new part of the pond environment in the book.

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.

- Students are given opportunities to express scientific concepts through writing and graphics. The materials provide Engineering Challenges where students create data sets to analyze and improve a product. For example, in Module 1, students apply the engineering design process to create a model cushion that helps a tugboat stop near a dock. Students follow a procedure to test the effectiveness of their cushions, record their results in a graph, and write their conclusions from the investigation in their Science Logbook.
- The materials provide opportunities for students to display an understanding of scientific concepts in written and graphic modes. For example, in Module 3, Spotlight Lesson 2, students explore different types of soil with a sifting screen. Students draw observations and record the size, shape, texture, and color of each soil sample in their Science Logbook.
- The materials provide opportunities for students to display an understanding of scientific concepts in written form. For example, in Module 3, Lesson 21, students investigate two models of radish plants and record investigation data in their Science Logbook. One model represents the radish plant with the opening of the box on the side and the other model represents the radish plant with the opening of the box on top. Students draw the two radish plants and write why “...the leaves and stems grow toward the opening” using the provided sentence stem.

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

- The modules are designed to engage students to act as scientists and engineers and help them persevere through concepts with productive struggle. For example, in Module 3, Lesson 15, students use a protective covering they designed and created in a previous lesson and test it with carbon paper and pressure to determine if it provides enough protection to be considered successful. Students work with a partner to revisit their plans and make improvements to their protective covering. The teacher provides guiding questions to lead the students in focused conversations and students improve their existing protective coverings and test them again.
- The modules are designed to engage students and help them persevere through concepts with productive struggle while acting as scientists and engineers. Each module includes an Engineering Challenge that encourages students to reflect on a problem, design a plan, implement their model, record their data and observations, and reflect on how to improve their model. For example, in Module 2, students follow the engineering design process to design and create a flower pot that does not hurt the environment. Students test different kinds of paper to determine the material that would be best to shape into a pot while still holding water and soil. Students build and test their pots and analyze data to determine if they are successful. Students engage in productive struggle as they improve their pots and retest.
- The materials provide authentic student engagement and perseverance of concepts through productive struggle while acting as scientists and engineers. In Module 3, students explore the

properties of various plants and animal body parts and why they are important. Students look at a photograph of scientists at a pond and identify a problem. Students then observe photographs of plants in the pond to identify their properties and come up with solutions to the potential problems.

Great Minds PhD Science Texas Grade 1

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.

- The materials provide opportunities for students to develop using evidence to support hypotheses and claims. In Module 2, Lesson 14, students construct an argument with evidence to support a claim about pine farms, listen actively to each other's arguments, retell the main points, and indicate agreement or disagreement using the instructional routine Inside-Outside Circles. The teacher pairs "each student in the outside circle with a student in the inside circle." Students in the outside circle tell their partner which claim they chose and explain their evidence while their partner in the inside circle listens. Students in the inside circle will restate their partner's argument and explain why they agree or disagree. Materials guide the teacher to "circulate to listen to conversations and to provide support as needed. If time allows, have one circle rotate so that students can share their claim and supporting evidence with a new partner."
- The materials prompt students to use evidence when supporting their hypotheses and claims. For example, in Module 1, Lesson 4, Spotlight Lesson on Weather Conditions, students analyze yearly weather data over three years in Amarillo. Students read the claim, "The seasons have similar weather from year to year" and use their logbook to circle "yes" if they agree with the

claim or “no” if they disagree with the claim. Students use the provided weather charts to write one piece of evidence that supports why they agree or disagree with the claim.

- The materials provide opportunities for students to develop using evidence to support their hypotheses and claims. For example, in Module 2, Spotlight Lesson 3, about freshwater and saltwater, students practice making claims and supporting claims with evidence using the instructional routine “Question Corner.”The teacher displays photographs of six bodies of water found in Texas around the room. When students are presented with a question, they express their selection by standing in front of one of the six bodies of water. Students then discuss with a partner why they chose this body of water and share it with the class. The “Differentiation” sidebar note provides the sentence frame, “I think this water body is best for…because….” to support students in using evidence to support their claim.

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

- The materials provide opportunities for students to apply scientific vocabulary within context. In Level 1, Module 1, the Teacher Note states, “In this module, students will see and hear the terms push and pull used as both nouns and verbs, and they will use the terms to explain how pushes and pulls can start, stop, or change the speed or direction of an object’s motion.” The materials revisit both terms explicitly, using the following strategy; “Provide student-friendly examples of pushes and pulls, such as pushing a friend on a swing or pulling a balloon on a string. Invite students to think of other examples of pushing and pulling.”
- The materials present scientific vocabulary using multiple representations. For example, in Module 1, Lesson 18, the Content Area Connection sidebar states "When revisiting pages 8 and 9 of the book *Tugboat*, consider reading the text aloud while displaying the illustration. Students may not be familiar with the words captain, crew, and board. By hearing these words in context and by using them in their responses, students build their vocabulary and improve their comprehension of the Engineering Challenge Scenario.”
- The materials present scientific vocabulary using multiple representations. For example, in Module 2, Lesson 2, students learn the vocabulary “living” and “nonliving.” Students watch a video about the environment of the gopher tortoise and discuss what was living and nonliving in the video. During an activity to support understanding of the vocabulary, students circle living things, select one of the living things they circled, explain how they know it is a living thing, and draw what it needs to live in their Science Logbook.

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

- The materials integrate argumentation and discourse within stages of the learning cycle. For example, in Module 1, Lesson 22, students use their knowledge and experiences with push and pull to engage in discourse. Students discuss the questions, "How does a tugboat use pushes and pulls to help move a cargo ship?” “How does a tugboat make a cargo ship move faster?” “How does a tugboat change the direction of a cargo ship?” and “How does a tugboat make a cargo ship slow down and stop?”
- The materials provide opportunities for students to develop how to engage in the practice of argumentation and discourse. Each module contains a Socratic Seminar that allows students to learn and explore through discourse with classmates. For example, in Module 2, Lesson 26, students engage in discourse regarding the essential question, "Why are gopher tortoises

disappearing?" Students work with a partner to discuss their thinking and then discuss with a group. Students use evidence to support their thinking and share why they agree or disagree.
- The materials integrate argumentation and discourse within stages of the learning cycle. For example, in Module 3, Lesson 6, students use what they have learned about crayfish and porcupine body parts to evaluate claims using the instructional routine, "Step In-Step Out." During this routine, students stand in a large circle and listen to the teacher read a claim. If students agree they step inside the circle. Students that agree and disagree both share their reasoning with the class.

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

- The materials provide opportunities for students to justify explanations of phenomena and solutions to problems using written and verbal arguments to problems using evidence acquired from learning experiences. In Module 2, Lesson 8, Spotlight on Water, student pairs present an argument on water conservation. Students explain how the circled photograph on the card shows evidence of humans conserving water. The materials guide the teacher to "Encourage students to listen respectfully to their partner and discuss whether they agree or disagree with their explanation." Students then swap cards with another pair and switch roles and repeat the activity. At the conclusion of the activity, students share their explanations in a whole group setting.
- The materials provide opportunities for students to justify explanations of phenomena and solutions to problems using written and verbal arguments to problems using evidence acquired from learning experiences. For example, in Module 1, Lesson 13, students revisit the anchor model. During the lesson, the teacher reminds students that tugboats are trying to move the cargo ship around the island and to the port. Students plan an investigation to answer the question, "How can a tugboat make a cargo ship slow down and stop?" Students use their Science Logbook to explain their plan to make the cargo ship stop using words and pictures. Students then orally share their plans for stopping the cargo ship and why they think their plan will be successful.
- The materials provide instruction for constructing and presenting a verbal or written argument to problems using evidence acquired from learning experiences. For example, in Module 3, Lesson 21, students analyze investigation data to determine how plants respond to light. The student Science Logbook guides students through the process of collecting evidence and using the information to construct arguments. In this lesson, students observe and record noticings of two radish plants and discuss their findings with a partner. Students provide evidence to support their claim using the sentence starter, "I think the leaves and stems grow toward the openings because…." Students then orally share their reasoning with the class.

Great Minds PhD Science Texas Grade 1

Indicator 5.2

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

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

Meets | Score 4/4

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

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

Evidence includes but is not limited to:

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

- The materials provide teacher guidance on anticipating student responses and the use of questioning to deepen student thinking. For example, in Module 1, Lesson 8, students reflect on a previous lesson about how strong and weak pushes affected the speed of a ball. Students rewatch a video of a tugboat pushing a cargo ship and answer the question, "How do you think the tugboat could make the cargo ship move faster?" The materials include the following possible student responses: "Maybe the tugboat could use a stronger push" and "A stronger push made the ball move faster, so I think that could make the ship move faster too."
- The materials provide support for teachers to deepen student thinking through questioning. Materials provide questions for teachers that require students to justify and use evidence to support observations and claims. For example, in Module 2, Lesson 8 students draw a picture of the environment where wiregrass grows. Students then identify the burrow as an environment for a gopher tortoise and add a burrow and gopher tortoise to their drawing. To deepen understanding, the materials provide questions for the teacher to ask students about their picture, such as, "Which part do gopher tortoises use for shelter?" "How do gopher tortoises change their environment?" and "What does your burrow look like and why did you draw it that way?"

- The materials provide teachers with possible student responses to questions and tasks and provide teacher guidance for the use of questioning to deepen student understanding. Materials use bold print to emphasize a question and use an italicized font to display possible student responses. For example, in Module 3, Lesson 28, students observe picture cards of parents and offspring. To deepen student thinking, the teacher asks, “Which parent do you think Offspring A belongs to and why do you think that?” The materials provide a list of possible student responses. The materials guide the teacher to confirm student responses, “...offspring A, the swan offspring, belongs to Parent B, the swan parent."

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

- The materials provide embedded support for the teacher in how to introduce and scaffold students’ development of scientific vocabulary. For example, in Module 1, Lesson 4, students engage with the words push and pull, a concept they learned in Kindergarten. In grade 1 materials, a Teacher Note provides guidance on how to scaffold the understanding of these words as both nouns and verbs; “In this module, students will see and hear the terms push and pull used as both nouns and verbs, and they will use the terms to explain how pushes and pulls can start, stop, or change the speed or direction of an object's motion. Revisit both terms explicitly by using strategies such as the following: provide student-friendly examples of pushes and pulls, such as pushing a friend on a swing or pulling a balloon on a string. Invite students to think of other examples of pushing and pulling.”
- The materials provide embedded support for the teacher to prepare for vocabulary introduced in the module. Materials provide teachers with a Module Overview that provides a preview of the vocabulary that will be taught in the lessons. For example, in Module 2, Lessons about Environments, the vocabulary words listed are “...burrow, farm, nonliving, offspring, recycle, restore, and survive.” To support the development and use of scientific vocabulary in context, students “...learn the following terms through investigations, models, explanations, class discussions, and other experiences.”
- The materials provide guidance for the teacher on how to support students' development and use of scientific vocabulary in context. For example, in Module 3, Spotlight Lesson 2, students observe soil to record its properties such as size, shape, texture, and color. To scaffold the use of these terms in context, the “Differentiation” note states, “Consider working with students to develop a list of words to describe the properties of the parts of soil. For example, they can use words such as small, medium, and large to describe sizes of soil pieces in each part of soil. Post the list for students to use as they complete the chart in their Science Logbook.”

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

- The materials provide a section in the Implementation Guide, titled “Supporting Scientific Discourse” that provides teacher support to prepare for student discourse. The materials state, “During every step of their learning, students must have the opportunity to process information. When students clarify, justify, and interpret their ideas through discussion, they deepen their reasoning...Discourse is the sense-making tool students use to put the pieces of evidence together to develop scientific understanding.” The Implementation Guide provides collaborative conversation prompts to support student discourse. These prompts are categorized by clarification, reasoning, evidence, and collaboration. For example, clarification prompts include

"What do you mean by…?" "Can you say more about that?" "Could you summarize that in your own words?" "What is your main point?" and "Could you describe what difference that makes?"

- The materials provide teacher support to prepare for student discourse in the Implementation Guide. The Implementation guide provides suggestions to establish classroom expectations to allow for student discourse and provides four student norms for collaboration. The student norms are, "... 1) Actively and effectively participate in discussions and collaborations, building on the ideas of others and clearly communicating their own ideas. 2) Listen actively to interpret verbal and nonverbal messages, ask relevant questions, and make pertinent comments. 3) Evaluate information from various media presented in different formats. 4) Work collaboratively with others to develop a plan of shared responsibilities and rules for discussion."
- The materials provide teacher questions for supporting student discourse and the use of evidence in constructing written and verbal claims. For example, in Module 3, Lesson 21, students discuss the effects of light on radish plants with a partner before making their claim. The materials provide questions for the teacher to support students in using evidence they have collected to write a claim. These questions include "Why did the leaves and stems grow toward the opening?" and "How do you think the leaves and stems of the radish plant will respond?"

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

- The materials support and guide teachers in facilitating the sharing of students' thinking and finding solutions. For example, in Module 1, Lesson 1, students reflect on the question, "How do you think tugboats help cargo ships in the harbor?" Students engage in a Think-Pair-Share routine to allow students to think and respond to the question before sharing it with the class. All students have the opportunity to share their responses with a partner, but only a few students will share their responses with the class. The teacher confirms student thinking by sharing that tugboats play an important role in helping bring cargo ships to the port.
- The materials provide teacher support and guidance to engage students' thinking in various modes of communication throughout the year. For example, in Module 1, Lesson 3, Spotlight Lessons on Weather Conditions, students observe a photograph in their Science Logbook and record how they would describe the weather in the photograph by circling the appropriate symbols for wind, cloud cover, rain, or snow. Students also circle the thermometer they think shows the temperature in the photograph. Students write an answer to the questions, "What activity would you do in this weather?" and "What activity would you not do in this weather?" The materials include a Differentiation Note that supports the teacher in facilitating the sharing of students' thinking, "...consider scribing responses for students who need support with the writing demands of this task."
- The materials provide teacher support and guidance to engage students' thinking in various modes of communication throughout the year. Materials provide exemplars of teacher questions and students' verbal responses for sharing their thinking. The Implementation Guide states, "These sample discussions demonstrate for teachers what a classroom discussion could sound like." For example, the Module 2 End-of-Module Assessment includes sample student responses of written evidence to support a claim. In the Debrief End-of-Module Assessment, the materials include exemplar questions to guide the discussion and sentence frames to support sharing of students' thinking.

Great Minds PhD Science Texas Grade 1

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

Materials include a range of formative, summative assessments, and diagnostic 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 a range of formative, and summative assessments that include formal and informal opportunities to assess student learning in a variety of formats as well as diagnostic assessments to measure student learning and identify learning gains. Within the Implementation Guide, the section, “Going Deeper- Assessment,” explains the four types of assessments and how frequently they are present in the materials. Each lesson contains at least one Check For Understanding, and each concept includes a Conceptual Checkpoint. Every module includes an Engineering Challenge and an End-of-Module Assessment. Spotlight Lessons include an End-of-Spotlight Assessment. Materials include Check for Understanding assessments, core tasks, and anchor visual routines that can be used as diagnostic assessments throughout this module.
- Materials include formative assessments in a variety of formats to measure student learning and determine the next steps for instruction. The materials provide Checks for Understanding, which "formatively assess students as they develop new knowledge and skills.” For example, in Module 1, Lesson 15, students use their knowledge of pushes and pulls to explain how to slow down and stop an object. The Check for Understanding note states, “Students notice the following pattern: When their classmates push on the front of the moving Hall's car, the car slows down and stops.

Students identify these pushes as causes of the car's change in movement." The materials also provide the next steps for the teacher for students who may have difficulty explaining what causes Hall's car to slow down and stop. The materials state, "Ask students to act out how they would stop the car, and help them identify their pushing or catching action as the cause of the car stopping."

- Materials include summative assessments in a variety of formats. Each Module contains a summative End-of-Module assessment that "gives students the opportunity to demonstrate the knowledge and skills they have acquired throughout the module in the context of one or more phenomena." In the End-of-Module Assessment for Module 1, Lesson 23, students apply their understanding of how pushes and pulls can move objects. Students view videos and photographs of carnival games to analyze how objects move and answer questions related to push and pull. The materials provide a rubric that describes evidence of student work that meets expectations. Blank spaces are provided for teachers to record evidence of student work that exceeds or falls below expectations. Additionally, an alignment map is provided that details the content standards, scientific and engineering practices, and recurring themes and concepts aligned to each question on the assessment.

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

- The materials assess all student expectations, as outlined in the TEKS, by grade level. The Implementation Guide contains a section titled "TEKS Content Development Progression," which outlines the standards addressed and assessed within each Module and Spotlight Lesson. In addition to outlining the standards addressed, the materials use bold text to identify components of standards that students should master within the lessons. The italicized text identifies standards that students will develop knowledge, but will master in later lessons. The materials also include horizontal and vertical alignment documents that outline each content standard and the Module or Spotlight Lessons they are addressed and assessed.
- The materials indicate which student expectations are assessed. Each module contains an End-of-Module Assessment that is a summative assessment of standards taught within the module. The materials include an End-of-Module Assessment Rubric that includes the TEKS assessed by each item, as well as evidence of student work that meets expectations for each standard. For example, in the Module 1 End-of-Module Assessment, item number one assesses the TEKS 1.1F, 1.5B, and 1.7A. The rubric identifies criteria for evidence of student work that meets expectations and states, "The student records the observation (1.1F) that the ball pushes on the wall (1.5B) and stops (1.7A)."
- The materials assess all student expectations, as outlined in the TEKS, by grade level. Each lesson includes a Check for Understanding section that includes the TEKS being informally assessed. For example, in Module 3, Lesson 3, one of the Check for Understanding tasks includes, "Students develop models (1.1G) of a pond plant and a pond animal to show that all organisms have external parts (1.5A, 1.13A)."

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

- The materials include teacher guidance on how the components of the modules work together to allow students to apply understanding on assessments. In the Implementation Guide, PhD Science Texas explains that the curriculum "…offers several types of assessments in each

module. Science Challenges and Engineering Challenges allow students to apply their knowledge in both familiar and unfamiliar contexts." End-of-module lessons have three components that integrate the recurring concept from the module: "First, students participate in a Socratic Seminar to discuss and synthesize module learning; next, a summative individual assessment gives students an opportunity to demonstrate mastery of knowledge and skills they acquired throughout the module; and, finally, students evaluate their own knowledge."

- The materials contain assessments that test students' ability to apply scientific knowledge and practices to recurring themes relevant to their learning goals. The materials include a standards-addressed table that outlines content standards, scientific and engineering practices, and recurring themes and concepts that are included within the Engineering Challenge lessons. Each module includes an Engineering Challenge that evaluates students' proficiency in science and engineering practices. For instance, in Module 1, students follow the engineering design process to develop a model of a cushion that would prevent a tugboat from bouncing too far away from its dock. In this activity, students learn about the different components of a dock system, identify any issues, and create sketches of their own dock cushions. Students then build their cushion devices, test materials, and gather evidence to improve their designs. At the end of the project, students share their cushions with the class and analyze the data they collected to determine the most effective designs.
- The materials include assessments that require students to integrate scientific knowledge and science and engineering practices with recurrent themes appropriate to the student expectation being assessed. For example, in Module 3, Spotlight Lessons on Earth Materials, students investigate the properties of different kinds of soil, how pottery is made, how people use natural resources to make objects, and the effects of heating and cooling. Students then apply this knowledge to a new phenomenon during the End-of-Spotlight Assessment to explain how Mata Ortiz's pottery and Adobe bricks are similar and different.

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. Within each Spotlight Lesson, students engage in an End-of-Spotlight Assessment that requires students to apply knowledge and skills to a new problem. For example, in Module 1, Spotlight Lessons on Weather Conditions, students collect local data for four weather condition categories: temperature, cloud cover, wind, and rain or snow. Students develop their understanding of how weather conditions can change and how these changes are part of seasonal patterns. During the End-of-Spotlight Assessment, students apply their knowledge to a new phenomenon, cherry blossom trees blooming in Washington, DC. Students complete the assessment to explain the temperature conditions necessary for cherry blossom trees to bloom and apply their knowledge to answer the question, "How can we predict when the cherry blossom trees in Washington, DC, will bloom?"
- Materials include assessments that require students to apply knowledge and skills to a new phenomenon or problem. For example, during the Conceptual Checkpoint in Module 2, Lesson 11, students apply their previous learning about gopher tortoises and the longleaf pine forest to answer questions about plants and animals in a garden habitat.
- Materials include assessments that require students to apply knowledge and skills to a new phenomenon or problem. For example, in Module 3, students explore plants and animals in pond environments. Students investigate how plants and animals use their body parts to survive. Students explore food chains, how animals use their senses, how animals communicate, how plants respond to light, and the changes animals undergo. Students then apply their

knowledge of plants and animals within the End-of-Module Assessment by explaining how koalas survive in the forest.

Great Minds PhD Science Texas Grade 1

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 student's needs, in all areas of science, based on measures of student progress appropriate for the developmental level.	M
3	Materials 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 the indicator. Materials include sufficient 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 resources that guide teachers in evaluating student responses. The modules contain rubrics for Engineering Challenges and End-of-Module Assessments which provide evidence of student engagement and whether student responses meet expectations. Additionally, the rubrics have blank spaces for teachers to note when student work goes beyond or falls short of expectations. For example, in Module 1, the Engineering Challenge Rubric outlines expectations for each stage of the Engineering Design Process, which includes "ask, imagine, plan, create, improve, share, and overall." An example of a student response that meets expectations in the "improve" stage is, "The student observes and compares cushions made of different materials (1.6A) and uses these comparisons to improve a cushion design so that the cushion is more effective (1.2D) at helping the model tugboat stop closer to the dock (1.5B) after the tugboat touches the cushion (1.7B)."
- Materials include information that guides teachers in evaluating student responses. In Module 3, students answer five multiple-choice questions and two written response questions on the End-of-Module Assessment. An answer key is provided which includes sample students' responses to the written response questions. The inline Teacher Note in Module 3, Lesson 30, instructs the teacher to score the assessment using the provided rubric. The rubric provides the TEKS for each item number and an explanation for rating student responses using a 1-4 scale.

The materials also include an End-of-Module Assessment Alignment Map for teacher reference. This map provides item numbers and a correlation to content standards, scientific and engineering practices, and recurring themes and concepts.

- Materials include information that guides teachers in evaluating student responses. Materials include follow-up suggestions for formative assessments in the Teacher's Edition and provide examples of acceptable answers for evaluating student responses. For example, in Module 3, Lesson 30, the Teacher Note guides the teacher to, "Identify at least one assessment item to debrief with the class in the next lesson. Also select an exemplar student response for the item to show students, or display the sample student response to this item from the Teacher Edition." The lesson also provides teacher instructions for facilitating the use of the selected exemplar or sample question. Materials guide the teacher to allow students to evaluate their own responses compared to peer responses and make revisions to their assessment.

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

- Materials provide guidance and resources to support teachers' overall analysis of assessment data and respond to individual student needs. The materials provide guidance documents and resources to support teachers' analysis and interpretation of the assessment data. For example, within the Implementation Guide scoring guidance for assessments, individual student score sheets, class trackers for item performance, standard performance, and next steps are provided to support teachers.
- Materials include assessment tools that yield data teachers can easily analyze and interpret. The materials include rubrics for End-of-Module Assessments, End-of-Spotlight Assessments, and Science/Engineering Challenges, that include the standards being assessed for each item and a description of the four scoring indicators. The Implementation Guide also provides teachers guidance on how to score and analyze results. For example, the materials include a chart of the different assessment types of questions and the suggested point value to assign. A Proficiency Band Information section is provided that explains the levels and percentage cutoffs to determine students who meet, approach, or do not meet expectations. Questions to consider when analyzing student and class trackers are provided in the Implementation Guide. Some reflection questions include, "Which content do I need to reteach with this student?" and "On which items did students struggle?"
- Materials provide guidance and resources to support teachers' analysis of assessment data. For example, in Module 3, a Teacher Note instructs teachers to analyze students' responses from the End of Module Assessment and select questions to review in the following lesson. The materials include an answer key with example written response answers to help the teacher when analyzing student data. Additionally, the materials provide suggestions for examining patterns or trends in the assessment data to help the teacher better understand and respond to student individual needs.

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

- The materials tools yield relevant information for teachers to use when planning instruction, intervention, and extension. For example, in Module 1, Lesson 9, students engage in a

Conceptual Checkpoint in which they use knowledge of pushes and pulls to determine the outcome of a skateboard race. An inline data chart provides evidence for students who show mastery of the skill or concept and states, "Students circle A push to indicate the action that will cause (1.5B) each rider to start to move toward the finish line (1.7A)." The materials provide teacher information for planning intervention for students who do not master this concept, and states, "If students circle A pull, remind them of the activity in Lesson 4 during which they moved toys across paper to show pushes and pulls. Guide students to think back on this activity and how the toys moved either away from them or toward them. Then ask students whether each helper wants to move the rider away from them or closer to them." After debriefing the Conceptual Checkpoint as a class to clear up misunderstandings, the materials provide an inline Optional Homework Extension that states, "While at school and home, students look for other examples of people or objects racing and consider how pushes or pulls help these people or objects move faster."

- The information gathered from the assessment tools helps teachers when planning differentiated instruction for students who do not yet understand a concept. For example, each Conceptual Checkpoint includes a section titled, "Next Step." The Next Step in Module 3, Lesson 10, states, "If students need support to explain how a stinger can help a yellow jacket survive, ask guiding questions such as these: What did you learn about the toothpick when you pressed it into the eraser? How would that help the yellowjacket protect itself?"
- The information gathered from the assessment tools helps teachers when planning extensions. For example, in Module 3, Lesson 22, students complete a Conceptual Checkpoint about plants and animals within their environment. At the end of the debrief, there is a sidebar note under "Extension" to guide the teacher in planning, that states, "If time permits, consider asking students to draw a model of the pika terrarium. Then have students point to and describe the interactions and dependence between the living and nonliving things in the terrarium model."

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

- Materials provide a variety of student resources for teachers to use in responding to performance data. End-of-Spotlight Assessment Next Steps are provided for students who have not yet met expectations. For example, in Module 1, if students are not successful with item 1c, the materials provide next steps that state, "Review materials found in Lesson 7 with students to provide additional support on how pushes and pulls can cause objects to change shape." Materials also provide sidebar and inline supports for in-the-moment resources, such as differentiation notes, teacher notes, and check-for-understanding opportunities.
- Materials provide a variety of teacher guidance for responding to student data. For example, the materials include next steps to take after the End-of-Spotlight Assessment. The next steps are organized in a chart by corresponding item number. The TEKS are also listed for teacher reference. An example of a next step for the End-of-Module 1 Spotlight Assessment is, "Review Lesson 5 with students to further support their understanding of using patterns to predict seasons of the year." This addresses item number 3 and TEKS 1.3A, 1.5A, and 1.9. Materials provide student resources for extension activities that "...may be used as whole class activities or may be assigned to students who would benefit from an additional challenge." Following the End-of-Module Assessment, the materials also suggest, "Offer students who need remediation the opportunity to revisit portions of the module." Materials provide teacher guidance on how to leverage different activities to respond to performance data. Throughout the module, there is in-the-moment guidance through Check for Understanding sidebars to address student

performance data through informal assessments. Suggestions include guided questions or a review of previous learning and materials. For example, in Module 2, Lesson 4, the Check for Understanding sidebar notes, “As students share their responses, listen for evidence that students understand that wiregrass is a living thing that has basic needs, such as water and light (1.11A, 1.12A). Listen for student explanations (1.3B) that mention these basic needs to justify one environment being better for wiregrass than the other environment. Encourage students to refer to their models to support their ideas (1.1G).”

Great Minds PhD Science Texas Grade 1

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. Formative and summative assessments include assessment items that align with grade-level standards and concepts, science and engineering practices, and recurring themes in a scientifically accurate way. For example, in Module 1 Lesson 9, students complete a Conceptual Checkpoint assessment in which they determine a push is needed to move skateboard riders towards the finish line, the effects of a push, and what questions can be asked to figure out which team of skateboard riders was faster. In a sidebar Teacher Note, the materials acknowledge that “at this level, it is enough for students to apply what they have learned about push strength and object speed to make an educated guess” to determine who won the race. This directly aligns with 1.7A where students explain how pushes and pulls can start, stop, or change the speed or direction of an object's motion.
- Assessments contain items for the grade level or course that avoid bias. Formative and summative assessments include items and concepts that present content and examples in a fair and impartial manner 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 Module 1, Spotlight Lessons on Weather Conditions, students reflect on their new knowledge and understanding of weather conditions and seasonal patterns and apply this in the End-of-Spotlight Assessment to explain the temperature conditions necessary for cherry blossom trees to bloom in Washington, D.C. The materials provide background information to provide accurate and relevant information in order to build fair and impartial background knowledge for all students.

- Assessments contain items for the grade level that are scientifically accurate. Formative and summative assessments include assessment items that align with taught objectives and present grade-level content and concepts, science and engineering practices, and recurring themes and concepts in a scientifically accurate way. For example, during the Conceptual Checkpoint for Module 2, Lesson 11, students use previous learning on living and nonliving things to identify the living things from an illustration of a garden. Students then choose two statements that describe living things, including, “Snails lay eggs.” Students answer questions to demonstrate an understanding of all components of TEKS 1.12A, “classify living and nonliving things based upon whether they have basic needs and produce young.”

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

- Within the materials, assessments contain pictures and graphics that are developmentally appropriate. For example, in the Conceptual Checkpoint for Module 1, Lesson 16, students identify how soccer players use pushes and pulls to change the movement of the ball. The graphics clearly depict images of soccer balls, figures to represent people, and the path of the soccer ball. The images are developmentally appropriate for students to understand and apply the concept of push and pull to move a soccer ball. The materials also include graphics of pushes and pulls depicted with hands and a rope, to help first-grade students conceptualize how the soccer ball might move.
- Assessment tools use clear pictures and graphics that are developmentally appropriate. For example, in the Conceptual Checkpoint for Module 2, Lesson 18 students observe two photographs that show the difference in human impact on the same area of land and circle a symbol to indicate their response to the question. Students circle a green checkmark for “yes” or a red X for “no.” In addition, materials include enlarged versions of the photographs in the resources at the end of the unit for easy student viewing.
- The End-of-Module Assessment uses clear pictures and graphics that are developmentally appropriate. For example, Module 3, End-of-Module Assessment, includes sixteen different, clear, and in-color images. These images include photographs of koalas, koala body parts, trout, a dingo, and eucalyptus trees. Several of these images are in a food chain or life cycle model and have clear labels that are easy to read. In Module 3, End-of-Spotlight Assessment, there are four clear, colored images in the assessment that have a zoomed view so students can see the picture details. These pictures include adobe bricks, pottery, adobe brick before heating, and adobe brick after heating.

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

- Materials provide clear guidance for teachers to consistently and accurately administer assessment tools. During an End-of-Module or End-of-Spotlight assessment, the teacher finds guidance for consistent administration of the assessment in the section titled “Learn.” The materials instruct the teacher to read one question at a time and allow enough time for each student to respond before moving on to the next assessment item. The materials provide step-by-step directions for the teacher on what to explain and instruct students to observe or resources to use while giving the assessment.
- The materials provide clear guidance for teachers to consistently and accurately administer assessment tools. For example, in Module 1, Lesson 22, the “Learn” section of the lesson supports teachers in preparing for the Socratic Seminar. The materials direct the teacher to

display a photograph on the front of the New York Harbor Knowledge Deck poster. The teacher reminds students of the Essential Question and asks students to think about what they have learned since the first time they saw the photograph. As the class begins the Socratic Seminar, the materials provide guidance to help teachers facilitate the conversations. The materials state, "Divide the class into groups and instruct students in each group to sit in a circle. Read aloud the Essential Question to begin the Socratic Seminar discussion. Have students discuss their answers to the Essential Question with their group. Allow students to respond to one another directly, with minimal teacher facilitation. Students should remind one another of conversation norms, ask for evidence, and post questions to extend the conversation. As needed, step in briefly to reinforce normals for collaborating conversations." The materials also provide sidebar support in the form of Check for Understanding Notes and Teacher Notes, as well as questions to stimulate additional conversation.

- The materials include detailed information that supports the teacher's understanding of assessment tools and their scoring procedures. After each End-of-Module assessment, the materials provide an example of sample student responses and a rubric of student expectations for standards and assessment items. The sample student response example contains the correct answers and what a student must do to score within the "meets expectations" column. The materials also provide teachers guidance to debrief the End-of-Module Assessment with students, including displaying a student sample for an assessment item and utilizing routines such as inside-outside circles for students to discuss questions such as, "What do you notice about this response? What do you wonder about this response? How does this response change your thinking?"

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

- Materials offer accommodations for assessment tools so that students of all abilities can demonstrate mastery of learning goals. Within the Implementation Guide, the "Going Deeper-Assessments" section provides guidance for administering assessments and how to support student needs with accommodations. The materials state, "Students engage with assessment tasks in a variety of ways, and teachers may modify assessment items as needed while preserving scientific rigor. Some students may need additional processing time and support as they complete assessments. To evaluate students' scientific understanding, teachers may need to read items to some students or allow students to answer orally with a scribe. Students may complete assessments individually or in groups; however, when using formative assessments summatively, teachers should evaluate individual student contributions rather than group performance."
- Materials offer accommodations for assessment tools so that students of all abilities can demonstrate mastery of learning goals. During daily formative assessments, the materials provide sidebar Differentiation Notes to support students who may need individual accommodations. For example, in Module 1, Lesson 19, students work in groups to plan and determine materials to use in a dock cushion. A Sidebar Differentiation Note states, "Students who need support articulating their ideas and coming to a consensus may find these sentence frames helpful (1.5B, 3F): I think we should use…because…. What if we try…? I agree because…. I disagree because…."
- Materials offer accommodations for assessment tools so that students of all abilities can demonstrate mastery of learning goals. In Module 1, End-of-Spotlight Assessment, students are asked "...to observe the picture and to decide what a person should wear if they go outside in

weather like that in the picture." The materials provide a Differentiation Note that states, "If students need support to order the seasons, revisit the class seasons chart. Guide students to describe the weather and environment on each card. Support students with placing the cards in order."

Great Minds PhD Science Texas Grade 1

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 still need to achieve mastery. Materials offer 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.

- The materials include teacher guidance for scaffolding instruction and differentiating activities for students who still need to achieve mastery. Each module includes multiple Conceptual Checkpoint opportunities. These checkpoints include the assessed TEKS, the assessed focus question, evidence for student understanding, and the next steps for supporting students who are not at mastery. For example, in Module 1, Lesson 9, students engage with a Conceptual Checkpoint that assesses student understanding of the focus question, "What causes objects to start moving?" Students use a skateboard race diagram to determine whether a push or a pull would cause the rider to start to move toward the finish line. The materials provide the next steps for students who have yet to show mastery, stating, "If students circle A. pull, remind them of the activity in Lesson 4 during which they moved toys across paper to show pushes and pulls. Guide students to think back on this activity and how the toys moved either away from them or toward them. Then ask students whether each help wants to move the rider away from them or closer to them."
- Materials provide additional resources for targeted instruction and differentiation for students who still need to achieve mastery. In Module 1, Lesson 20, students engage with the concept of push and pull. The Differentiation section of this lesson guides scaffolding the recording of learning, "To help students count boxes on the measurement paper and compare their results, consider providing tools and manipulatives, such as number lines, counting bears, linking cubes, or 10-frames. To support students who are not yet writing their numbers, write the numbers 1 through 11 within each empty square on the Science Logbook page, and have students circle their results instead."

- The materials include a Differentiation sidebar that provides teacher guidance for scaffolding instruction and differentiating activities for students who have not mastered the content. For example, in Module 2, Lesson 18, the Differentiation sidebar notes, "If students are unfamiliar with tomatoes as a food, consider showing them photographs of meals that incorporate tomatoes, such as a hamburger or salad." In Module 3, Lesson 2, the Differentiation sidebar supports the teacher in scaffolding the activity and states, "For students who may need scaffolds to formulate questions or statements that express wonder, consider providing a short list of sentence frames."

Materials provide enrichment activities for all levels of learners.

- The materials provide enrichment activities for all levels of learners that account for learner variability. Each module offers a component titled "Extension Activities" with information and instructions for extension activities, including preparation notes and activities for all levels of learners. For example, in Module 1, Lesson 11, students extend their knowledge of push and pull as they "...carry out an investigation with additional obstacles in the harbor, such as boats made of clay. Working with a partner, students use their tugboats to push or pull the cargo ship to change direction and avoid obstacles while moving toward the port."
- The materials provide enrichment activities that account for learner variability. For example, materials include "Extension" sidebars, allowing students to extend their learning. In Module 2, Lesson 20, the Extension sidebar guides the teacher to extend the teaching, "If students are curious about additional examples of objects made from recycled materials, consider displaying and discussing the information on the "What Do Your Recyclables Become?" web page on the Maine Department of Environmental Protection website (http://phdsci.link/1855)."
- The materials provide enrichment activities that account for learner variability. For example, in Module 3, Lesson 15, students brainstorm how to improve their protective covering model. The Extension sidebar suggests students can further extend their engineering design of a protective covering. Materials suggest that the teacher explain that engineers go through the design process more than once and allow students to revisit the Imagine or Plan stage. Materials state, "Allow them to choose a different body part to mimic or have them plan what they would do differently next time. If time permits, allow them to build and test another solution."

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 of learning in the moment. For example, Module 1, Lesson 7, Spotlight Lesson on Weather Conditions, provides the teacher guidance, "If students need support recalling the parts of weather or connecting weather conditions to cherry blossom trees blooming, consider displaying the parts of weather chart from Lesson 3 and replaying the time-lapse video from Lesson 6."
- The lessons include recommendations for just-in-time scaffolds to develop productive perseverance of learning in the moment. For example, materials include a Differentiation sidebar that provides scaffolded supports that can be implemented during the lesson if needed.

In Module 2, Lesson 5, the Differentiation sidebar offers the guidance, "If students need additional support to notice a pattern in the class data table, have each group first join another group to share their results. Have the two groups identify which one of each group's forest models has more wiregrass plants in bright light. Then invite students to share how their group's results were like the other group's results. Students should notice that each group counted more wiregrass plants getting bright light in the forest models with trees far apart."

- The lessons include recommendations for just-in-time scaffolds to develop productive perseverance of learning in the moment. The materials provide a Conceptual Checkpoint at the end of each concept. For example, in Module 3, Lesson 28, the Conceptual Checkpoint assesses student understanding of how parents support their offspring. The provided chart describes what the teacher should see if students have mastered the concept and the next steps the teacher should take if students have not mastered the concept. Suppose students cannot indicate that offspring do not look identical to their parents. In that case, the materials suggest referring to the paired parent and offspring photographs so students notice similarities and differences. The material also provides questions for the teacher, including, "What does it mean to look exactly the same? Do the parents and offspring look the same?"
- Lessons provide support and resources for students ready to accelerate their learning. For example, the materials include Optional Homework enrichment activities that contain challenging activities and assignments that extend beyond the regular curriculum and stimulate critical thinking, problem-solving, and creativity. In Module 2, Environments, Lesson 17, students can extend their learning by researching "…how humans are restoring a local environment. Students draw pictures or collect photographs to communicate their findings with classmates."

Great Minds PhD Science Texas Grade 1

Indicator 7.2

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

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

Meets | Score 2/2

The materials meet the criteria for this indicator. Materials include a variety of research-based instructional methods that appeal to a variety of learning interests and needs.

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

Evidence includes but is not limited to:

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

- The materials engage students in the mastery of the content through a variety of developmentally appropriate instructional approaches. Within the implementation guide, the materials explain the role of various instructional routines and give specific protocols for implementation. Materials include ten collaborative conversation routines and techniques, seven written response routines, nine terminology learning routines, and four text-based routines. An example of a collaborative conversation routine and technique is "Mix and Mingle," which "...offers an active way for students to share ideas about a text or concept orally." In this routine, students receive a topic or question, then circulate and pair up with a peer to share their response. Students circulate again and discuss responses to the same question or a new question.
- Materials engage students in the mastery of the content through a variety of developmentally appropriate instructional approaches. For example, lessons include teacher modeling or "thinking aloud" to introduce a new concept. The Teacher Note in Module 2, Lesson 15, suggests, "Students may think fire hurts all the plants and animals. Encourage students to

consider whether any plants or animals could survive a fire. Point out that fire might not hurt these plants and animals, and wonder aloud whether fire could help them in some way."

- The program supports student discourse with authentic opportunities to engage in structured conversations with multiple partners and in a whole group. For example, in Module 3, Lesson 29, students participate in a Link-Up activity to learn about how animals survive in their environment. Each student is given a term card and, "Students circulate and discuss with each person they meet whether their terms are related." When the terms are related the students link up with each other. After all pairs have been found, each pair shares the relationship with the whole group. Some examples of terms included are, "behavior, sense, life cycle, pond, aquarium, response, and mimic."

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

- The materials provide guidance to teachers on when to use specific grouping structures based on student needs. For example in the Implementation Guide, PhD Science suggests, "Grouping students strategically promotes multiple means of student engagement, action, and expression. There are many ways to group students, and every teacher knows what works best for their class and students. When grouping students, consider the task they are to complete." Guidance continues to clarify that, "Grouping students with diverse abilities works well when students perform an open-ended task and each student has a specific role in the task (e.g., reading, recording data, note-taking). This student grouping method allows all students to participate and collaborate to complete a task, brings together students with complementary skills, and encourages a positive classroom culture." The materials also give examples of grouping students with similar abilities or interests that work well within the instructional setting.
- The materials support a variety of instructional groupings within the classroom setting and make suggestions throughout the lessons. For example, in Module 1, Lesson 13, students engage in a whole group conversation to discuss the differences in the way cargo ships move in a water model and map model. Students work in pairs to investigate how tugboats can make a cargo ship slow down and stop. The materials also provide a Differentiation sidebar note that states, "if students would benefit from more support while planning, consider having two pairs collaborate as a group of four instead of working as separate pairs."
- The materials support a variety of instructional groupings (e.g., whole group, small group, partners, one-on-one). For example, in Module 2, Lesson 1, Spotlight on Water, students work with a partner while engaging in the instructional routine, "Stop and Draw." For this instructional routine, students receive a prompt or question and pause briefly before responding. Students draw individual sketches before discussing them with a partner or the class. Materials state that "allowing time for individuals to respond in this way serves as a formative assessment and offers students an opportunity to track their thinking."

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

- The materials provide multiple opportunities for students to engage in varied types of practices within and across lessons. For example, in Module 1, Lesson 3, Spotlight Lesson on Weather, students engage in guided practice activities facilitated by the teacher to identify clothing and activities that are appropriate for observed weather. The teacher reads the text, "Pond," and students respond to reflective questions. Students then work in collaborative groups to sort weather, clothing, and activity cards based on the appropriate weather conditions. At the end of

the lesson, students independently work in their Science Logbook to reflect on weather conditions in photographs and activities that they would do or would not do in that weather.

- Materials consistently support multiple types of practices and provide guidance and structures to achieve effective implementation. Within the Implementation Guide, the materials provide an overview of various instructional routines such as collaborative conversation routines and techniques, written response routines, terminology learning routines, and text-based routines. The materials explain the purpose, grouping, and how each routine works. For example, in Module 1, Lesson 17, the Teacher Note states, "A Whip Around is a collaborative conversation routine that gives each student an opportunity to respond. Students share their responses one after another until all students have participated."
- The materials provide teacher guidance and structures for the effective implementation of multiple types of practices. In Module 3, Spotlight Lesson 2, the teacher displays photographs of clay from different places and asks students questions about the properties of clay. The teacher reads a text about soil scientists and what tools they use. Students observe a sample of soil in groups while the teacher walks around and asks questions regarding their observations. Students then independently record their observations in their Science Logbook.

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

- Materials represent diverse communities using images and information that are respectful and inclusive. The materials provide information on cultures and history through lessons and images. For example, in Module 1, Lesson 6, Spotlight Lessons on Weather, students view an image of the National Cherry Blossom Festival in Washington, D.C., and engage in a notice and wonder routine to develop ideas about weather and temperature. A Teacher Note gives a cultural background on the Cherry Blossom trees which states, "The cherry blossom trees in Washington, D.C., were planted in 1912. The trees were a gift of friendship from Japan to the United States. In Japanese culture, the blooming of cherry blossom trees at the beginning of spring is a symbol of renewal and appreciation for the brevity of life."
- Materials represent diverse communities using images and information that are respectful and inclusive. Real-world examples and connections throughout the materials represent a diversity of communities and places, including rural, urban, and suburban communities, cities, and states across the U.S., and countries around the world. Depictions of places are respectful and inclusive, with an emphasis on community strengths, resources, and unique characteristics. For example, the Knowledge Deck for Module 2 provides information on how Native Americans used long-leaf pine needles to weave baskets. The Knowledge Deck also includes posters with photographs of various people and places. For example, the Module 2 Knowledge Deck Poster features men cutting down longleaf pine trees that once covered the Southeast. In the Module 3 Knowledge Deck Posters there are photographs of crayfish and koalas in their different environments.
- Materials represent diverse communities using images and information that are respectful and inclusive. For example, in Module 3, Spotlight Lesson on Earth Materials, students explore how natural resources are used to understand how people in Mata Ortiz make pottery. Students also observe photographs of pottery and natural resources found in Casas Grandes. At the end of the Spotlight Lesson, students compare the adobe used by the ancient people in Casas Grandes to the pottery made by the people of Mata Ortiz.

Great Minds PhD Science Texas Grade 1

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

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.

- The materials guide linguistic accommodations for Emergent Bilingual students. For example, in Module 1, Lesson 24, the English Language Development note states, "To help English learners and other students who may need support in connecting causes with their effects, consider providing a sentence frame such as the following: A…(cause) made the object…(effect)." Materials include teacher guidance for linguistic accommodations, with the goal of creating comprehensible input. Materials scaffold lessons to support speaking, listening, reading, and writing for students with various levels of English language proficiency. For example, in Module 2, Lesson 2, Spotlight Lesson on Water, the materials guide the teacher to explicitly introduce the term *water body* using these strategies: "Pronounce the term and have students repeat it. Say in syllables wa-ter bo-dy, and then repeat the full word. Ask students to share the name of a water body they know. After introducing water body and other important terms, they provide scaffolds for English learners as they use the words when speaking, writing, and investigating." Materials include linguistic accommodations commensurate with various levels of English language proficiency as defined by the ELPS. In the Implementation Guide, the materials guide supporting English learners when using new words while writing and speaking. The Implementation Guide suggests using sentence frames and word banks and customizing the support based on each student's needs. For example, sentence stems related to Observe/Describe are provided in order of difficulty, and include, "I see…," "I notice…," "This model shows…," "I observed…when…," and "My observation is that…because…."

Great Minds PhD Science Texas Grade 1

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

- The materials encourage the strategic use of students' first language as a means to linguistic, affective, cognitive, and academic development in English, but the materials only support the Spanish language. For example, the Language Development side note in Lesson 1, Module 2, Spotlight Lessons on Water, states, "Students will encounter the terms ocean, lake, river, stream, pond, and puddle throughout these lessons. Providing the Spanish cognates lago (lake) and oceano (ocean) may be helpful." The materials use Spanish cognates to support Emergent Bilingual students. The materials include links for professional development to encourage students' first language as a means to linguistic, affective, cognitive, and academic development in English; however, Spanish is the only first language that is supported. The Implementation Guide provides a link to support English Learners in the section, STEM Subjects: Transforming Classrooms, Schools, and Lives. The synopsis of the free resource notes the value of the Spanish home language in science instruction. The Implementation Guide also provides information on Spanish translation, closed captioning on videos, and translations on web pages to support Spanish-speaking students.
- The materials encourage the strategic use of students' first language as a means to support students' linguistic, affective, cognitive, and academic development in English. Within the Implementation Guide, the Spanish Translation Considerations section explains that all core texts used within the materials have a Spanish translation. The materials state, "Great Minds provides literature in Spanish so Spanish-speaking students or students learning in Spanish can have the same learning opportunities as students using the English language curriculum. The Ph.D. Science Texas curriculum includes translations of all core texts."

Great Minds PhD Science Texas Grade 1

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 meet the criteria for this indicator. Materials 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.

- The materials provide information to share with students and caregivers about the design of the program. The materials offer a Family Tip Sheet that provides an overview of what students will learn. The Family Tip Sheet provides caregivers with information about how students will engage in science through sections titled, "What will my student do in class?" and "What will a lesson look like?" The Family Tip Sheet explains that students will engage with an anchoring phenomenon, generate questions on a driving question board, participate in the engineering design process to apply what they have learned to solve real-world problems, and participate in a Socratic Seminar focusing on the importance of questioning. The materials state, "...you will find students in small groups discussing ideas, doing experiments, or reporting their findings...Students uncover key concepts by actively engaging in science and engineering practices. They read high-quality, age-appropriate books that spark curiosity, introduce phenomena, and support the development of scientific understanding."
- Materials provide information to share with students and caregivers about the design of the program. In Level 1, Module 1, the materials offer a Family Tip Sheet with information about the program and what the students will learn in the classroom. The materials explain how science is connected to other subjects in the modules: "The curriculum highlights connections to math, literacy, and social studies so students can practice using the interdisciplinary approach necessary for real-world tasks." For example, the Module 1 Family Tip Sheet explains, "Your student is learning how tugboats use pushes and pulls to move cargo ships through a harbor."

During the Module, students incorporate reading and writing strategies to enhance their learning of push and pull.

- Materials provide information to share with students and caregivers about the design of the program. Family Tip Sheets introduce what Ph.D. Science Texas is and what students will be doing in class. For example, Family Tip Sheet Overview, to support lessons about Environment, states that students will not be memorizing facts or simply reading from textbooks but will participate in hands-on investigations, generate questions about phenomena, and participate in discussion and debate.

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

- The materials provide resources and strategies for caregivers to help reinforce student learning and development. The Family Tip Sheet provides a section titled, "How can I help?" The materials state, "With each module you will receive a Family Tip Sheet that outlines the module concepts and includes ideas on how you can support your student at home. The goal of these suggestions is to help students see science everywhere and not just at school." Materials encourage families to reinforce learning at home by, "...talking about science, watching science videos, or visiting a museum, park, or zoo."
- Materials provide information to be shared with caregivers for how they can help reinforce student learning and development. The Family Tip Sheet includes conversation starters and activities for families to use at home. For example, in Level 1, Module 1, some conversation starters include, "Discuss the ways pushes and pulls move objects at home or in the community. Compare local weather to a different location. Discuss how weather influences daily choices. Point out the patterns of the seasons, such as the order of occurrence and changes in the natural world." Related activities to support student learning about the science concepts include, "Demonstrate pushes and pulls. Use household items, and have your student identify how pushes and pulls affect an object's motion. Keep a daily weather journal. Have your student record the weather using words, drawings, or photographs. Create a seasons booklet. Have your student draw a season on each page. Then tell them to list activities for each season."
- Materials provide at-home activities for caregivers to help reinforce student learning and development. Materials include optional homework assignments that allow caregivers to extend learning beyond school and into the home. For example, the optional homework assignment in Module 3, Lesson 7, is, "Have students use the observations they collected in class, or other observations from their surroundings, to make and describe a food chain to a person at home."

Materials include information to guide teacher communications with caregivers.

- Materials include teacher guidance for communicating with caregivers. The Family Tip Sheet Overview States, "This resource, available in English and Spanish, gives families and caregivers an overview of the Ph.D. Science Texas curriculum and suggests ways to participate in and extend learning outside the classroom." In addition, the materials include a Family Tip Sheet for each module to "introduce families and caregivers to each module’s phenomenon and concepts and includes an overview of what students will learn in the module, conversation starters, activities, and additional resources to learn more about the topics in the module."
- Materials include information to guide the teacher in communicating with families. The Implementation Guide mentions that the Family Tip Sheets are provided in English and Spanish.

- Materials include teacher guidance for communicating with caregivers. The materials include rubrics to measure student performance on Science and Engineering Design Challenges. The guidance included in the Implementation Guide, under the section, "Communicating with Caregivers," states "a completed Science or Engineering Challenge rubric should be sent home after the completion of the challenge. The rubric can be used to communicate students' progress applying conceptual knowledge to a real world problem."

Great Minds PhD Science Texas Grade 1

Indicator 8.1

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

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

Meets | Score 2/2

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

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

Evidence includes but is not limited to:

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

- Materials include a year-long, Texas Essential Knowledge and Skills (TEKS)-aligned Scope and Sequence that provides pacing information and standards for modules within each grade level and vertically across grade levels. The scope and sequence also includes common topics within each module across grades. For example, Module 1 in grades K-2 includes lessons about the weather.
- The materials include an Implementation Guide with tabs for horizontal and vertical alignments. The Implementation Guide also includes a Curriculum Map that outlines the sequence of lessons and TEKS within individual modules.
- The Grade 1 materials provide a Curriculum Map for each level, along with the order of skills taught and spiraled throughout the lesson. Within the Curriculum Map, a color-coded chart includes an at-a-glance view of module titles, anchor phenomena, and spotlight lesson titles for each grade level. For example, each module has an instructional focus that comprises earth and space science, life science, and physical science, along with TEKS aligned to each module.

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

- An introduction is included at the beginning of each module with information regarding anchor phenomenon, essential questions, ways to apply learning to new contexts, and recurring themes and concepts (RTCs). For example, the Module 2 introduction outlines the anchoring phenomenon of life in a longleaf pine forest to answer the question, “Why are gopher tortoises

disappearing?" Students complete an engineering challenge to create a flowerpot that does not hurt the environment and begin to establish an enduring understanding of the effects that occur when living things change their environment to get what they need.

- Module 1, Lesson 1, Pushes and Pulls, provides clarification on the RTC by stating, "throughout this module, students look for patterns, or repeated events and use them as evidence of cause and effect relationships. Take this opportunity to note the patterns that students identify in how tugboats help move big ships (1.5A, 1.5B)."
- The materials guide teachers to facilitate concepts related to engineering practices. For example, Module 2 states, "In Lessons 21–25, students participate in an Engineering Challenge in which they design and create paper flower pots."

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

- Within each module, the materials provide a table highlighting the standards to be addressed at the beginning of each lesson set. The standards addressed within each lesson set are labeled as "introduced, addressed, or mastered." The "introduced" label appears when the content standard is being taught for the first time. The "addressed" label appears each subsequent time the content standard is covered in a lesson. The "mastered" label appears when the content standard is being assessed for the final time and mastery is expected. For example, 1.7B is an introduced standard in Level 1 Module 1, Lesson 2, and is later revisited as an addressed standard in Level 1 Module 1, Lessons 4–5 and 10–14. In Level 1 Module 1, Lessons 22–23, 1.7B is labeled as a mastered standard.
- Materials provide a Curriculum Map in the Implementation Guide that notes where the three major scientific components are sequenced in the modules. The Curriculum Map clarifies that "PhD Science Texas modules are sequenced to build content understanding of science ideas. Each module provides opportunities for students to explore questions and apply knowledge and skills developed in previous modules."
- The teacher guide references what students have previously learned. For example, in grade 1, Module 2, Lesson 2, the Spotlight on Knowledge and Skills section states, "in the Kindergarten Life Module, students learn that a living thing is a thing that has basic needs and can make more living things."
- Materials provide review and practice of knowledge and skills spiraled throughout the year to support mastery and retention. For example, the Check for Understanding section provides teacher guidance to "have students identify patterns of similarities and differences among plants and animals." Materials also include an activity to complete with students who need additional support with this concept.

Great Minds PhD Science Texas Grade 1

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.

- Materials include an Implementation Guide to provide guidance in implementing research-based strategies throughout the modules. For example, students are introduced to new concepts through science and engineering challenges that allow them to first observe and wonder, then investigate and deeply understand phenomena.
- The Implementation Guide includes a Product Components section that guides teachers on implementing enrichment activities to enhance student learning. These activities include conceptual checkpoints, science or engineering challenges, Socratic seminars, and spotlight lessons.
- The Teacher Edition includes a Prepare section with a list of materials sorted by student and teacher materials. This section provides the teacher with a list of materials to prepare before the lesson and guidance for using materials to provide instructional support during and after the lesson. For example, the Teacher's Note in Module 2, Lesson 2 states, "*At Home with the Gopher Tortoise* does not have page numbers. Consider writing small page numbers in the book or using sticky tabs to mark pages with relevant illustrations or where reading begins."

Great Minds PhD Science Texas Grade 1

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

- The materials include a Cross-Content Standards Correlations chart with Texas Essential Knowledge and Skills (TEKS) for ELA, math, and social studies. The chart indicates which standard is addressed and in which lessons it is taught. For example, Social Studies TEKS 1.15C "The student will identify the contributions of scientists and inventors such as Alexander Graham Bell, Thomas Edison, and Garrett Morgan" is found in Module 1, Lesson 17, Module 2, Lesson 21, Module 3, Lesson 11, and Module 3, Spotlight Lesson 2.
- Materials include a Cross Area Connection section in the sidebar of Teacher Guide lessons. For example, in Module 3, Lesson 1, students read "Over and Under the Pond" and make observations about parts of a pond environment and distinguish between the information the illustrations provide and the information the text provides.
- Cross-content standards are embedded throughout the materials, including 33 grade 1 ELAR TEKS, 14 grade 1 math TEKS, and 13 grade 1 social studies TEKS.

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

- The materials include a Hands-On Materials Kit List of all equipment and quantity of supplies needed to support instructional activities in each module. For example, in Module 2, materials include 56 paper bags, one 16 qt clear plastic bin, one ten qt plastic bucket, 56 sheets of cardstock, three 1/2 lb blue modeling clay, 12 8 oz clear plastic round containers, six flashlights with batteries, 20 drops blue food coloring, and two 100 mL graduated cylinders. Schools that purchase the Hands-On Materials Kit will receive all the items listed.
- Materials provide a comprehensive list of books found in the Core Text Library. Texts to support instructional activities are sorted by module and indicate if a Spanish translation is available. For example, *Water Rolls, Water Rises*, found in Module 3, includes a Spanish translation.

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

- Within the Implementation Guide, the section Safety in the Elementary Classroom includes guidance to support safe behavior, appropriate dress, use of personal protective equipment, and internet use in accordance with Texas Education Agency Science Safety Standards. For example, Module 3 guides the teacher to be cautious of items on the floor during investigations since "Items can fall to the floor even when everyone is careful. Immediate removal of debris from the floor is essential to help prevent injury."
- The Teacher Edition also provides safety protocols to minimize potential hazards. For example, the Safety Note in Module 3, Lesson 1, states, "Do not touch insects while making observations" and "Wash hands immediately inside, especially after handling soil."
- Safety considerations are provided to both teachers and students to implement. Module 3 guides teachers to explain all safety considerations to students and review all safety expectations before each activity. For example, "Students and teachers must put away all food and drinks during science investigations, and students must never place materials in their mouth."

Great Minds PhD Science Texas Grade 1

Indicator 8.3

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

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

Meets | Score 2/2

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

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

Evidence includes but is not limited to:

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

- Materials provide a Pacing Guide with guidance and pacing recommendations for the completion of each lesson. For example, each lesson requires 35 minutes of in-person instructional time. The guide also presents lesson objectives and activities with multiple pacing and scheduling considerations. For example, Module 2, Lesson 3 suggests breaking the lesson into two days.
- The pacing guide provides a Year at a Glance with a recommended time frame for completion for each module. For example, Module 3 "...contains 31 lessons plus eight spotlight lessons about Earth Materials. Even with lesson splits and teacher choice days, this module should take no more than fifty-three days to complete. This maximum number of days ensures the implementation of all Level 1 modules within a school year with 150 days of science instruction."
- Each lesson includes an Agenda with a suggested pacing timeline in minutes. For example, in Module 2, Lesson 2, the suggested pacing for the lesson is five minutes for the "launch" activity, 25 minutes for the "learn" activity, and five minutes for the "land" activity.

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

- Materials provide teacher notes that support the strategic implementation of concepts and skills to be taught in a specific order, building upon learning in previous modules. For example, in Level 1, Module 3, "...students focus their learning on body parts, starting with animal body parts. Students build on their learning of the needs of plants and animals from the environments module to describe ways that animals use their body parts."

- Materials provide guidance for strategic implementation that ensures the sequence of content is taught in an order consistent with the developmental progression of science found in the Texas Essential Knowledge and Skills (TEKS). The “Storyline” found in the appendix of each module shows the unit progression and how learning builds upon previous lessons. The materials also include a Scope and Sequence to guide teachers through the implementation of TEKS in a guided sequence of progression. For example, in Module 1, students learn how to start movement before they learn how to change movement.

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

- Materials include a Pacing Guide that allows opportunities for flexibility in completing a lesson set. Lessons 1-9 are recommended for 9-14 days, and Lessons 10-16 are recommended for 7-13 days.
- The Year at a Glance guides teachers to complete all three modules in one school year through monthly strategic planning. Module 1 is taught from August to October, Module 2 is taught from November to January, and Module 3 is taught from February to April.
- Pacing suggestions are provided to teach all science content in a school year and extend the science curriculum to fit a school year with more than 150 science instructional days. Suggestions include lessons that can be split into more than one day, cross-curricular embedding of content, instructional notes that describe time-saving strategies, and alternative instructional routines.

Great Minds PhD Science Texas Grade 1

Indicator 9.1

The visual design of materials is clear and easy to understand.

1	Materials include an appropriate amount of white space and a design that supports and does not distract from student learning.	Yes
2	Materials embed age-appropriate pictures and graphics that support student learning and engagement without being visually distracting.	Yes
3	Materials include digital components that are free of technical errors.	Yes

Not Scored

The visual design of materials is clear and easy to understand.

Materials include an appropriate amount of white space and a design that supports and does not distract from student learning. Materials embed age-appropriate pictures and graphics that support student learning and engagement without being visually distracting. Materials include digital components that are free of technical errors.

Evidence includes but is not limited to:

Materials include an appropriate amount of white space and a design that supports and does not distract from student learning.

- The materials include an appropriate amount of white space and an overall design that does not distract from student learning. Student materials are appropriately designed to support student learning. For example, the student Science Logbook contains a balance between white space and graphics. The text on each page is clear and in an easy-to-read font. Each activity is labeled with the lesson number and then, in bold print, the activity objective. Ample space is provided and clearly outlined when students have to draw a model or write an explanation. When required, blank charts are provided to help students organize their thinking.
- The materials include an appropriate amount of white space and an overall design that does not distract from student learning. Student materials are appropriately designed to support student learning. Student materials include a spacer page between activities. Pages are age-appropriate in size with appropriate space for writing activities. Graphics and visuals are sized appropriately to be used without being distracting.
- Teacher guidance materials are appropriately designed with clear, designated places for important information. Teacher guidance materials for Module 2 have large, bold headings to identify lessons, and a smaller, purple font that denotes the different components of the lesson. Guidance materials following assessments and lesson agendas are colored in a purple color that notes importance. Important information contained in sidebars is noted by a small picture within the lesson text so as not to distract from the lesson. For example, English Language Development notes are added for the teacher through a sidebar and noted in the lesson text with a symbol of the Earth.
- The materials include an appropriate amount of white space and an overall design that does not distract from student learning. Within the Student Logbook, the text on each page is in an easy-

to-read font and font size. Each activity is labeled with the lesson number and the activity objective is in bold print.

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

- The materials embed age-appropriate pictures and graphics that support student learning and engagement without being visually distracting. The Knowledge Deck Cards include age-appropriate photographs to support student understanding and build background knowledge to support the application of science concepts. In addition, the Student Logbook for Module 1 includes maps of Staten Island and New York Harbor, toy icon pictures and photographs, and a photograph of children playing on a skateboard. All photographs are age-appropriate and support student learning of pushes and pulls and how objects move.
- The Student Logbooks embed age-appropriate pictures and graphics that support student learning and engagement without being visually distracting. Images are clear and cropped or zoomed to allow students to focus on the necessary part of the image. The graphics used are familiar symbols that students can easily recognize. For example, in the Student Logbook for Module 2, Lesson 19, the graphic for "land" is soil with a shovel in it, the graphic for "life" is an outline of a person, and the graphic for "air" is three arrows. The graphics are larger in size, labeled, and the only images on the page.
- The materials embed age-appropriate pictures and graphics that support student learning and engagement without being visually distracting. The Environments Resources section of the Module 2, Environments, Teacher Manual includes graphics and images for lessons. The graphics are one per page and labeled unless included as part of a comparison or chart, and then are still large and include appropriate white space. All images are labeled with the lesson number and may provide smaller text for teachers.

Materials include digital components that are free of technical errors.

- All teacher-facing materials include digital components that are free of technical errors. Within the Teacher Edition materials, all components are free of spelling, grammar, and punctuation errors.
- The materials include digital components that are free of technical errors. The Implementation Guide is free of spelling, grammar, and punctuation errors and free of inaccurate content materials or information.
- All student-facing materials include digital components that are free of technical errors. The student Science Logbook is free of spelling, grammar, and punctuation errors. Knowledge Deck Posters are free of inaccurate content materials or information. The End-of-Module Assessments and End-of-Spotlight Assessments are free of wrong answers to questions and problems.

Great Minds PhD Science Texas Grade 1

Indicator 9.2

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

1	Materials integrate digital technology and tools that support student learning and engagement.	Yes
2	Materials integrate digital technology in ways that support student engagement with the science and engineering practices, recurring themes and concepts, and grade-level content.	Yes
3	Materials integrate digital technology that provides opportunities for teachers and/or students to collaborate.	No
4	Materials integrate digital technology that is compatible with a variety of learning management systems.	Yes

Not Scored

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

Materials integrate digital technology and tools that support student learning and engagement. Materials integrate digital technology in ways that support student engagement with the science and engineering practices, recurring themes and concepts, and grade-level content. Materials do not integrate digital technology that provides opportunities for teachers and/or students to collaborate. Materials integrate digital technology that is compatible with a variety of learning management systems.

Evidence includes but is not limited to:

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

- The materials integrate digital technology and tools that support student learning and engagement. Materials provide videos for students to view as a whole group before conducting an activity or assessment. Students also use videos and other digital technology in small groups or at stations. For example, during Module 3, Lesson 17, students rotate in groups through video stations at which they watch videos of animals sensing information. Materials do include evidence of digital technology. For example, in Module 2, Spotlight Lessons on Water, Lesson 6, students use the River Runner simulator tool to simulate the path of a raindrop moving through a watershed.
- The materials integrate digital technology and tools that support student learning and engagement. While the materials provide a digital version of the student Science Logbook, even when downloaded, the logbook is not easily edited, especially with student devices. The digital Science Logbook does not integrate additional digital technology and tools that support student learning and engagement within the digital logbook.

Great Minds PhD Science Texas Grade 1

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

- The materials integrate digital technology in ways that support student engagement with science and engineering practices, recurring themes and concepts, and grade-level content. Materials provide opportunities for students to obtain, evaluate, and communicate information using digital tools. Students engage with a variety of videos to obtain information related to the phenomena in the module. For example, in Module 1, Lesson 5, students view a video of the Royal Opera House ballet to indicate when they notice a push or a pull happening. In Lesson 7, students view a video of a tugboat pushing a cargo ship to guide a discussion about the ship's speed and why the tugboat is moving the cargo ship slowly.
- The materials integrate digital technology in ways that support student engagement with science and engineering practices, recurring themes and concepts, and grade-level content. Materials provide opportunities for students to obtain, evaluate, and communicate information using digital tools. Students engage with a variety of videos to obtain information related to the phenomena and recurring themes. For example, in Module 1, Lesson 16, students view two videos of children playing soccer before engaging in a Conceptual Checkpoint. The materials use the video to guide a discussion about how the children in the videos are using pushes and pulls in the game. This also relates to recurring themes as students determine patterns of pushes and pulls found in previous lessons.
- The materials integrate digital technology in ways that support student engagement with science and engineering practices, recurring themes and concepts, and grade-level content. For example, in Module 3, Lesson 4, students view videos of a moose, porcupine, and turtle at the "Mouth and Nose Station." Students work with the group to identify how each animal in the videos uses their body part and record findings in their Science Logbook.

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

- The materials do not integrate digital technology that provides opportunities for teachers and/or students to collaborate. While teachers and students interact and collaborate daily within the materials and activities, digital technology is not utilized in order to support that collaboration. Students watch a video and then engage in collaboration through hands-on, in-person activities; however, the collaboration does not occur in a digital sense.
- The materials do not integrate digital technology that provides opportunities for teachers and/or students to collaborate. Students have the opportunity to collaborate and use their Science Logbook to record observations during investigations and activities. However, the Science Logbooks are not user-friendly in the digital format, and students cannot use them digitally to collaborate with other students or their teachers.

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

- Student-facing digital materials are accessible and compatible with multiple operating systems and devices. The materials can be accessed from a variety of operating systems and devices such as iPads, PCs, Apple computers, and smartphones. The student Science Logbooks and Knowledge Deck Cards for each module are accessible from multiple devices, and can also be downloaded as a PDF so they can be accessed without a connection to the internet.

Great Minds PhD Science Texas Grade 1

- Teacher-facing digital materials are accessible and compatible with multiple operating systems and devices. The materials can be accessed from a variety of operating systems and devices such as iPads, PCs, Apple computers, and smartphones. The Implementation Guide and all Teacher's Editions are accessible from multiple devices, and can also be downloaded as a PDF so they can be accessed without a connection to the internet.
- Digital materials are accessible and compatible with multiple operating systems and devices. The materials are accessible online through any device with internet access. The teacher and student editions can be accessed without the internet if previously downloaded. Videos can be viewed without the internet if they have been loaded and played at least once.

Great Minds PhD Science Texas Grade 1

Indicator 9.3

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

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

Not Scored

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

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

Evidence includes but is not limited to:

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

- The digital technology and online components are developmentally appropriate for the grade level. Materials provide information that identifies how online and digital components align with grade-level science knowledge and skills. For example, in Module 1, Lesson 1, Spotlight Lessons on Weather Conditions, students view a video of a kite flying and observe the part of weather that includes wind as moving air. In a Spotlight on Knowledge and Skills sidebar note, the materials state, "In the Kindergarten Weather Module, students trap air in bags to determine that air is all around them and that wind is moving air (K.10C, 1A)." This sidebar note shows the teacher the background knowledge that was developed in the prior grade level, and that this video supports the logical next step in the developmental understanding of wind. This video aligns with TEKS 1.10D, where students describe and record observable characteristics of weather, including calm or windy.
- The digital technology and online components are aligned with the grade-level scope and approach to science knowledge and skills progression. The provided video links support the objective of each lesson. The aligned TEKS can be found under the section titled "Standards Addressed" before the start of each concept in every module. For example, in Module 3, Lesson 18, students watch a video of a goldfish and then engage in the 4 corners instructional routine. Students move to their selected corner of the room to indicate which body part they think helps goldfish sense the plants. This video and discussion support TEKS 1.13A, as students "Identify

the external structures of different animals and compare how those structures help different animals live, move, and meet basic needs for survival."

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

- The materials provide teacher guidance for the use of embedded technology to support and enhance student learning. The materials include times that teachers need to play specific videos in order to set the stage for a lesson or assessment. In addition, the materials provide sidebar teacher notes that offer additional technology ideas and components to support student understanding if needed. For example, in Module 1, Lesson 5, a sidebar teacher note states, "If students have difficulty seeing the pushes and pulls between the ballet dances, consider playing the video at half speed during the second viewing. Replaying the video at the following times may help highlight push and pull interactions: When the knave moves Alice across the stage (0:13-0:16); When the knave and Alice pull on each other (0:35-0:36); When the knave pulls Alice's hand as she slides across the stage (1:01); When the knave pushes and pulls Alice (1:40-1:49)."
- The materials provide teacher guidance for the use of the embedded technology to support and enhance student learning. The materials provide specific teacher guidance for embedding the technology within lessons. The guide prompts teachers when to show videos to enhance student learning and provides the clickable link embedded within the lesson. The links can also be found in the Materials list in the Teacher Preparation section. For example, in Module 3, Lesson 18, there is an inline Teacher Note that provides guidance on when to use the video, which states, "If crayfish are not available for live observation or if the crayfish does not respond as anticipated, play the crayfish sensing video (http://phdsci.link/1508)."

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

- The materials include resources for parents and caregivers on how to support student engagement with digital technology and online components. Within each level and module, a family tip sheet is sent home to provide guidance to parents and caretakers on concepts learned within the module. For example, in Module 1, the materials give additional resources and state, "Visit an online image library such as Wikimedia Commons and explore a diagram of a tugboat https://commons.wikimedia.org/."
- The materials include resources for parents and caregivers on how to support student engagement with digital technology and online components. The materials provide a Tips for Families letter for each module with information on lesson overview and activities families can do at home. This letter provides external links for families to visit to learn more about the topics being studied in class. For example, in the Tips for Families letter in Module 3, there is a link to learn more about ancient Casas Grandes pottery on the Royal Ontario Museum website, "http://www.phdsci.link/2088."