

TEXAS SCIENCE

Spark Curiosity. Ignite Learning.

GRADES K-5



GRADES 6-8



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TEXAS SCIENCE

Program Overview
Grades K-5





Designed for Texas. Built for the Future.

We know that students are natural problem-solvers and innovators. Fueled by curiosity, they approach each day with a sense of wonder and drive to discover. We built *McGraw Hill Texas Science* to empower them to ask questions, pose hypotheses, conduct hands-on investigations, and communicate their findings.

Drawing on feedback from Texas teachers, we set forth to create a program where inquiry lays the foundation for deep understanding of science, where a spirit of discovery improves students' reading and writing skills, and where the ultimate goal is TEKS mastery and a lifelong love of learning.

For Every Learner

Texas Science empowers students to take ownership of their learning through hands-on activities, science probes that elicit and build upon student preconceptions, and personalized learning opportunities. Combined with equitable resources, targeted TEKS review assignments, and leveled content that meets students where they are, our program ensures every student can be a scientist.

For Every Scenario

Students have access to real-world content and hands-on activities with examples that tie science concepts into tangible, everyday life experiences.

For Every Teacher

Texas Science offers flexible pathways for you to teach the TEKS—either following the recommended path or selecting from the wide collection of resources to deliver content in the way that best fits your unique classroom.

Texas Science Is for You

Embedded with Texas-based phenomena and a stringent focus on the TEKS, the *Texas Science* program provides every Texas student with the tools they need to succeed in science. *Texas Science* was made by Texas too—drawing on feedback from teachers and administrators like you, our program centers the needs of today's Texas science classrooms.

Guided by TEKSperts

Our authors and contributors are proud TEKSperts committed to engaging students throughout their learning experience:



Julie Jackson, Ph.D.

Creator of Interactive Word Walls, Dr. Jackson draws on expertise in vocabulary, language acquisition, and the TEKS to facilitate student understanding and acquisition of science vocabulary.



Dinah Zike

Creator of NEW! Foldables and interactive notebooking, Dinah Zike focuses on helping students understand difficult new concepts and facilitating engagement.



Page Keeley

Page Keeley's internationally known probes put students at the center of the lesson to focus content on their current understandings and challenge their preconceptions.



Felicia Mensah, Ph.D.

A scholar in science teacher education and teacher professional development, Dr. Mensah provides expertise on life science as well as diversity and inclusion in all science experiences.



Cindy Guerrero, Ph.D.

Dr. Guerrero utilizes her expertise in English-language development to maximize the program's ELPS support.



Doug Fisher, Ph.D.

A renowned reading expert, Dr. Fisher helped create our new and improved Science Literacy Essentials to foster reading comprehension.



A Program Built for the New TEKS

Our team explicitly designed *McGraw Hill Texas Science* for the new TEKS standards and the modern Texas science classroom. This program combines the new TEKS with feedback from our most trusted collaborators—Texas teachers and administrators—and offers the tools to help every student achieve success in science.

TEKS Progression Breakdown

Every lesson in the *Texas Science* program begins by using prerequisite TEKS as a launch pad—seamlessly building up to the lesson-level TEKS concepts. To help gauge student abilities and understanding, each lesson comes with resources to pre-assess and remediate student learning as needed.

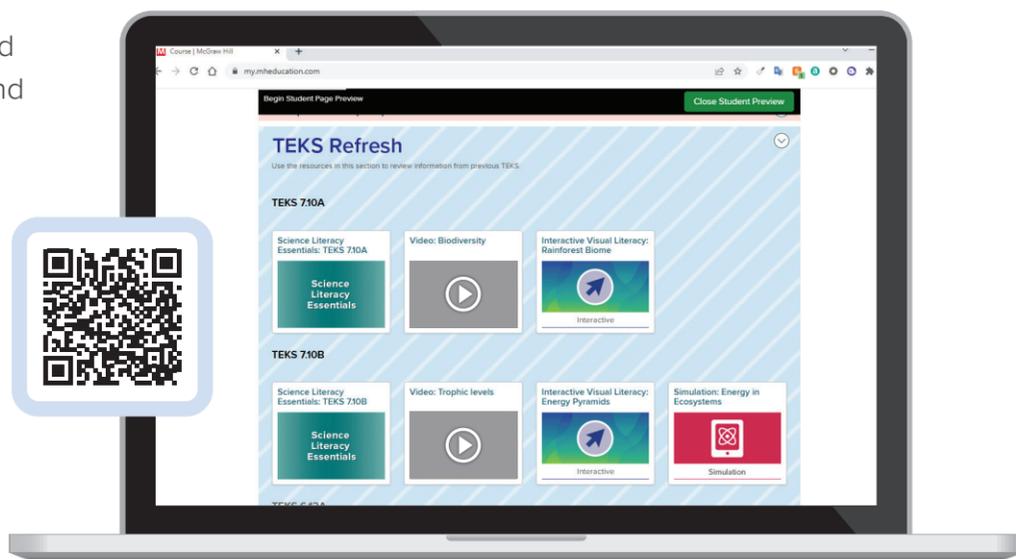
Cognitive verbs (investigate, distinguish, evaluate, etc.) help unpack complex TEKS, clearly defining the extent to which topics must be covered to meet each standard.

TEKS Assessment Guide

Online and printable guided practice tests are available to help students prepare for state assessments. Each practice test includes rigorous, high-level thinking questions and answers so students can check their work.

TEKS Refresh

After conducting pre-assessments, you can assign TEKS Refresh activities to students who need them, ensuring they understand and remember content from previous grades before diving into new material.



Chapter 10 Energy Flow within Ecosystems

Chapter Overview

How did dinosaurs get their energy?

Big Idea Energy cycles through matter, starting from the Sun and through to organisms that are consumed. Fossils can tell us about past environments.



TEKS Progression

TEKS Refresh Use this chart to review what your students have already learned and to help guide their learning. If students need support on the prior TEKS or background knowledge, refer to TEKS Refresh for reteaching resources or assign LearnSmart review assignments.

<p>Grade 2 2.12B create and describe food chains identifying producers and consumers to demonstrate how animals depend on other living things</p>	<p>Grade 3 3.12B identify and describe the flow of energy in a food chain and predict how changes in a food chain such as removal of frogs from a pond or bees from a field affect the ecosystem 3.12D identify fossils as evidence of past living organisms and environments, including common Texas fossils</p>	<p>Grade 4 4.12A investigate and explain how most producers can make their own food using sunlight, water, and carbon dioxide through the cycling of matter 4.12B describe the cycling of matter and flow of energy through food webs, including the roles of the Sun, producers, consumers, and decomposers 4.12C identify and describe past environments based on fossil evidence, including common Texas fossils</p>	<p>Grade 5 5.12B predict how changes in the ecosystem affect the cycling of matter and flow of energy in a food web</p>
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Chapter Assessment

Chapter assessment includes a **Chapter Pre-Test** to gauge students' prior knowledge, a **Chapter Wrap-Up** for students to answer a variety of questions; a **Show What YOU Know** activity, in which students create an instructional video, write a timeline, or photograph and perform a dance, and an online, customized assessment.

For this chapter, **311B Chapter 10**

TEACHER FAVORITES!

Every chapter includes an easy-to-use **TEKS Progression**, which shows the vertical alignment of the TEKS.

TEXAS SCIENCE

TEKS Assessment Guide

Grade 5

Coaching for TEKS Success:

- Teacher Support with Scoring Rubrics
- Student Support with Guided and Independent Practice
- Performance Task Practice
- Included with purchase online and available for print!

McGraw Hill

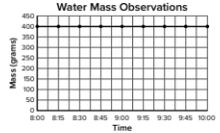
TEKS Assessment Guide

Name _____ Date _____

GUIDED PRACTICE

2. A class is investigating the properties of water as it freezes. They place tap water in a container and seal the container with a lid. Next, they take the mass of the container. Students then place the sealed container in the freezer.

The graph shows the mass of the container every 15 minutes.



TEKS Coach
Think about a bottle of water that you put in an ice cooler on a hot summer day. Think about what you know happens to matter when it is heated, cooled, or mixed. You can use mathematical language to describe what you observe.

Compare the mass of the water as it freezes. What happened to the mass as the water changed from a liquid to a solid?
Provide evidence from the graph to support your claim.

Texas Science Chapter 2: Matter • TEKS Assessment Guide 7

Learning in Three Dimensions

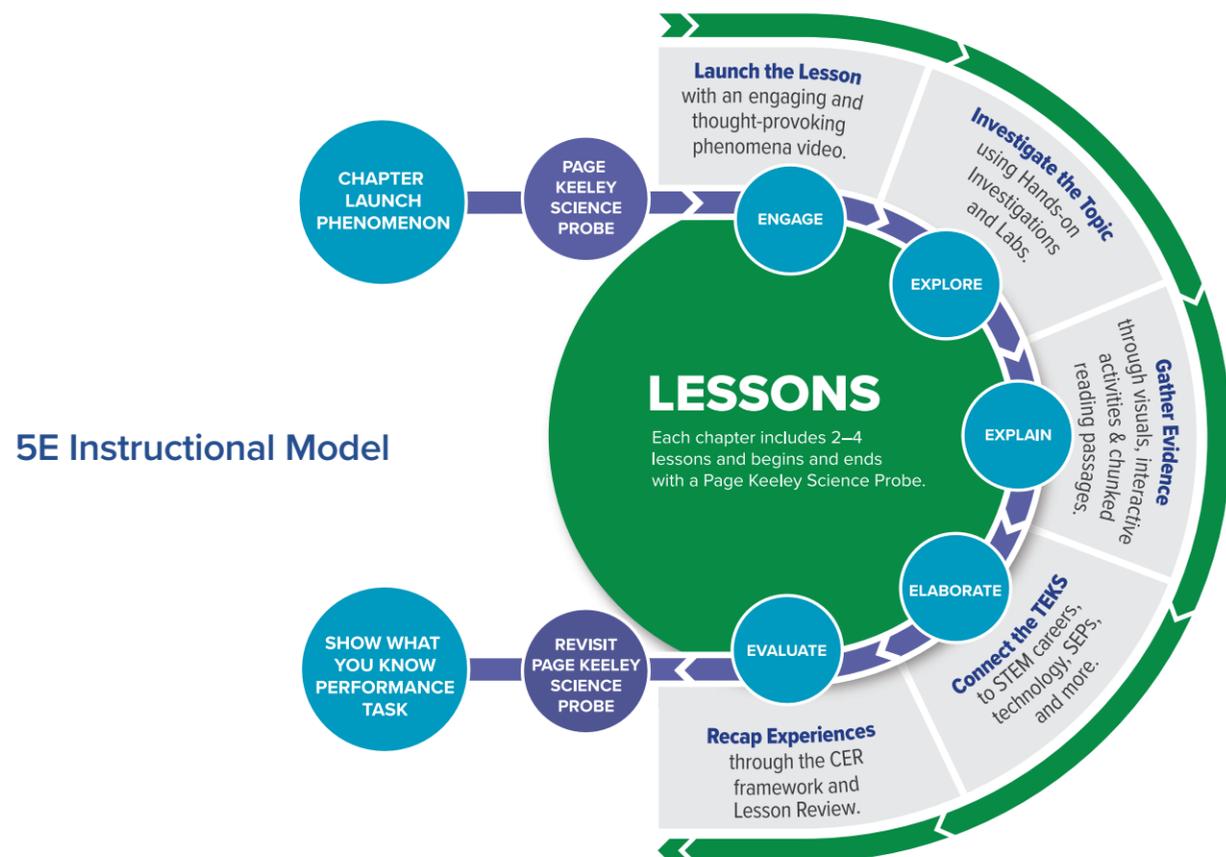
Rooted in the three-dimensional learning framework of the TEKS, *Texas Science* takes an application-based approach to learning. Each of the three dimensions—TEKS, Scientific and Engineering Practices (SEPs), and Recurring Themes and Concepts (RTCs)—work together to nurture deep, holistic understanding and prepare students for any challenge.

Phenomena in *Texas Science*

Texas Science opens every lesson with an engaging phenomena-focused question, video, or image—piquing students' curiosity and prompting them to ask questions. As the lesson progresses, students will accrue new knowledge that they can use to help explain the anchoring lesson phenomena.

The TEKS

Built to bring science and engineering concepts and organizing principles into focus, TEKS are at the foundation of science classrooms across the state. By honing their abilities and understanding in accordance with the TEKS, students are well-positioned for success in college and the workforce.



Scientific and Engineering Practices

Woven throughout every chapter and lesson, SEPs teach students how to investigate the natural world like real scientists and engineers. By learning how engineers design and build models and systems and how scientists use inquiry and experimentation to construct new theories, students gain insight into the real-world applications of the material.

By mastering the SEPs, students will be able to:

- **Ask** questions based on observations.
- **Plan and conduct** investigations.
- **Use** appropriate safety equipment and practices.
- **Use** appropriate scientific tools.
- **Collect** quantitative and qualitative data as evidence.
- **Construct** appropriate tables, graphs, maps, and charts.
- **Develop and use** models.
- **Distinguish** between scientific hypotheses, theories, and laws.



Recurring Themes and Concepts

Science is a complex and wide-ranging discipline. To achieve holistic understanding, students must be able to identify recurring themes and draw connections between overarching scientific concepts. Piecing these connections together, students gain a more comprehensive view of the scientific discipline and how it connects to external fields of study, such as math or English language arts.

Recurring themes and concepts include:

- **Patterns**
- **Cause and Effect**
- **Scale, Proportion, and Quantity**
- **Systems and Models**
- **Energy and Matter**
- **Structure and Function**
- **Change and Stability**

Inspiring New Teacher Confidence

Built to support the influx of new teachers across the state, *Texas Science* provides a clear path for you to cover the TEKS. Supports throughout the Teacher’s Edition deliver additional tools to ensure teacher success and student content mastery.

As a new teacher, stepping into a new classroom or subject area can be daunting—but it doesn’t have to be. With structured supports aimed at new teachers, you can feel confident and prepared to drive scientific achievement in your classroom.



Step-by-step support provides guidance and troubleshooting for Hands-on Investigations.

Lesson 3 TEKS 4.12C Past Environments and Fossil Evidence

Plan Your Lesson

Timing: 45 min per day

KEY MOMENT

Short on time? Look for Key Moments throughout the lesson to use in your instruction.

Have 15 minutes to prepare for the lesson.

DAY 1	DAY 2
<p>ENGAGE / EXPLORE 45 min KEY MOMENT 20–30 min</p> <p>GET READY</p> <ul style="list-style-type: none"> Before Day 1, build the Interactive Word Wall frame. Plan for the Hands-On Investigation. Cue up the video <i>Clues to the Past</i>. Download the necessary routines and graphic organizers. <p>TEACH 35 min</p> <p>Introduce the Essential Question. 2 min</p> <p>Observe the photo and video of dinosaur fossils. 2 min</p> <p>Facilitate discussion and notebooking. 3 min</p> <p>Review the cognitive verbs and Scientific and Engineering Practices and post the word cards on the Interactive Word Wall. 3 min</p> <p>Around the Big Bend Students research dinosaur fossils discovered in Big Bend National Park and make inferences about the environments in which they lived. 25 min</p> <p>ASSESS 10 min</p> <p>Claim, Evidence, Reasoning Complete Step 1: Make a claim. 5 min</p> <p>Connect the cognitive verbs and Scientific and Engineering Practices to the investigation and post related items to the Interactive Word Wall. 5 min</p>	<p>EXPLAIN 45 min KEY MOMENT 20–30 min</p> <p>GET READY</p> <ul style="list-style-type: none"> Assign Science Literacy Essentials (optional). Gather words and artifacts to the Interactive Word Wall. Download the necessary graphic organizers. <p>TEACH 35 min</p> <p>Claim, Evidence, Reasoning Introduce Step 2: Gather Evidence. 5 min</p> <p>Read Environments of the Past. 15 min</p> <p>Add words, students’ work, and artifacts to the Interactive Word Wall. 10 min</p> <p>Connect to the Chapter Question 5 min</p> <p>Quick Check Complete Step 2: Explain your answer. 10 min</p>

Interactive Word Wall

Look for places to implement your Interactive Word Wall.

Text Complexity

EXPLAIN	Environments of the Past
Day 2	Lexile: 740L
Vocabulary	Frequent use of academic vocabulary
Graphics	Graphics are essential
EXPLAIN	The Changing Land of Texas

Day 3 Lexile: 740L

Graphics are essential to understanding and have information not in the text

Organization Largely straightforward but some shifts pacing

To address Text Complexity:

Use Science Literacy Essentials for that need text at a lower Lexile.

Review Dr. Fisher’s Text Complexity Strategies found online.

Aligned to the research-based 5Es, *Texas Science* lesson plans plug easily into the plans you already use.

DIGITAL FEATURE!

Teacher eBook

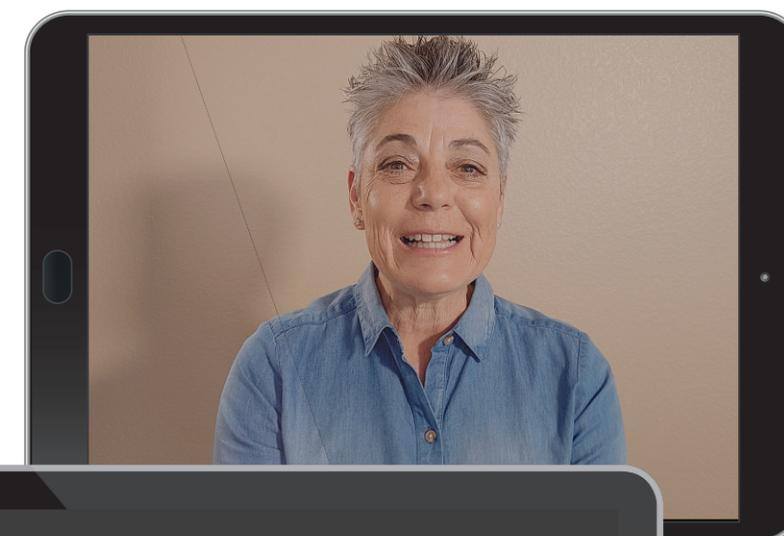
No need to carry around a textbook—the *Texas Science* Teacher eBook has every feature of the print version!



Text Complexity Support

by Dr. Doug Fisher clues you in to the details of the text, allowing you to help all students prepare to read.

Professional Development Videos offer tips, teaching best practices, and guidance for getting the most out of *Texas Science* in your classroom.



Hands-On Labs, Real-World Investigations

Real scientists get their hands dirty. By conducting hands-on investigations, students can apply their scientific knowledge to exciting real-world contexts. Accessible materials and engaging instructional videos prepare teachers and students alike to get the most out of each investigation.

- **Claim, Evidence, Reasoning (CER)** writing prompts help students make meaning from their investigation.
- **Comprehensive instructional videos** guide teachers on how to approach each science topic to maximize student comprehension.
- **Anytime Investigation Videos** provide student-friendly videos showing lab work in action.
- **STEM Projects** aligned to each strand of the multi-dimensional learning model allow students to bring their own creativity to design solutions for science and engineering challenges and investigate their world.



Hands-On Investigations



Whether jotting down lab notes or clicking through digital investigations, students have access to an array of rigorous hands-on activities through *Texas Science*. With 100% TEKS-aligned labs, the program prompts every student to dive deep into the lesson content and observe new concepts in action.

- **Hands-On Investigations** immerse students in the real-world applications of science.
- **Explore Simulations** allow students to explore content beyond the limits of the classroom and as representations of real-world experiences.
- **Ready-to-use notebook activity sheets** allow students to record their investigations quickly and simply.



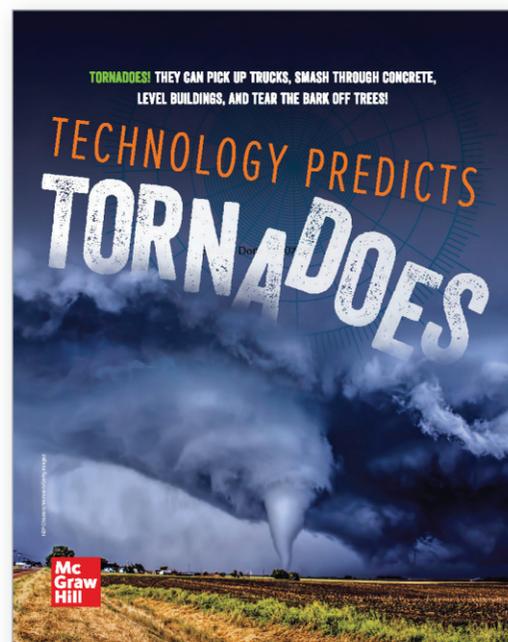
Interactive Infographic

Texas Science is Full STEAM Ahead

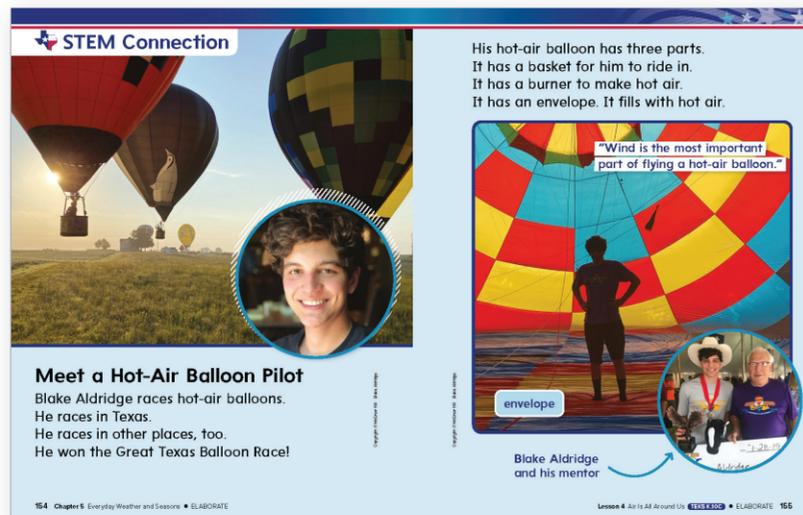
When students see people who look like them excelling in STEAM, they envision their own present and future as scientists and engineers. Profiles dispersed throughout the program showcase diverse figures in wide-ranging STEAM careers. Easy-access “set it and forget it” activity stations integrate STEAM into busy classrooms so that students can deepen their knowledge through experiential learning.

With the aid of abundant STEAM support found in *Texas Science*, students can explore every dimension of science, technology, engineering, arts, and math:

- **STEAM Stations** integrate STEAM into busy classrooms, allowing teachers to quickly print bundled teacher support materials and differentiated student activity pages.
- **STEM Connections** expose students to interviews and articles about real STEM professionals.
- **STEM Projects** put students in the shoes of scientists and engineers, tasking them with designing a solution to a real-world STEM problem.
- **STEM Biographies** cut to the heart of discovery—introducing students to the pioneers who made STEM research and exploration a reality.
- **STEAM Investigator articles** discuss high-interest STEAM topics at three different Lexile levels.
- **Notebooking activities** let students record their observations, data, and thinking just like real scientists.



STEAM Investigator



STEM Connections



SCIENCE TECHNOLOGY ENGINEERING ART MATH

STEAM Stations allow students to extend and apply their learning beyond the scope of the textbook as they work independently to complete engaging STEAM-aligned activities.

Reinforce

Use stations to provide practice and cross-curricular connections to TEKS-aligned content.

Extend

Stretch learning with open-ended, accelerated station activities.



Notebooking Foldables

Use stations for students to work ahead in their notebooks with Dinah Zike Foldables.



IF/THEN® seeks to further advance women in STEM by empowering current innovators and inspiring the next generation of pioneers. *Texas Science* highlights IF/THEN women throughout to depict positive role models using science in the workplace.

- STEM Connections tie in-depth profiles of scientists to lesson content.
- Videos and interviews with IF/THEN scientists provide engaging, real-world examples of women in science and engineering-based careers.



Boundless Science Learning

Transport students beyond the walls of your classroom with cutting-edge digital content, including interactives, simulations, videos, and more. Fun and easy to use, these features align with lesson topics to spark scientific curiosity, support discussion, enhance review, and deepen understanding.

Scan the QR codes to explore these engaging online resources!



Interactive Infographics features prepare students to identify visual representations of scientific phenomena.



TEKS Refresh ensures students understand and remember content from previous grades before diving into new material.



Explore Simulations allow students to manipulate variables in a scenario beyond the limits of the classroom.



LearnSmart uses smart, adaptive technology and multiple-choice questions to help gauge student understanding



Virtual Field Trips use engaging questions, pictures, and videos to explore diverse locations across Texas and show how they connect to STEM fields.



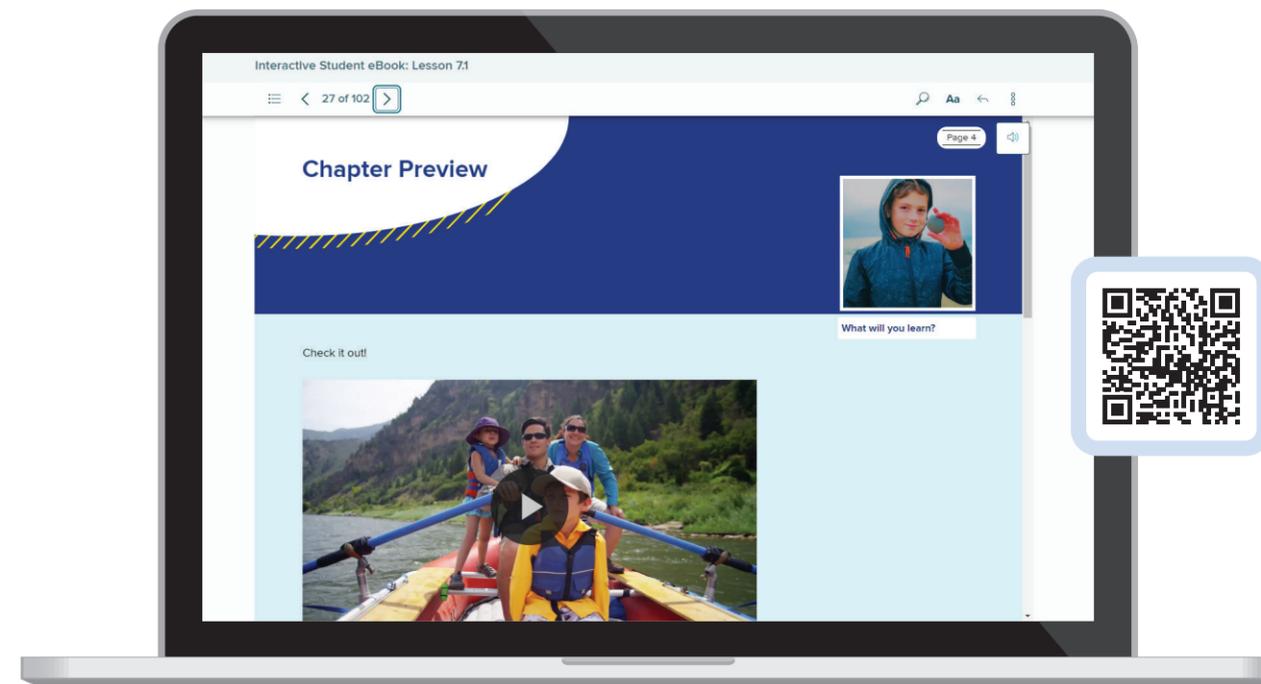
Word Labs give flashcards a modern twist with flexible, student-driven, scientific word exploration.



Unlock a New Era of Learning: The K–5 Digital Student Experience

In today's digital age, students have greater access to technology than ever before—all available at their fingertips. With that comes new tools, videos, activities, simulations, and more to take their learning and engagement to the next level. *Texas Science* boasts an array of digital resources for students, pushing the limits of science learning beyond the four walls of the classroom.

- **The Student eBook** includes built-in comprehension questions and vocabulary definitions at the point of use.
- Text content is available at **multiple reading levels**, so students can adjust as needed.
- With the **K–12 Portal App by McGraw Hill**, students can access their content and assignments anywhere, any time, on any device, with or without internet access.
- **Embedded Videos** and **ReadSpeaker** in the eBook allow students to learn in a variety of modalities.



Student eBook

Watch and Learn: The K–5 Print Student Experience

Science takes place before our eyes every single day. That’s why, in order to build deep scientific understanding, students must not only be able to write about and discuss a topic but also recognize visual representations. Rich, varied imagery and interactive diagrams prepare students to observe and identify science in the real world, not just in the pages of their textbook.

Texas Science leverages multiple modes of visual learning in every unit, module, and lesson.

Infographics use visuals to bring complex science topics to life and allow for deeper engagement, particularly when embedded with digital interactive components.

Interactive Word Wall

Erosion and Deposition by Ice

Start here
Glaciers form in places where snow piles up faster than it melts.

Claim, Evidence, Reasoning
How can frozen water change Earth's surface? Check your claim. Can you back it up? Keep reading and underline evidence.

glacier
ice wedging
moraine

Much of Earth's surface is covered by water. In very cold places, this water is frozen and exists on the surface in thick sheets as ice. These large sheets of ice that move slowly across the land are called **glaciers**.

Over time, a glacier can change the land into a wide, flat area of land with steep sides, called a U-shaped valley.

Read the Infographic Learn how a glacier forms and changes Earth's surface.

1. The weight of snow on top puts pressure on the snow below. The snow below gets packed down, or compressed and hardens into ice.
2. Over many years, the ice grows thicker and becomes heavier and more compressed, creating more pressure.
3. Ice near the bottom melts from all the pressure, making the bottom slick. The glacier begins to flow downhill.
4. As the glacier moves, it weathers and erodes Earth's surface by plucking rocks from the ground and carrying away gravel, sand, and clay, making a valley wider and steeper.
5. Sometimes a long, ridgelike mound formed from glacial debris left behind by a glacier, called a **moraine**, will form.
6. A glacier deposits its debris at the downhill end, or terminus.

U-shaped valley
moraine
terminus
glacial debris

218 Chapter 7 Changes to Earth's Surface

Lesson 3 Ice Changes Earth's Surface TEKS 5.10C • EXPLAIN 219

Visual Assessment Items in Lesson Reviews, Chapter Wrap Ups, and TEKS Assessment Guides give students opportunities to make meaning from pictures and practice for the STAAR.

Lesson Review
Water Changes Earth's Surface

1. This is a photo of a delta. The particles of soil and rock that are eroded and deposited to form a delta are called _____.
2. Describe how a delta forms as a result of erosion and deposition by water.
3. This photo shows a change to Earth's surface. Which statement best describes how this sea arch formed?
4. Which landform is the result of deposition by water?
5. A student visited a landform and recorded these observations:
Observations:
• steep walls
• valley
• running water at the bottom
What type of landform might the student have observed? Explain your answer.

Lesson 2 Water Changes Earth's Surface TEKS 5.10C • EVALUATE 213

214 Chapter 7 Changes to Earth's Surface

Science Literacy Essentials pair leveled text (two grade levels below on-level) with enhanced visuals so students have multiple avenues to access grade-level information.

Patterns of Friction

ESSENTIAL QUESTION
What patterns of friction do you see in objects?

Start here
As you read, underline evidence to answer the Essential Question.

Friction
When you use the brakes on a bicycle, the bike stops. Do you know why? It's all about **force**, a push or pull. The brakes use **friction** by pushing the brake pads against the wheels. This force stops the turning movement of the wheels.

What is a force? A force (f_{ors}) is a push or pull.

What is friction? Friction (FRIC-tion) is a force between surfaces.

What is a contact force? A contact force (CON-tact f_{ors}) is a force between two touching objects.

Friction is a **contact force**. Friction acts to oppose motion. It slows a moving object or stops the object entirely.

Think About It!
Have I heard the word friction used in everyday life?

Different surfaces apply different amounts of friction. Hard, smooth surfaces produce less friction. Rough surfaces produce more friction.

A wooden floor is hard and smooth. A carpet is soft and less smooth. A cardboard box will slide more easily across a wooden floor because there is less friction.

Ice is hard and smooth, so it applies very little friction. Skates and hockey pucks slide easily. They slow down gradually, not suddenly.

Sand has a rough surface, so it applies a lot of friction. When a golf ball rolls into sand, it slows down and stops very quickly.

Think About It!
How would differences among carpets, such as a fluffier carpet or a flatter carpet, affect the movement of an object?

less friction
more friction

Would a gravel road or a paved road apply more friction on a moving object? Why?

Quick Check: Why is friction called a contact force?

1 Science Literacy Essentials Patterns of Friction

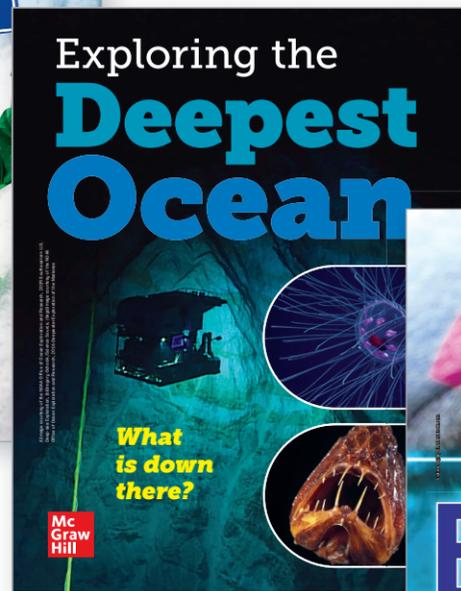
Patterns of Friction Science Literacy Essentials 2

Read About It, and Write About It

In the world of science, communication is as critical as discovery. Frequent opportunities to practice writing and reading for the TEKS assessments build deep conceptual understanding and cross-curricular skills. Guided by experts Dr. Julie Jackson and Dr. Cindy Guerrero, *Texas Science* provides equitable literacy support for students of all backgrounds.

To support literacy acquisition and growth for all students, *Texas Science* incorporates several reading and writing tools:

- **Text Complexity Strategies by Dr. Doug Fisher** clue students into the details of a text, helping them prepare to read.
- **Sentence Stems, Notebooking templates, and Foldables** give students opportunities to write in every class.
- **Write About It! Graphic Organizers** use visuals to help students organize their thinking.



STEAM Investigator articles discuss high-interest STEAM topics at three different Lexile levels (Approaching, On-Level, Beyond, Emergent Bilingual and authentically translated Spanish).

Credit: Donald Startzell/500px Plus/Getty Images Credit: Guy Midkiff/Alamy Stock Photo

Wind Changes Earth's Surface

ESSENTIAL QUESTION
How is Earth's surface changed by wind?

Start here As you read, underline evidence to answer the Essential Question.

Erosion and Deposition by Wind

The Rio Grande Basin is more than just a river. Monahans Sandhills State Park is inside the basin, but far from the river. How do you think the park has changed over time? How does the sand change? Wind causes many changes. Wind is moving air. It can cause weathering, erosion, and deposition.

What is weathering? Over time, rocks will slowly be worn away, or weathered. Weathering (WE-thuh-ring) is the wearing away of rocks and other materials.

What is erosion? Rocks and sand can be moved from one place to another. Erosion (i-ROH-zuh-n) is the movement of weathered rock.

What is deposition? The process of dropping off weathered rock is called deposition (de-puh-ZISH-uhn).

weathering
weathering, weather, weathers, weathered

erosion
erosion, erode, erodes, eroded

deposition
deposition, deposit, deposits, deposited

Weathering, erosion, and deposition change Earth's surface.

Think About It
Are there words that are new to you?

Think About It
What information are you learning about wind and sand dunes?

landform (lan'd-form)- compound word of land and form

sand dunes (sand-dün)- Spanish cognate: *duna*

wind (wind)- Spanish cognate: *viento*

Quick Check The process of weathered pieces of rock moving from one place to another is called _____.

TALK ABOUT IT How has wind changed a landform?

1 Reading Essentials Wind Changes Earth's Surface

Wind Changes Earth's Surface Reading Essentials 2

Science Literacy Essentials for Grades 3–12 offer leveled text with enhanced visuals to give students an alternative way to access grade-level content.

Name _____

Guided Write About It!

Read the prompts in your Student Edition. Then follow the steps below.
 Use your notebook or a separate sheet of paper to complete your writing.

Plan Your Writing First Prompt

Consider the following:

- how many toothpicks you used in your tower
- your chances of building the same size tower with half as many toothpicks
- how using fewer toothpicks will affect your tower's stability

Use a T-chart to organize your information. Put the questions at the end of the prompt at the top of your Problem and Solution chart.

Questions	

Plan Your Writing Second Prompt

Consider the following:

- how wind might affect your tower
- the complete list of materials
- which two materials would build the strongest tower and why

Use a T-chart to organize your information. Put the questions at the end of the prompt at the top of your Problem and Solution chart.

Questions	

Write

You can start your response like this:

I'm going to use ... and ... to build a tower for a very windy city.

Explain your process and the materials that you will use. You can use the following sentence stems.

... is a good material for this project because it is ...

End by writing about the stability of your tower.

The two materials I chose will make my tower sturdy because ...

Remember to use vocabulary words.

Guided Write About It! activity pages use scaffolding supports to help students write about their discoveries.

Vocabulary TEKSpertise

Strengthening Science Vocabulary and Communication with Dr. Julie Jackson's Word Walls



From renowned author and educator Dr. Julie Jackson, Interactive Word Walls bring science vocabulary to life so that students can build meaningful relationships to TEKS concepts rather than simply memorize them. Throughout the Teacher's Edition, embedded supports describe how to build Interactive Word Walls that maximize learning by sparking curiosity, promoting engagement, and contextualizing new terms and concepts.

Dr. Jackson's *Texas Science* innovations include:

- **Science language information** in every chapter that highlights target vocabulary, including—
 - Prior-knowledge words
 - Lesson words
 - Academic vocabulary support
 - SEP/RTC language
- **Pre-made Interactive Word Wall Guides** and Word Cards in English and Spanish with images.
- **Professional development videos** to help you practice powerful instructional strategies.

Innovative Word Labs allow students to study science vocabulary at their own pace using visuals and embedded word strategies.



WORD LAB GO ONLINE

Do you need practice?

Interactive Word Wall

Update your graphic organizer!

Abiotic: Learn

Define

Word Parts: abiotic starts with the prefix *o-* and has the root *bio*.

- *o-* sometimes means not.
- *bio* means life.

Definition: nonliving parts of an ecosystem

Sentence: Plants are affected by abiotic factors like sunlight.

📌 **Selección para expandir o colapsar.**

▼ **Español**

abiótico

Definición: todo factor inanimado en el ambiente de un organismo, como el suelo, el agua, la temperatura del agua y la disponibilidad de luz.

Frase: Las plantas se ven afectadas por factores abióticos como la luz solar.

Lesson 2 **TEKS 4.12B** Food Webs

Interactive Word Wall

The Interactive Word Wall connects core science ideas from investigations to vocabulary for a deeper understanding of the TEKS.

TEKS 4.12B describe the cycling of matter and flow of energy through food webs, including the roles of the Sun, producers, consumers, and decomposers

Use the information below to help you frame the Interactive Word Wall.

1. What words will students practice?

Prior Knowledge	Scientific and Engineering Practices
consumer ecosystem energy flow of energy	food chain matter producer Sun
Science Tools	
computer	• use tools to observe • develop and use models • identify patterns in data

2. What words are highlighted in the lesson?

Lesson Vocabulary	Target Vocabulary
consumer decomposer food web	predator prey

Build the Frame

- Use the frame provided on the student graphic organizer or create your own.
- Throughout the lesson, guide students as they organize words, materials, and visual supports on the Interactive Word Wall.
- Students add to their Interactive Word Wall graphic organizers as the class adds to the wall.

3. What strategies can help teach the words?

Cognates	Word Origin
plant / planta producer / productor consumer / consumidor	Consumer comes from the Latin <i>consumere</i> , meaning "to take up." Prey comes from the Latin <i>prehendere</i> , which means "to grasp" or "to seize."
Word Parts	Related Words
Decomposer contains the Latin root <i>compos</i> , which comes from <i>composita</i> , meaning "something put together." The prefix <i>de-</i> means "opposite of."	Relate the word food web to other types of webs with which students might be familiar, such as spider webs. Ask: How is a food web similar to a spider web? Sample answer: one organism in a food web can connect to many organisms; one point in a spider web connects to many others
Total Physical Response	
Take students outside to play a game of predator-prey freeze tag. Assign 3-5 students to be predators . Have them see how long it takes them to freeze all the prey . Rotate predators and prey until all students have had a chance to play each role.	

Check out Dr. Jackson's **323F Chapter 10 Energy Flow**

Target Vocabulary combines new words with familiar ones to determine essential vocabulary.

Build the Interactive Word Wall Frame and add photos, art, and more so students can make quick and easy visual connections to vocabulary.



Notebooking TEKSpertise

Documenting Discoveries with Dinah Zike's Notebooking Strategies



Science takes on greater meaning when it is written down. Through the process of writing, we can reflect upon and eventually build on our discoveries. With carefully designed, intuitive notebook activities created by award-winning author, educator, and inventor Dinah Zike, students join generations of researchers documenting their findings—all while improving writing skills, deepening scientific understanding, and preparing for success on standardized tests.

Dinah's *Texas Science* innovations include:

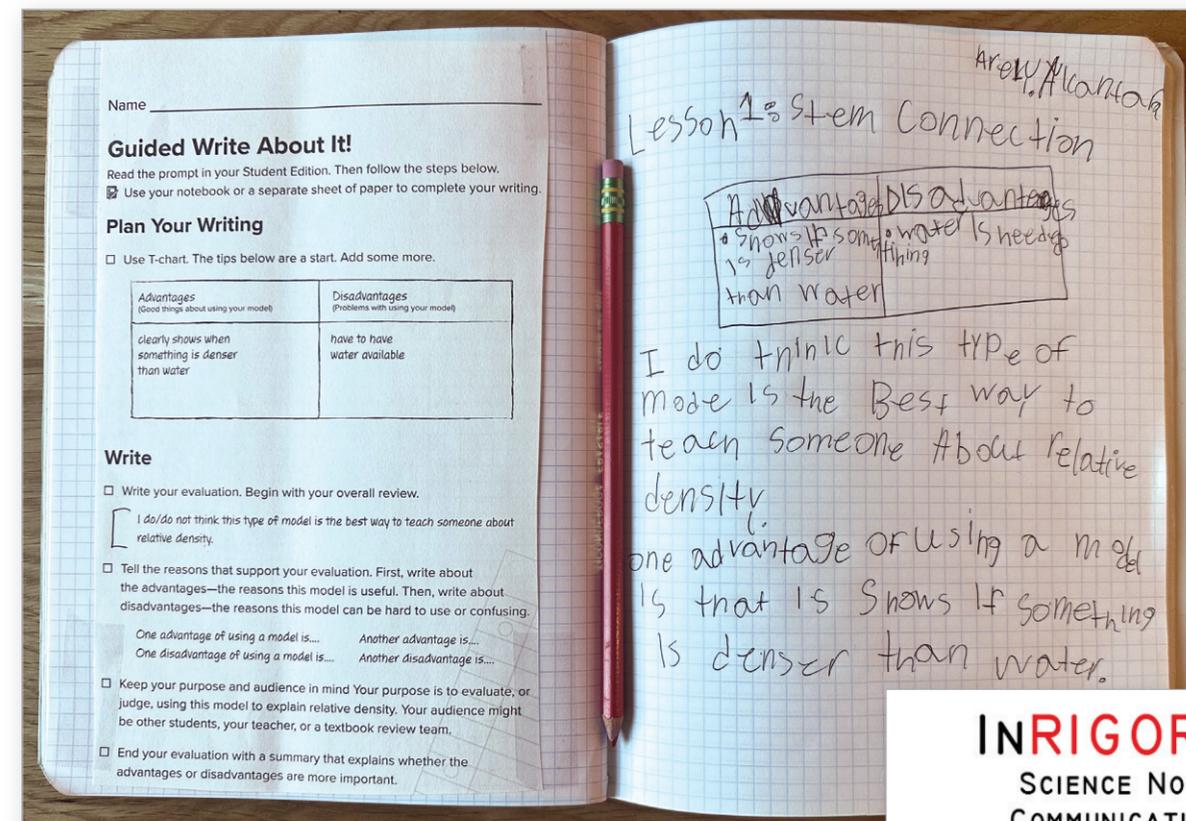
- Brand new **TEKS Foldable Activities with embedded Notebooking strategies.**
- PHOTOstart and PHOTOfinish activities** that launch and close each lesson.

Other Notebooking innovations include:

- Write About It!**
- Hands-On Investigations and Labs**
- Guided Write About It!**
- Guided Claim, Evidence, Reasoning (CER) writing prompts**



Foldables



Write About It!

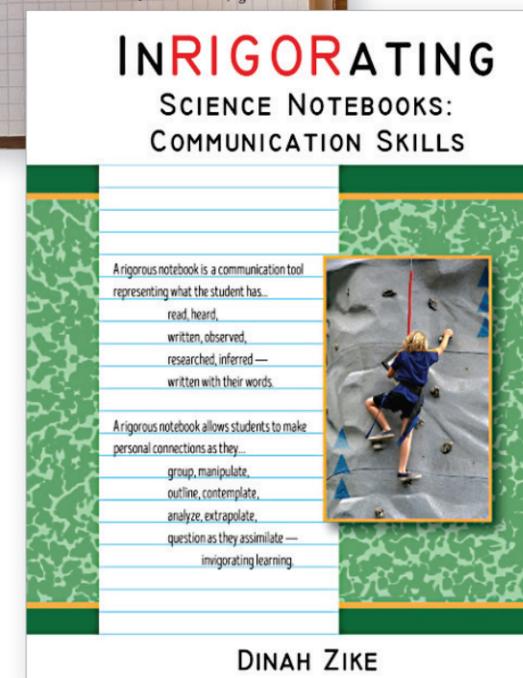
- Choose a writing prompt.
 - Which Texas dinosaur fossil would you like to discover and prepare for an exhibit at the Houston Museum of Natural Science? Why? Research when the dinosaur lived, its habitat, its structure, and more fun facts.
 - If you had to image Texas 20,000 years from now, what animals do you think could be extinct and why?
 - In her *Cool Tools* video, Myria Perez discusses how to prep dinosaur bones. Reread her interview and research the tools she uses. Which tool do you think is best? Why?
- Organize your information. Draw an Flow Chart graphic organizer (like this one) in your notebook.

Flow Chart

```

graph TD
    A[ ] --> B[ ]
    B --> C[ ]
            
```
- Use your Flow Chart graphic organizer to create a poster. Include words from the [Interactive Word Wall](#) in your writing.

CER Writing Prompts



Dinah's new book, *InRIGORating Science Notebooking*

Science Literacy TEKSpertise

A renowned reading expert, Dr. Fisher helped create our new and improved Science Literacy Essentials to foster reading comprehension.

Dr. Doug Fisher, Ph.D.



Texas Science empowers all students to succeed in science—no matter their starting point. The new Science Literacy Essentials provide reading and writing support for students in need of a little extra help, including:

- **Content written two Lexile levels lower** than the on-level content.
- **Teacher tips** to provide ample student support.
- **Writing space** for students to practice explaining their understanding.
- **Print, digital, and Spanish-language versions** of the text.

Text Complexity in Science

Douglas Fisher, Ph.D., San Diego State University

What's a Teacher to Do?

When we know what makes a given text complex, there are actions we can take to support students. In some cases, these are teaching points that need to be integrated into our lessons; in other cases, they involve support for learners. Consider the following factors and the sample actions that can help students unlock the meanings of complex texts.

If ...	Then ...	Monitor ...
Graphics are complex or necessary for understanding but students are not tracking the information	<ul style="list-style-type: none"> • Model extracting information from graphics. • Focus questions on specific aspects of information to reduce the distractions of all the data. • Have students construct data tables and graphics so they see how these are developed. 	<ul style="list-style-type: none"> • Students' correct use of information from graphics • Students' comparing information in the text to the visual information
Vocabulary is interfering with understanding	<ul style="list-style-type: none"> • Identify words that require pre-teaching and focus on pronunciation and meaning. • Identify words that can be solved using context or word parts and focus on word-solving skills. • Develop a conceptual word bank so that students track their understanding of new terminology. 	<ul style="list-style-type: none"> • Students' expanding vocabulary as they use the target terms in their speaking and writing • Students' word-solving skills as they use context and word parts to determine word meanings

Text Complexity Strategies clue you in to the details of the text, allowing you to help all students prepare to read.

PROGRAM FEATURE!

Science Literacy Essentials are also available in Spanish!

Particles of Matter

ESSENTIAL QUESTION
How can you illustrate matter you cannot see?

Start here As you read, underline evidence to answer the Essential Question.

Physical Properties

What is the tiniest bit of matter you have ever observed? Things that we think of as small, such as a crumb or a piece of fuzz, are huge compared to the tiny particles of matter that scientists identify. A **particle** can be so small that you cannot see it with your eyes.

What is a particle? A particle (PAR-ti-cle) is a tiny piece or amount.

One way of understanding that gas is matter is seeing it fill a balloon. Think back to the investigation. Gas particles are so small that you cannot see them but you can see a balloon getting larger.

Scientists make models of matter. Models can help us understand things that are not easy to see. Models of particles explain many properties of matter.

gas

liquid

solid

Particles of water look different in each physical state. Complete the sentences to explain.

Water can be a gas, a _____, or a _____.

Particles look _____ in each state.

Think About it! Tips provide support for students as they read.

Think About It: Do you understand the three states of matter?

Think About It: What smaller word do you see in the word *particle*?

The Particle Model

You can look at a particle model to understand states of matter. Particles move in different ways in different states of matter.

Solid: Particles in solids are tightly packed together. They can't move from place to place. But they can vibrate. That is why solids hold their shapes. Ice is an example of a solid.

Liquid: Particles in liquids move and flow. That is why a liquid takes the shape of whatever container it is poured into. The volume of a liquid does not change because it is moved to a new container.

Gas: Particles in gases move freely. They can expand and take any size and shape. Water evaporates to become a gas.

Blue particles represent water.

The red particles represent the food dye.

A red substance and a blue substance form a solution. The red particles are mixed evenly with the blue particles.

Quick Check: What state of matter has particles that move the least? Why?

Talk About It: What is your favorite drink? How are particles arranged in your drink?

Sentence Stems help all students communicate their ideas.

Quick Checks give students opportunities to show their understanding with rigorous open-response questions.

Credit: uniquely india/Getty Images



Probes TEKSpertise

Illuminate and Investigate Scientific Misconceptions with Page Keeley Probes



One of the most effective ways to support conceptual learning is through formative assessment. That's why *Texas Science* begins every lesson with a Page Keeley Science Probe and productive discussion strategy. Each probe uses real-world phenomena to promote student thinking and discussion, revealing the misconceptions and initial ideas students bring to their learning to best inform your instruction.

Past Environments and Fossil Evidence **LESSON 3**

PAGE KEELEY SCIENCE PROBES **Past Texas Environments**

Student 1: I am so excited to go on this field trip. What do you think the fossils will tell us about past environments?

Ollie: I think fossils will show us that the environment of Texas hasn't changed.

Court: I think fossils will show us that Texas was once covered by forests.

Flavio: I think fossils will show us that the environment of Texas changed, but it was always warm.

Layla: I think fossils will show us that the environment of Texas was very different in the past.

Student 2: Let's get ready to find some fossils!

Who do you think has the best idea? Explain your thinking.

Lesson 3 Past Environments and Fossil Evidence **TEKS 4.12C** • BEFORE YOU EXPLORE **333**

Instinctual Traits and Learned Behaviors **LESSON 2**

PAGE KEELEY SCIENCE PROBES **Surviving in the Wild**

Kuruk: Squirrels are always so busy! I wonder what behaviors help wild animals survive in their environment.

Jasmine: Wild animals survive by instinct and by learning.

I disagree. Wild animals don't learn like we do. They survive by instinct.

Who do you think has the best idea? Explain your thinking.

Systems and Parts **Lesson 3**

PAGE KEELEY SCIENCE PROBES **Parts of a Whole**

book **bicycle** **chair**

pencil **clock** **puzzle**

doll **jacket** **flower**

DIRECTIONS Circle the objects with parts.
Talk About It What objects did you circle? Why? Show a partner.

Lesson 3 Systems and Parts **TEKS 1.6C** • BEFORE YOU EXPLORE **47**

Foster Multilingual Connections

Every student deserves access to a rich, robust, and challenging science curriculum leveled to their needs and abilities. *Texas Science* applies the best pedagogical practices for teaching emergent bilinguals, complete with authentically translated print and digital texts and an array of diverse scaffolding tools.

Activate Prior Knowledge

prepares all EB students with content-specific strategies.

EB/EL Emergent Bilingual/English Learner Support

Help students activate their prior knowledge about the vocabulary in this chapter and introduce them to new terms using the following activity.

Activate Prior Knowledge Provide students with the prior knowledge terms and key content terms written on individual notecards, differentiating the activity as needed. **ELPS 1A, 3E, 5B**

Beginning	Intermediate	Advanced/Advanced High
Have students scan and find up to three words they know and three they don't know. Then have them work in groups, sharing what they know and asking for help with the words they don't know. Have them write the words/meanings in their notebooks. Allow students to use their home language. ELPS 1A	Have students scan and find up to three words they know and three they don't know. Then have them work in groups, sharing what they know and asking for help with the words they don't know. Have them write the words/meanings in their notebooks. ELPS 3E	Have students scan the chapter and find words they are familiar with. Have them write them and their meanings in their notebooks. Then have them list the words they don't know yet, leaving space to write their meanings as they learn them. ELPS 5B

Spanish Language Transfer

Transferable Skills	Non-Transferable Skills
Both English and Spanish have regular verbs that show the action in a sentence. Regular Spanish verbs in the simple present follow consistent patterns in their conjugations. Simple present verbs in English also follow a consistent pattern: adding -s to third-person singular verbs.	In English, adjectives normally precede the noun that they modify (<i>incomplete dominance, polygenic trait</i>), but in Spanish, adjectives normally follow the nouns they modify (<i>dominancia incompleta, rasgo poligénico</i>).
Cognates	False Cognates
For students whose first language shares cognates with English, have them use the knowledge of their first language to learn English. Examples of English/Spanish cognates in this chapter: hybrid / híbrido dominant / dominante pedigree / pedigrí	Point out false cognates to help students avoid errors. English: cross (sp. cruz) English: cruise (sp. crucero) English: pattern (sp. patrón) Spanish: paterno (en. paternal)
genetic recombination / recombinación genética codominance / codominancia epistasis / epistasia	

Targeted Strategies Throughout the lessons, use EB/EL Leveled Support to cover the following ELPS.

	Learning Strategy	Listening	Speaking	Reading	Writing
Lesson 1	ELPS 1F				
Lesson 2				ELPS 4G	ELPS 5G
Lesson 3		ELPS 2I	ELPS 3E		

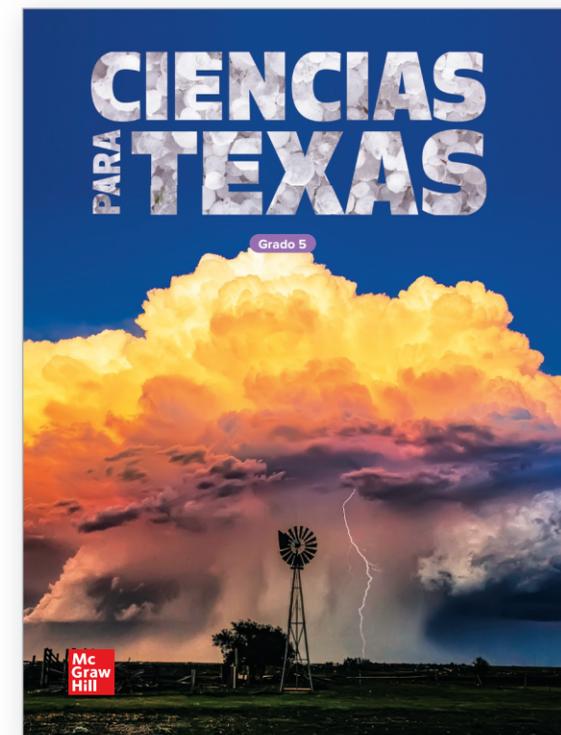
Targeted Strategies in every lesson provides EB/EL tips and leveled support to cover the ELPS.

Spanish Language Transfer gives you information to better support emergent-bilingual students.

Reading Comprehension and Multilingual Support

Texas Science supports reading comprehension and English Language Proficiency Standards (ELPS) using a variety of innovative tools and scaffolds:

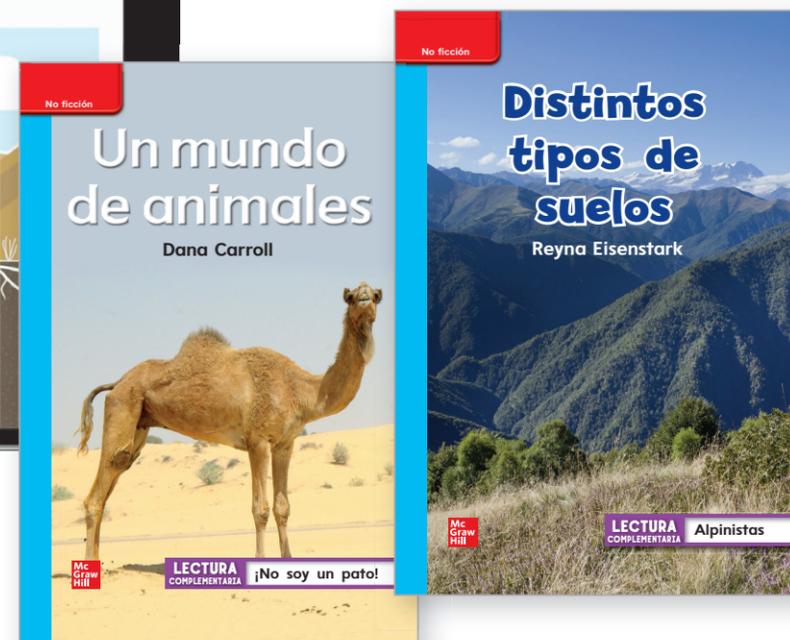
- Both the core text and Science Literacy Essentials are **available in Spanish** online in a printable format.
- Google Translate** is available for students where needed.
- The **multilingual glossary** offers key vocabulary definitions in over 10 different languages.
- All student materials are **authentically translated in Spanish** including Hands-On Activity pages, Guided Writing Prompts, Online Simulations, videos, and more!



Spanish Student Edition



Simulaciones



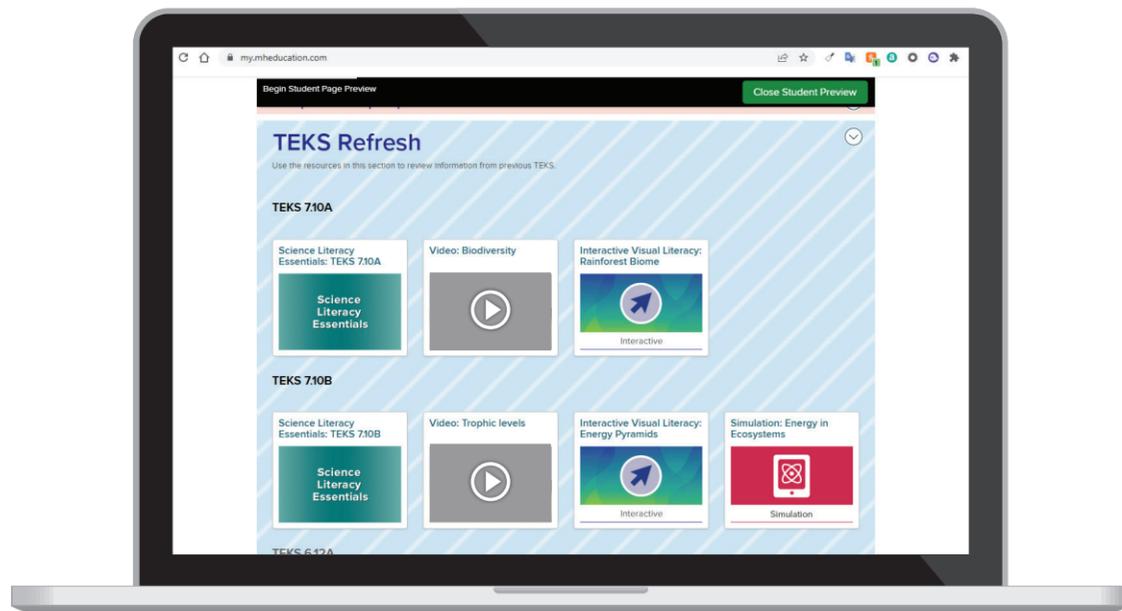
Lectura por niveles

Assess and Address Learning Needs

Chart the path to TEKS mastery with a suite of easy-access tools aimed at gauging student understanding, identifying learning gaps, and targeting misconceptions throughout each lesson and chapter. Formal exam practice, personalized and adaptive study tools, and a curated selection of learning assets ensure STAAR success and deep comprehension for all students.

Formative Assessment Tools

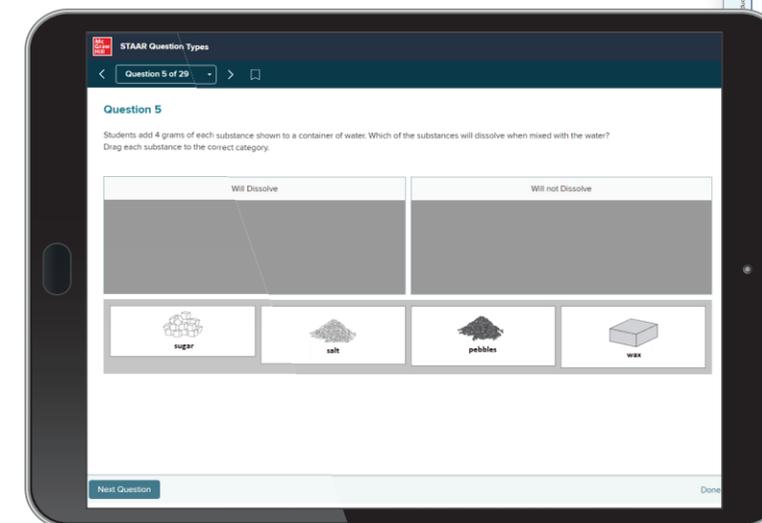
- **Chapter pre-tests** are available online to kick off lessons by evaluating current student understanding.
- **TEKS Refresh** allows you to assign students LearnSmart problems to help close foundational knowledge gaps.
- Throughout the Student's Edition, **Talk About It, Investigation Connections, and Read the Visual Literacy questions** provide guidance to help you track student comprehension.
- **Kahoot!** uses fun, game-show-like quizzes to help students review important material in an engaging way.
- **LearnSmart** for the new TEKS gives students a chance to take learning into their own hands while granting you insight into their knowledge and abilities (Grades 3–5).



TEKS Refresh

Summative Assessment Tools

- **Quick Checks and Essential Question Check-Ins** serve as exit tickets that quiz students at the end of every lesson to assess understanding—available in print and digital formats.
- **The Am I Ready? Routine** gives students the tools to check their own understanding as they prepare for upcoming tests.
- **The TEKS Assessment Guide** provides STAAR-aligned assessment questions to prepare students for the end-of-course exam.
- **Chapter tests** are available for assignment online, as are chapter review assignments to help students prepare.
- **STEM Projects** allow students to demonstrate their understanding through creative, hands-on applications of the material.



Tech-enhanced Questions

Assessment Routine

Am I Ready?

Get ready for the Lesson Review. Complete these activities. Check them off as you go!

- ☐
Interactive Word Wall Review your vocabulary words and their connections. Can you use each word in a sentence? Can you explain each word to a partner?
- ☐
Claim, Evidence, Reasoning How did the lesson activities help you write your claim, cite evidence, and support your claim with reasoning?
- ☐
PAGE KEELEY SCIENCE PROBES Revisit your response. Make a note on the probe to show how your thinking has changed.
- ☐
Review your work. Can you answer the Essential Question?

Rate Your Understanding

I'm confused.
I'm still learning.
I understand.
I can teach someone else.

Am I Ready? Routine