

# TEXAS SCIENCE

Spark Curiosity. Ignite Learning.

GRADES K-5



GRADES 6-8



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# TEXAS SCIENCE

Program Overview  
Grades 6-8

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## 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.

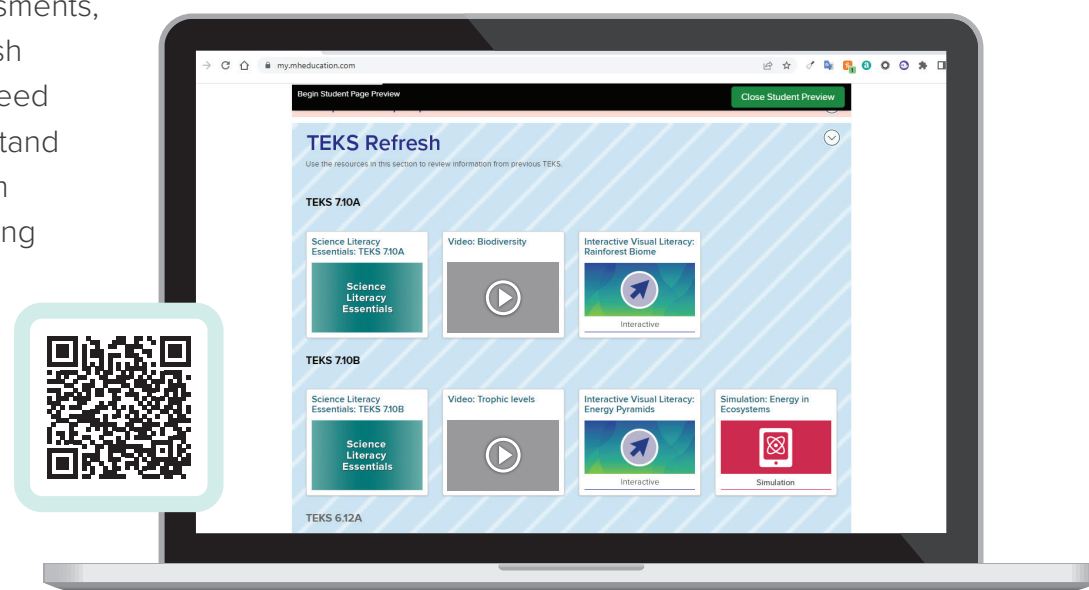
Cognitive verbs (investigate, distinguish, evaluate, etc.) help unpack complex TEKS, clearly defining the extent to which topics must be covered to meet each standard.

## TEKS Assessment Guide

Online and printable guided practice tests are available to help students prepare for state assessments. The guided practice section includes tips that help students with test taking skills and strategies. Both the guided practice section and practice test section include rigorous, high-level thinking questions in the same format and question types as the STAAR.

## 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.



Lesson 8.1 **TEKS 8.13A** Cell Structure and Function

### Lesson Overview

**Essential Question**  
What are the functions of the different parts of plant and animal cells?

**Lesson Objective**  
Students identify the function of the cell membrane, cell wall, nucleus, ribosomes, cytoplasm, mitochondria, chloroplasts, and vacuoles in plant or animal cells.

**TEKS Progression**  
**TEKS Refresh** Use this chart to review what your students have already learned and to help guide their learning as they progress in their development of their scientific knowledge. If students need support on the prior TEKS or background knowledge, refer to your TEKS refresh for resources or assign LearnSmart review assignments.

<p><b>G6</b></p> <p><b>6.13B</b> identify and compare the basic characteristics of organisms, including prokaryotic and eukaryotic, unicellular and multicellular, and autotrophic and heterotrophic</p>	<p><b>G7</b></p> <p><b>7.13B</b> describe the hierarchical organization of cells, tissues, organs, and organ systems within plants and animals</p>	<p><b>G8</b></p> <p><b>8.13A</b> identify the function of the cell membrane, cell wall, nucleus, ribosomes, cytoplasm, mitochondria, chloroplasts, and vacuoles in plant or animal cells</p>	<p><b>HS Biology</b></p> <p><b>B.5A</b> relate the functions of different types of biomolecules, including carbohydrates, lipids, proteins, and nucleic acids, to the structure and function of the cell</p>
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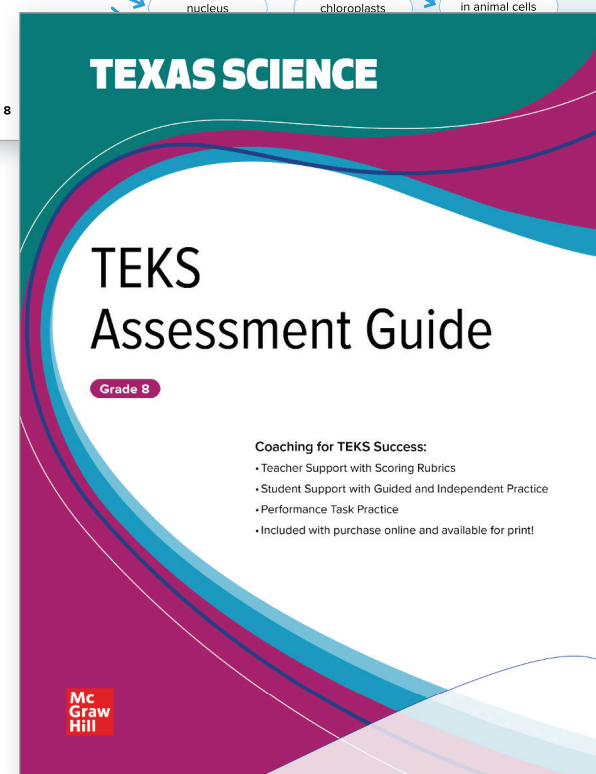
**Unpack the TEKS**  
**TEKS 8.13A** identify the function of the cell membrane, cell wall, nucleus, ribosomes, cytoplasm, mitochondria, chloroplasts, and vacuoles in plant or animal cells.  
**Understand the Cognitive Verb** To *identify* is to establish distinguishing characteristic(s).  
In this lesson, students are expected to identify the functions of the parts of plant and animal cells. It is important to cover all parts of the TEKS during instruction. This lesson is designed to teach and assess all aspects of **TEKS 8.13A**.

Identify → the function of → cell membrane, cytoplasm, cell wall, mitochondria, nucleus, chloroplasts → in plant cells, in animal cells

**TEACHER FAVORITES!**

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

**Unpack the TEKS** breaks down what's needed to effectively cover each standard.



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.

**Water Mass Observations**

Time	Mass (grams)
8:00	450
8:15	450
8:30	450
8:45	450
9:00	450
9:15	450
9:30	450
9:45	450
10:00	450

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.

**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.

Texas Science Chapter 2: Matter • TEKS Assessment Guide 7

# Learning in Three Dimensions

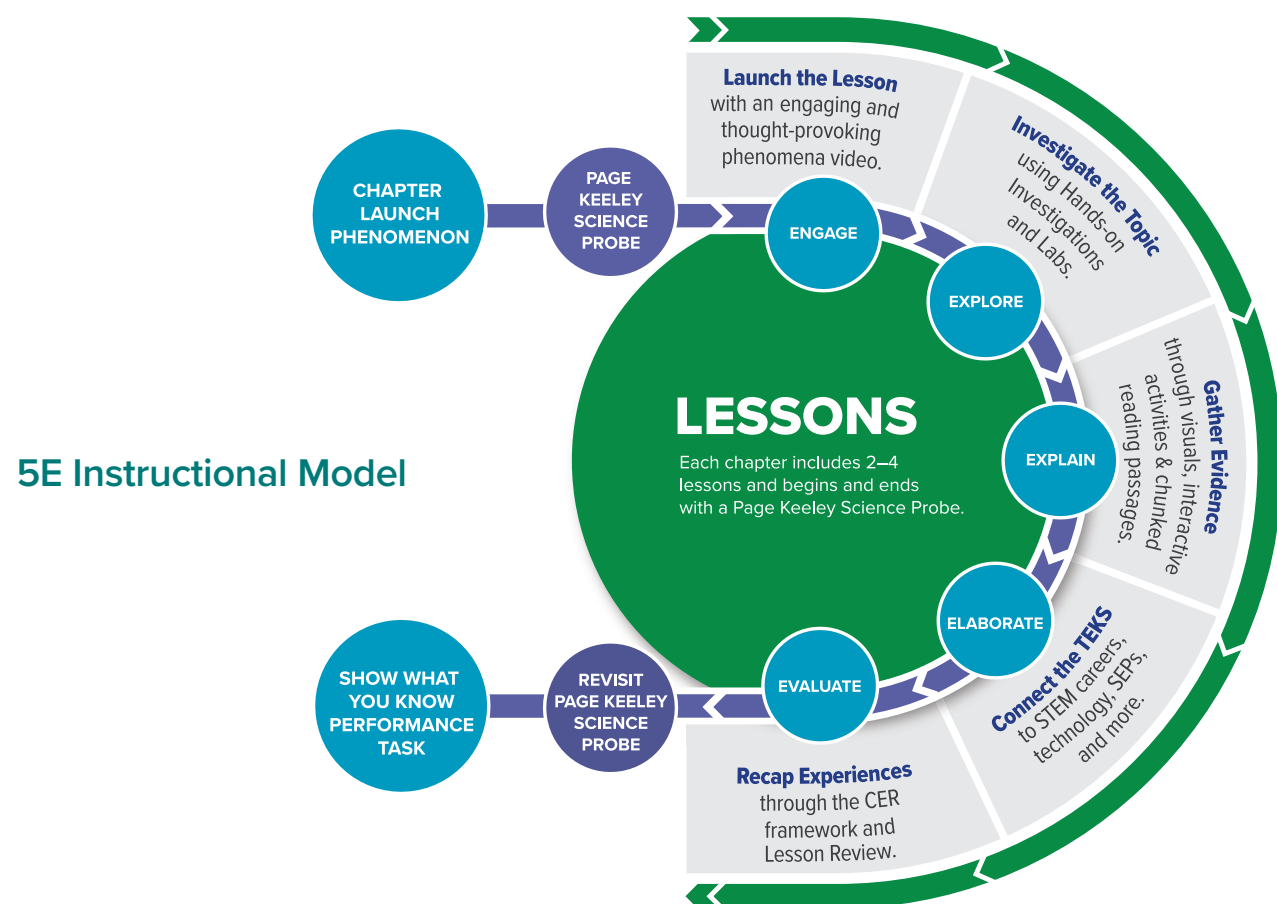
Rooted in the three-dimensional learning framework of the TEKS, *Texas Science* takes an application-based approach to learning. Each of the three dimensions—TEKS, Scientific and Engineering Practices (SEPs), and Recurring Themes and Concepts (RTCs)—work together to nurture deep, holistic understanding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

**Editable Lesson Guides** are available online for each lesson.

**Differentiation Options**  
Support students struggling with the content using the REINFORCE activities. Accelerate the lesson using the EXTEND activities.

## Plan Your Lesson TEKS 8.13A

**Essential Question:** What are the functions of the different parts of plant and animal cells?

**Lesson Objective:** Students identify the function of the cell membrane, cell wall, nucleus, ribosomes, cytoplasm, mitochondria, chloroplasts, and vacuoles in plant or animal cells.

**Lesson Language Objective:** ELPS 1D, 2C, 4F, 4G

**Looking for more differentiation options?** Find the **REINFORCE**, **EXTEND**, and **EB/EL** activities and strategies within the lesson support for differentiation support. Even more differentiation options include Science Literacy Essentials, LearnSmart, and Word Lab.

	PLAN	TEACH	ASSESS
<b>ENGAGE</b>			
<b>DAY 1</b> 45 min	<ul style="list-style-type: none"> <li>Preview Lesson Overview</li> <li>Build Interactive Word Wall frame</li> <li>Plan for Quick Launch activity</li> <li>Preview Page Keeley Science probe and strategy</li> </ul>	<b>35 min</b> <ul style="list-style-type: none"> <li>Quick Launch activity and video</li> <li>Discuss activity and video</li> </ul>	<b>10 min</b> <ul style="list-style-type: none"> <li>Assess prior knowledge and misconceptions with <i>Cell Parts</i></li> </ul>
<b>EXPLORE/EXPLAIN</b>			
<b>DAY 2</b> 45 min	<ul style="list-style-type: none"> <li>Preview Lesson Foldable</li> <li>Assign Student Edition and if needed, Science Literacy Essentials or leveled ebook</li> <li><b>Differentiation</b> Review differentiation support from Instructional Options</li> </ul>	<b>35 min</b> <ul style="list-style-type: none"> <li>Read <i>Types of Cells</i></li> <li>Read <i>Cell Size, Shape, and Movement</i></li> <li>Visual Literacy—Read the Diagram</li> <li>Add to the Interactive Word Wall</li> </ul>	<b>10 min</b> <ul style="list-style-type: none"> <li>Gauge understanding with provided questions</li> <li>Use Apply It questions to check for understanding</li> <li>Exit Ticket options</li> <li><b>Differentiation</b> Assign LearnSmart for review or remediation</li> </ul>
<b>DAYS 3-4</b> 90 min	<ul style="list-style-type: none"> <li>Preview Explore Lab and Anytime Lab video</li> <li>Gather lab materials</li> <li>Preview video <i>Making Keratin</i></li> <li>Assign Student Edition and if needed, Science Literacy Essentials or leveled ebook</li> </ul>	<b>80 min</b> <ul style="list-style-type: none"> <li>Read <i>Cell Organelles</i></li> <li>Explore Lab: <i>Engineer a Cell</i></li> <li>Play <i>Making Keratin</i></li> <li>Update Explore Lab CER chart</li> <li>Add to the Interactive Word Wall</li> </ul>	<b>10 min</b> <ul style="list-style-type: none"> <li>Gauge quest</li> <li>Use A under</li> <li>Exit T</li> <li><b>Differ</b> review</li> </ul>
<b>ELABORATE</b>			
	<ul style="list-style-type: none"> <li>Preview Science Background information</li> <li>Preview virtual career fair <i>Studying</i></li> </ul>	<b>10 min</b> <ul style="list-style-type: none"> <li>STEM Career: <i>Diagnosing Faulty Mitochondria</i></li> <li><b>Write About It</b> Make connections between a faulty organelle and a condition associated with it.</li> </ul>	<b>10 min</b> <ul style="list-style-type: none"> <li><b>THEM</b></li> <li>Te</li> </ul>
			<b>25 min</b> <ul style="list-style-type: none"> <li>Revis</li> <li>Re</li> <li>Revis</li> <li>Assign</li> </ul>

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

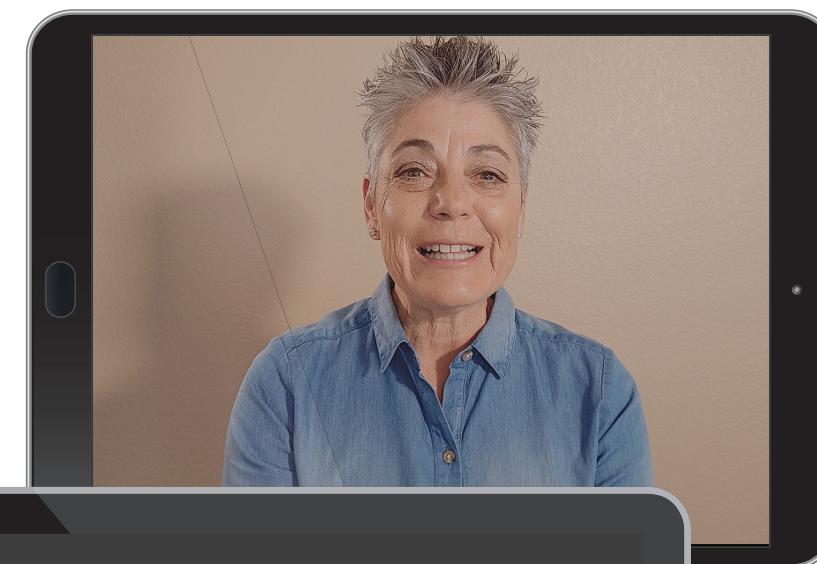
**DIGITAL FEATURE!**

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



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

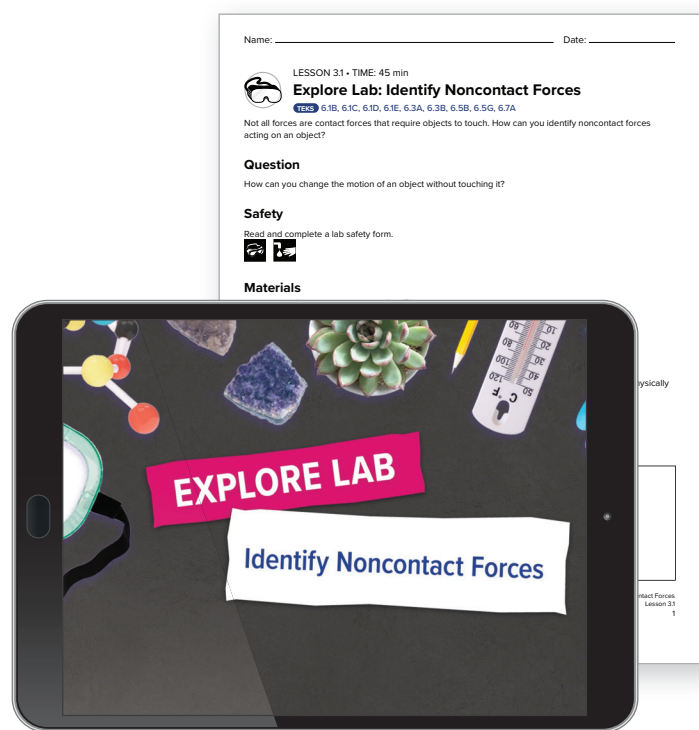
**Professional Development Videos** offer tips, teaching best practices, and guidance for getting the most out of *Texas Science* in your classroom.



# 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 Lab 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.



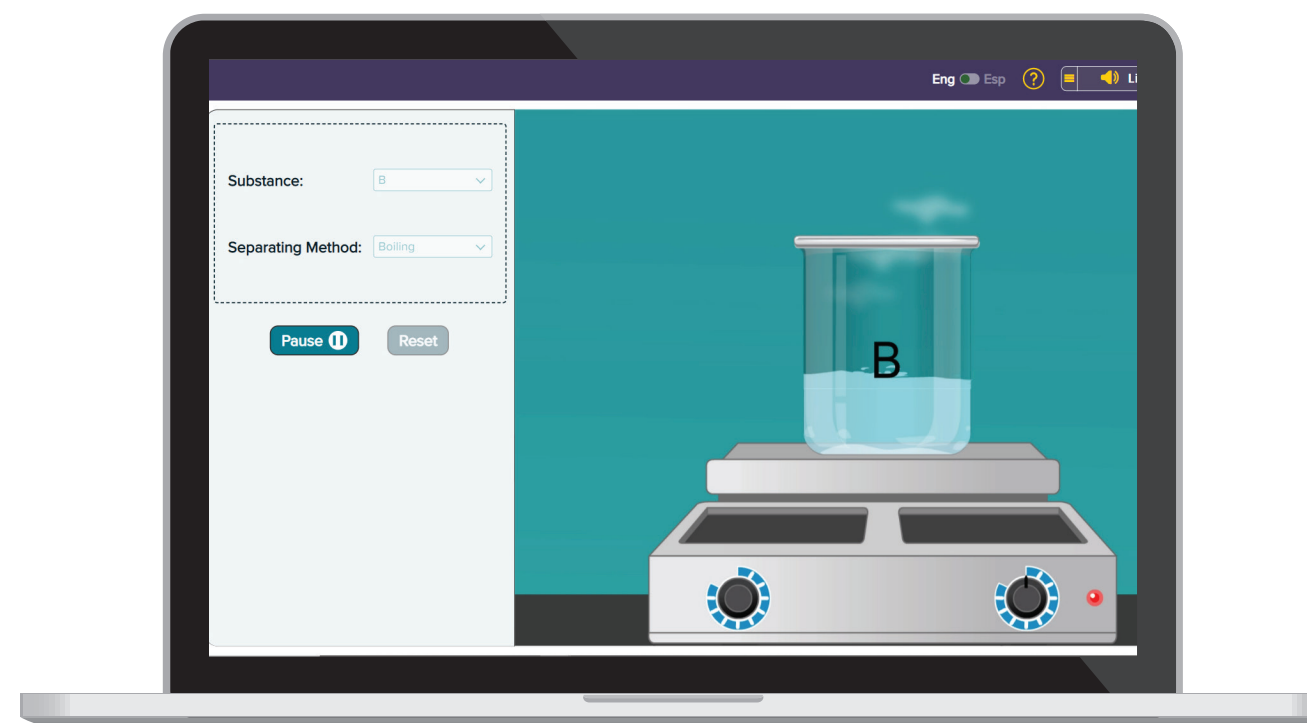
Hands-On Investigation



Credit is: zizou7/Shutterstock

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.
- **Quick Launch Labs** introduce lessons with hands-on activities, giving students the chance to ask questions as they explore new concepts.
- **Teacher-driven Quick Demos** spark student curiosity and encourage them to ask questions and find explanations.
- **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.



# 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 Visual Literacy

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.



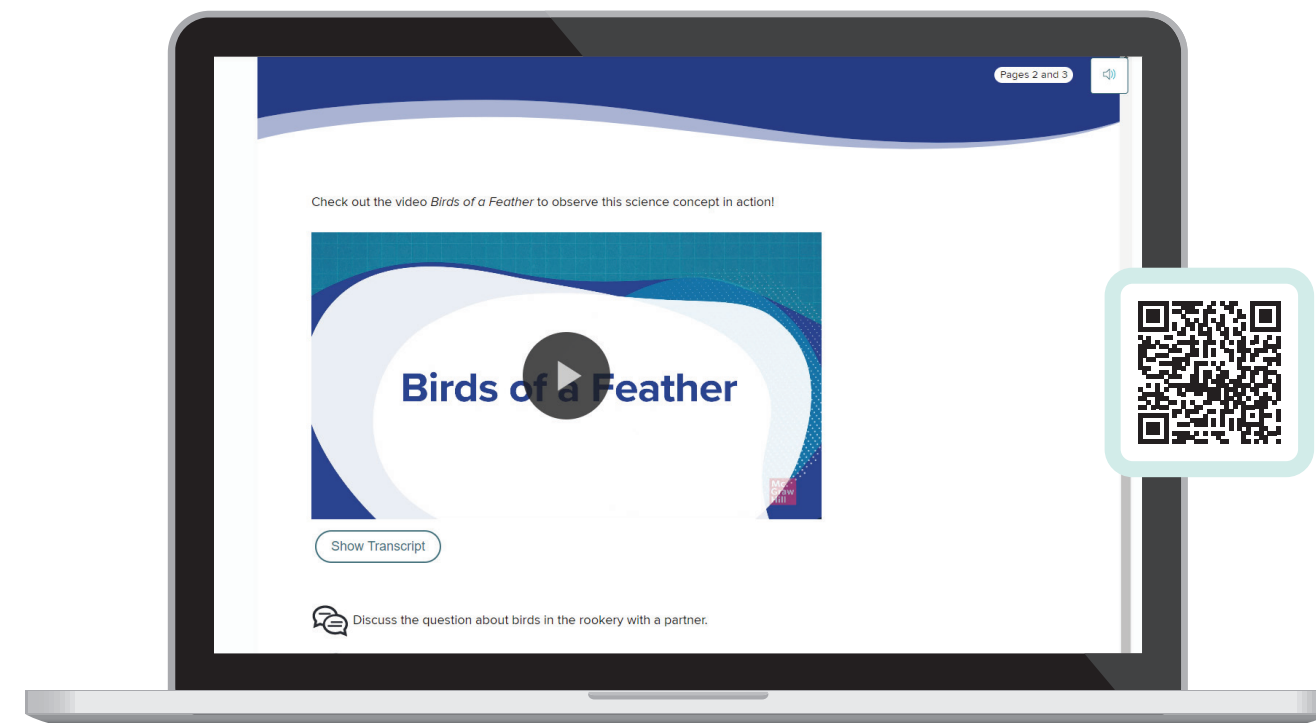
### Word Labs

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

# Unlock a New Era of Learning: The 6–8 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 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




# Generate Next-Level Discovery: The 6–8 Print Student Experience

When students model scientific phenomena, they learn to dissect and make meaning out of complex science ideas. As topics grow more complicated throughout middle school, these powerful visuals become even more critical to the learning experience.

**Recall** What are some environments in which extremophiles might live?

Hot springs, salt lakes, seafloors near hydrothermal vents.



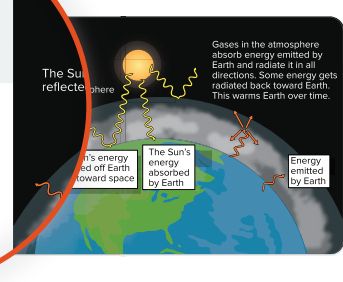
**Protective Atmosphere**  
Earth's moon receives about the same amount of sunlight as Earth. Yet conditions on the surface of the Moon are more extreme than they are on Earth. The Moon's surface temperature can rise to 100°C during the day and drop to -150°C at night. Temperatures are extreme on the Moon because the Moon, unlike Earth, does not have an atmosphere.

**Sustains Temperatures** Earth's atmosphere is like a blanket around Earth. It absorbs sunlight during the day and keeps heat from escaping into space during the night. Greenhouse gases in the atmosphere trap heat from the Sun, maintaining Earth's average surface temperature at a habitable 15°C. The natural process that occurs when certain gases in the atmosphere absorb and reradiate thermal energy from the Sun is known as the **greenhouse effect**. Gases such as carbon dioxide and water vapor trap heat in a similar way to the way that a blanket keeps you warm when you are feeling chilly.

Some planets have what is known as a runaway greenhouse effect. This occurs when the atmosphere is so absorbent that energy is radiated back to the surface of the planet. Venus has a runaway greenhouse effect.

**Infer** How does Earth's atmosphere maintain the surface temperature?

The atmosphere traps the outgoing energy released from Earth's surface.



**Radiation Absorption** Have you ever spent the day outside playing soccer and come home with a painful sunburn? Sunburns are caused by the Sun's ultraviolet light. Even though you cannot see ultraviolet light, you can feel its effects. The ozone layer, made up of the greenhouse gas ozone (O<sub>3</sub>), forms a protective layer around Earth that absorbs most of the Sun's ultraviolet radiation. The atmosphere also helps protect Earth from highly charged particles that erupt from the Sun, as well as X-rays and other potentially harmful energy from the Sun.

**Relate** Return to the beginning of the chapter and review the chapter question about solar system objects in the night sky. Read the paragraphs about *Protective Atmosphere* again. Underline text that connects to the chapter question.

**Air We Breathe** Earth's atmosphere is mostly made of nitrogen, but there are other gases that life depends on for survival. Much of life on Earth relies on oxygen and carbon dioxide. Plants release oxygen through photosynthesis, and we breathe it. Earth's atmosphere is mostly made of nitrogen, but there are other gases that life depends on for survival.

**Composition of Earth's Atmosphere**


Gas	Percentage
Nitrogen	78.08%
Oxygen	20.95%
Argon	0.93%
Carbon dioxide	0.038%
Trace gases	0.04%

**Read the Graph** Circle the element that humans depend on the most for survival.

**Life Science** Cyanobacteria evolved to use photosynthesis, leading to their output of oxygen into the atmosphere. Cyanobacteria evolved to use photosynthesis, leading to their output of oxygen into the atmosphere.

Check out the video *A Warm Blanket* to explore how the atmosphere protects us and keeps us warm.

Now reflect on the ways the atmosphere allows life to exist on Earth. Record your responses in your Science Notebook.



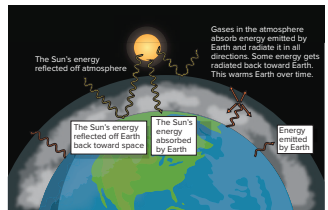
Enhanced Science Probe Visuals connect relatable science scenarios to Page Keeley's Formative Assessment Probes.

**Protective Atmosphere**  
Earth's moon receives about the same amount of sunlight as Earth. Yet conditions on the surface of the Moon are more extreme than they are on Earth. The Moon's surface temperature can rise to 100°C during the day. It can drop to -150°C at night. Temperatures are extreme on the Moon because the Moon, unlike Earth, does not have an atmosphere.

**Sustains Temperatures** Earth's atmosphere is like a blanket around Earth. It absorbs sunlight during the day, it keeps heat from escaping into space during the night. Greenhouse gases in the atmosphere trap heat from the Sun. This maintains Earth's average surface temperature at 15°C. The natural process that occurs when certain gases in the atmosphere absorb and reradiate thermal energy from the Sun is known as the **greenhouse effect**. Gases such as carbon dioxide and water vapor trap heat. This is similar to the way that a blanket keeps you warm when you are feeling chilly. Some planets have what is known as a runaway greenhouse effect. This occurs when the atmosphere is so absorbent that energy is radiated back to space from the upper atmosphere and not the surface of the planet. Venus has a runaway greenhouse effect.

**Tips** provide support for students at point of use.

**TIP** The yellow arrows show the path of energy from the Sun. The orange arrows show the path of energy emitted by Earth.



**4. Interpret the Diagram** What happens to the Sun's energy when it reaches Earth? What happens to the energy that is absorbed by Earth?

**Life on Other Planets**  
A group of friends heard scientists are looking for life on other planets. They wondered what scientists are looking for to find out if life exists beyond Earth. They texted each other their ideas.



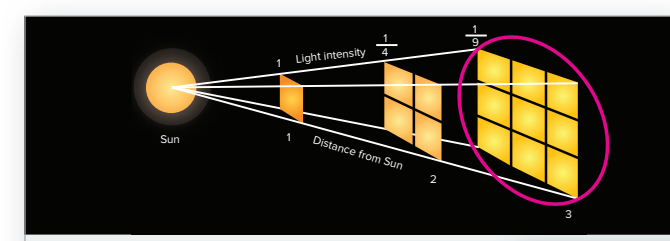
Who do you think has the best idea? Explain your thinking. Record your answer in your Science Notebook.

Lesson 4.3 TEKS 7.9C Characteristics for Life ENGAGE 167

Science Literacy Essentials pair leveled text with enhanced visuals so students have multiple avenues to access grade-level information.

Enhanced Reading with Purposeful Visuals feature chunked text with “speed bump” questions, engaging visuals, and embedded data analysis opportunities—giving students multiple ways to make sense of each TEKS topic.

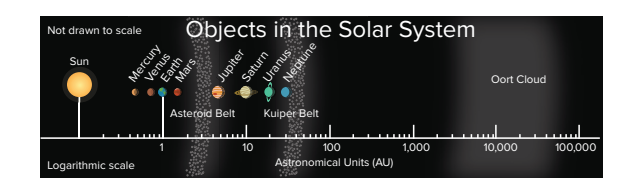
Visual Assessment Items in Lesson Reviews, Chapter Wrap-Ups, and TEKS Assessment Guides give students opportunities to make meaning from pictures and practice for the STAAR.



**Interpret the Diagram** Circle the area that receives the least amount of energy from the Sun. How does this explain why the Sun has a habitable zone?

Energy from the Sun is not equally spread out. Light intensity decreases as distance from the Sun increases and increases the closer you are to the Sun.

7. Observe the following diagram of the objects in the solar system.  
TEKS 7.2A, 7.3A, 7.9A



- Select the statement that is correct.
- A The Oort Cloud is located beyond the Kuiper Belt and extends up to 100,000 AU from the Sun.
  - B The Kuiper Belt is donut-shaped and is located next to Jupiter.
  - C The asteroid belt is located between Uranus and Neptune.
  - D The planets in our solar system include Earth, Mars, Jupiter, Saturn, Uranus, and the Sun.



# 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"> <li>• Model extracting information from graphics.</li> <li>• Focus questions on specific aspects of information to reduce the distractions of all the data.</li> <li>• Have students construct data tables and graphics so they see how these are developed.</li> </ul>	<ul style="list-style-type: none"> <li>• Students' correct use of information from graphics</li> <li>• Students' comparing information in the text to the visual information</li> </ul>
Vocabulary is interfering with understanding	<ul style="list-style-type: none"> <li>• Identify words that require pre-teaching and focus on pronunciation and meaning.</li> <li>• Identify words that can be solved using context or word parts and focus on word-solving skills.</li> <li>• Develop a conceptual word bank so that students track their understanding of new terminology.</li> </ul>	<ul style="list-style-type: none"> <li>• Students' expanding vocabulary as they use the target terms in their speaking and writing</li> <li>• Students' word-solving skills as they use context and word parts to determine word meanings</li> </ul>

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

**Tips** provide support for students at point of use.

**Science Literacy Essentials** are also available in Spanish!

**PROGRAM FEATURE!**

The screenshot shows a page from the Science Literacy Essentials with the following elements:

- Apply It:** Question 7: Explain. After conducting several investigations, Mendel was able to conclude that a smooth seed is a dominant trait in pea plants. How does a cross between two plants with smooth peas result in offspring with the wrinkled pea trait? (Includes a writing box)
- Need help answering this question?:** Reread the paragraphs in the *Dominant and Recessive Traits* section. Focus on the description and explanation of recessive factors.
- Determining Inheritance:** Mendel analyzed the results of his experiments. He concluded that two genetic factors control each inherited trait. He also proposed that when organisms reproduce, each reproductive cell, sperm or egg, contributes one factor for each trait. What are these factors? And how are they passed from parents to offspring? (Includes a writing box)
- Chromosomes:** Other scientists studied the parts of a cell. They combined Mendel's work with their work. As a result, these genetic factors were better understood. Scientists discovered that inside each cell is a nucleus. It contains threadlike structures called chromosomes. These are made of deoxyribonucleic acid, or DNA. A **chromosome** is a DNA-containing structure that carries genetic material from one generation to another. (Includes a writing box)
- Academic Vocabulary:** conclude (verb) to reach a logically necessary end by reasoning (Includes a writing box)
- TIP:** Remember that a parent plant that expresses a dominant trait may have either one or two dominant factors.
- TIP:** Note that the lines to the chromosome show that this is one of many chromosomes in the nucleus of a cell. The lines to the gene show that a gene is part of a chromosome.
- History Connection:** How did scientists discover DNA? Rosalind Franklin and Maurice Wilkins were scientists who used X-rays to study DNA. James Watson and Francis Crick used the information about DNA to build a model of DNA. Watson worked with scientist Francis Crick to build a model based on Franklin's and Wilkins' X-rays. The model showed that smaller molecules of DNA bond together and form a double helix.
- Genes and Alleles:** Scientists have discovered that each chromosome carries information about hundreds or even thousands of traits. A section on a chromosome that has genes for one trait. For example, a gene of a pea plant might carry information about flower color. Recall that an offspring inherits two genes (factors) from one from each parent. The genes can be the same color. An example is purple or white for pea flower color. Two forms of a gene are called an **allele** (uh-LEE). Pea plants have two purple alleles, two white alleles, or one of each. Examples are flower color, pod shape, and stem length.
- Write About It:** What is the relationship between chromosomes and genes? (Includes a writing box)

**Science Literacy Essentials** include visual supports to enhance learning for all types of learners.

**Write About It!** gives students opportunities to show their understanding with rigorous open-response questions.



# 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 *abi-* and has the root *bio*.

- *abi-* 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?

<b>Prior Knowledge</b>	<b>Scientific and Engineering Practices</b>
consumer ecosystem energy flow of energy	<ul style="list-style-type: none"> <li>• use tools to observe</li> <li>• develop and use models</li> <li>• identify patterns in data</li> </ul>
<b>Science Tools</b>	
computer	

2. What words are highlighted in the lesson?

<b>Lesson Vocabulary</b>	predator prey
consumer decomposer food web	

**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?

<b>Cognates</b>	<b>Word Origin</b>
<b>plant / planta</b> producer / productor <b>consumer / consumidor</b>	<b>Consumer</b> comes from the Latin <i>consumere</i> , meaning "to take up." <b>Prey</b> comes from the Latin <i>prehendere</i> , which means "to grasp" or "to seize."
<b>Word Parts</b>	<b>Related Words</b>
<b>Decomposer</b> 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 <b>food web</b> 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? <b>Sample answer:</b> one organism in a food web can connect to many organisms; one point in a spider web connects to many others

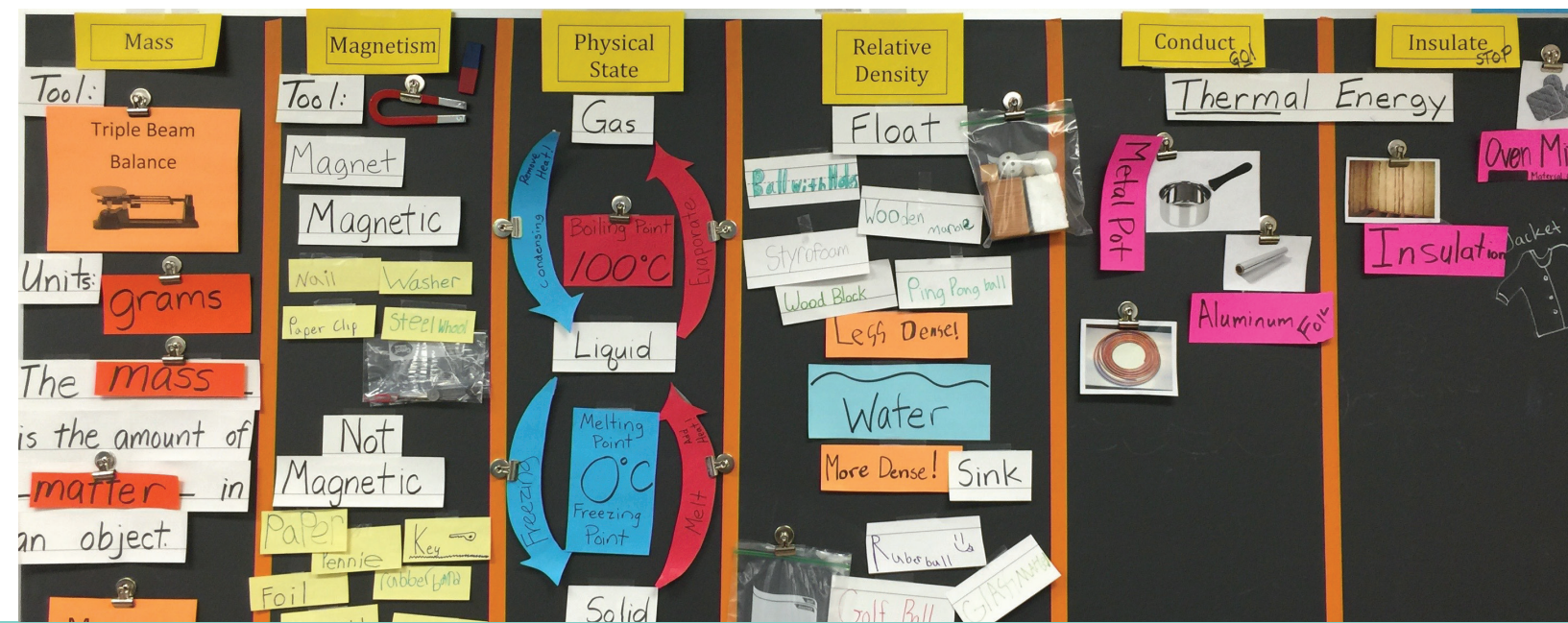
**Total Physical Response**

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.

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

**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 TEKSperks

## Documenting Discoveries with Dinah Zike's Notebooking Strategies



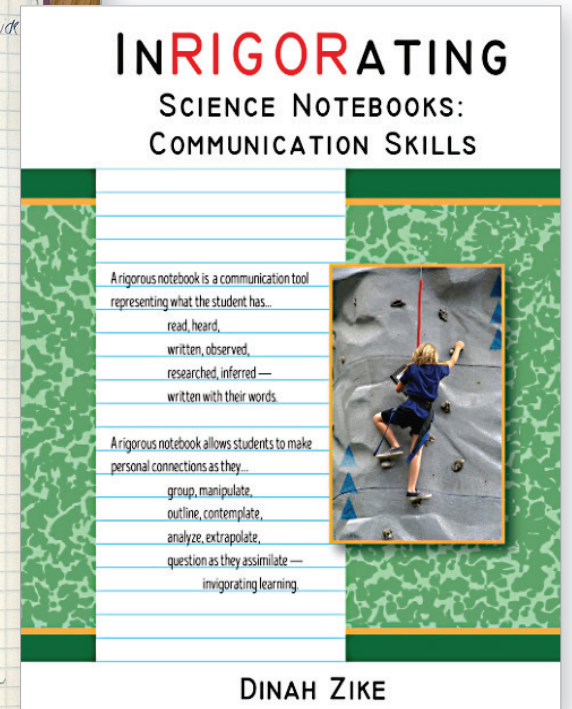
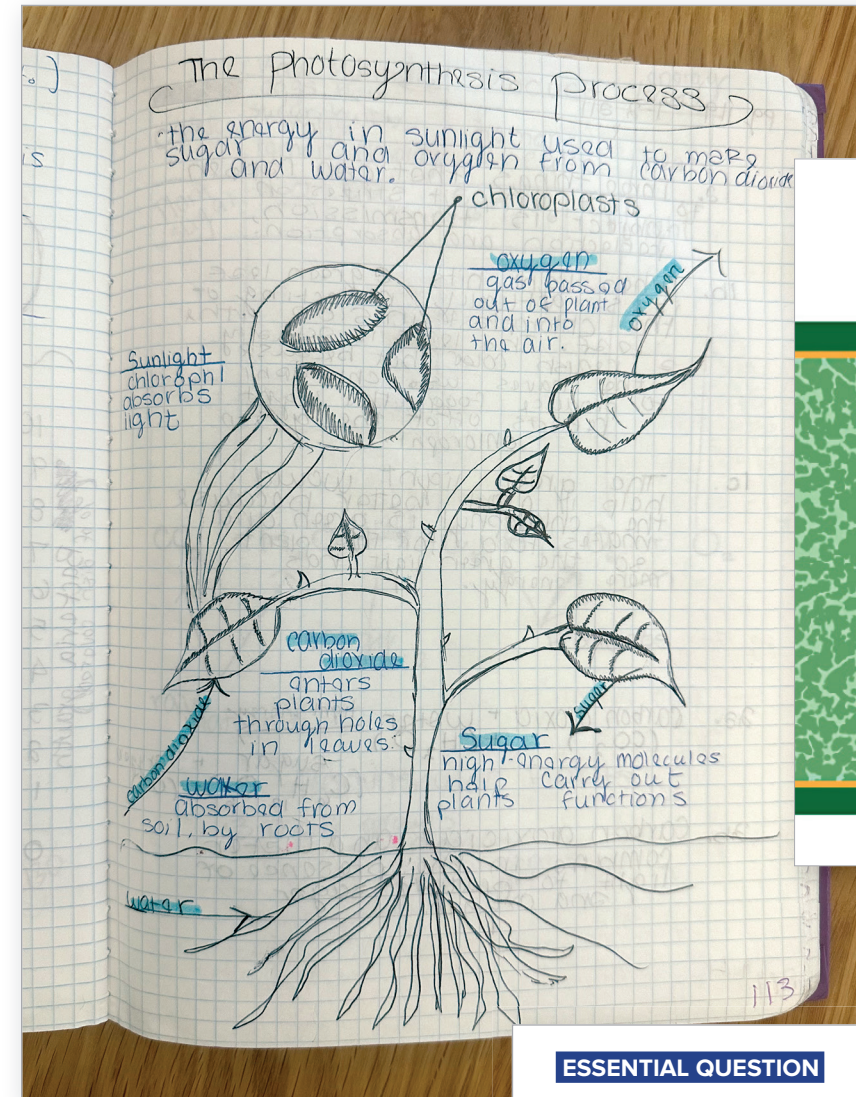
Science takes on greater meaning when it is written down. Through the process of writing, we can reflect upon and eventually build on our discoveries. With carefully designed, intuitive notebook activities created by award-winning author, educator, and inventor Dinah Zike, students join generations of 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**
- **Claim, Evidence, Reasoning (CER)** writing prompts



Dinah's new book, *InRIGORating Science Notebooking*

### Create Your **FOLDABLES**

Use one sheet of notebook paper to make a 2-Tab horizontal Foldable. Under the tabs, describe genes and explain how they determine what traits are inherited by offspring from their parents.

Function of Genes

Inherited Traits

Cells and Inherited Traits

Foldables

**Sentence Stems and Frames** help teachers scaffold for all students' writing abilities.

**ESSENTIAL QUESTION**

**What are the different types of relationships between organisms?**

**Notebooking** Have students record the Essential Question in their Science Notebooks. Suggest they add a tab for easy reference back to this question. Use these sentence stems to facilitate a discussion about how the Quick Launch relates to the Essential Question.

The relationship between organisms was \_\_\_\_.

I found that when \_\_\_\_ happened, it caused \_\_\_\_.

One question I have is \_\_\_\_.

Make note of any misconceptions or questions students have and plan to address them throughout the lesson.

**Science Mindset** Encourage student independence by prompting students to answer the Essential Question on their own prior to working with others. This encourages accountability for one's own learning.

# 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.



### Bunnies

Melissa's pet rabbit had a litter of bunnies. The mother rabbit was white and the father rabbit was black. Four bunnies were black and two bunnies were white. Melissa posted a photo of two of the bunnies on social media. Her friends had different ideas about the color of the bunnies.



**Melissa**  
Arlington, TX

38 Likes

**Melissa** My black male pet rabbit and my white female pet rabbit had a litter of bunnies. There are all sorts of colors! ❤️

**Troy** There are more bunnies with black fur than white because males have stronger traits. 🐰

**Camila** The bunnies inherited more traits from the father than from the mother.

**Kai** They inherited half their trait for fur color from their mother and half from their father. 🐰

**Melissa** I was thinking they inherited more traits for black fur color than white.

 Who do you think has the best idea? Explain your thinking. Record your answer in your Science Notebook.

Lesson 8.2 TEKS 8.13B Cells and Inherited Traits • ENGAGE 319

Social Media Inspired Probe



### Earth's Spheres


Tricia's teacher told the class they would be visiting an exhibit at the museum to learn about Earth's spheres. Tricia and her friends wondered what their teacher meant by "Earth's spheres". They each had a different idea.




**Tricia:** I think it's another way to describe the layers of Earth.

**Marisol:** I think it's about different systems that interact on Earth.

**Caleb:** I think it's about the planets that are closest to Earth.

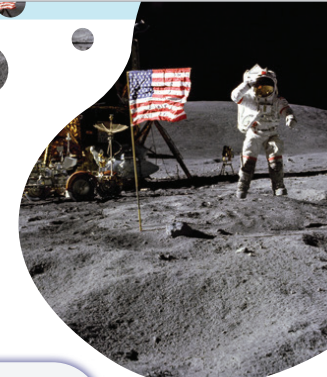
 Who do you think has the best idea? Explain your thinking. Record your answer in your Science Notebook.

Lesson 4.1 TEKS 7.9B Gravity and Motion • ENGAGE 139



### Going to the Moon


Mason was excited to learn that astronauts would be going back to the Moon. He texted his friend to get their reaction:



**Mason**  
Hey, did you know that astronauts are getting ready to go back to the Moon?

**Talulah**  
They'd better wear heavy moon boots because there is no gravity in space.

**Mason**  
What? I thought gravity exists everywhere, including in space.

 Who do you think has the best idea about gravity? Explain your thinking. Record your answer in your Science Notebook.

Lesson 4.1 TEKS 7.9B Gravity and Motion • ENGAGE 139

Texting Conversation Probe

# 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. <b>ELPS 1A</b>	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. <b>ELPS 3E</b>	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. <b>ELPS 5B</b>

### 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  genetic recombination / recombinación genética codominance / codominancia epistasis / epistasia	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)

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

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

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

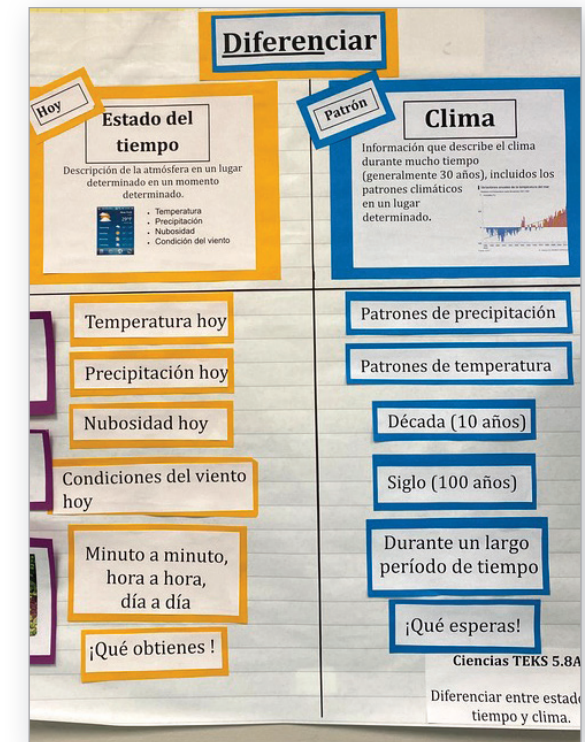
### Spanish Language Transfer

gives you information to better support emergent-bilingual students.

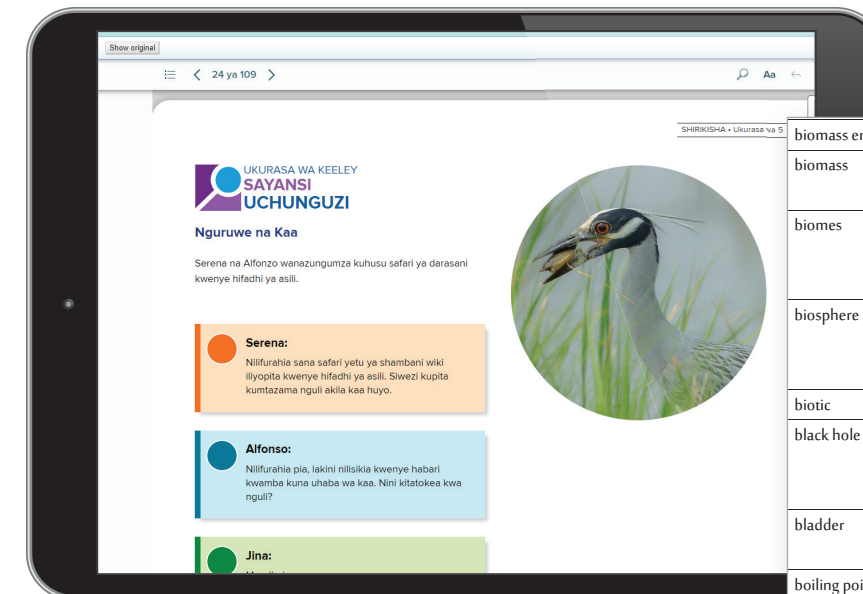
## Reading Comprehension and Multilingual Support

*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 in print and online are **authentically translated to Spanish** including Hands-On Labs and simulations pages, online simulations, videos and more!



Spanish Interactive Word Wall



Google Translate

biomass energy	طاقة الكتلة الحيوية	وبية كالخشب والكحول.
biomass	الكتلة الحيوية	ت والحيوانات، مثل الخشب والنفط.
biomes	المواطن البيئية	ت الظروف المناخية والنظام والغازات الموسمية المعتدلة تية المحطرة والمراعي.
biosphere	الغلاف الحيوي	مثل ذلك الجزء العلوي من طق التي بها مياه على سطح
biotic	الحيوية	با.
black hole	الثقب الأسود	ميت تتفجر كتلة المركز مخلفة لا يمكن حتى للضوء الإفلات
bladder	المثانة	أن يخرجها الجسم عبر مجرى
boiling point	نقطة الغليان	خار المسائل مساوياً للضغط
brain stem	جذع الدماغ	لدماغ الأوسط والجسرونخاع
breaker	الموجة المتكسرة	تم تكسر على الشاطئ.

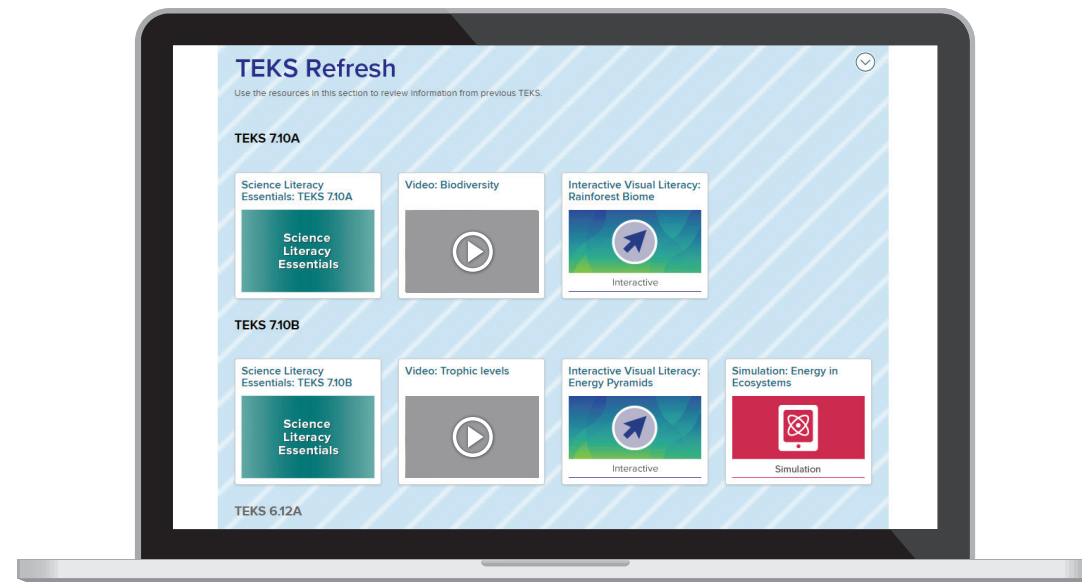
Multilingual Glossary

# 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

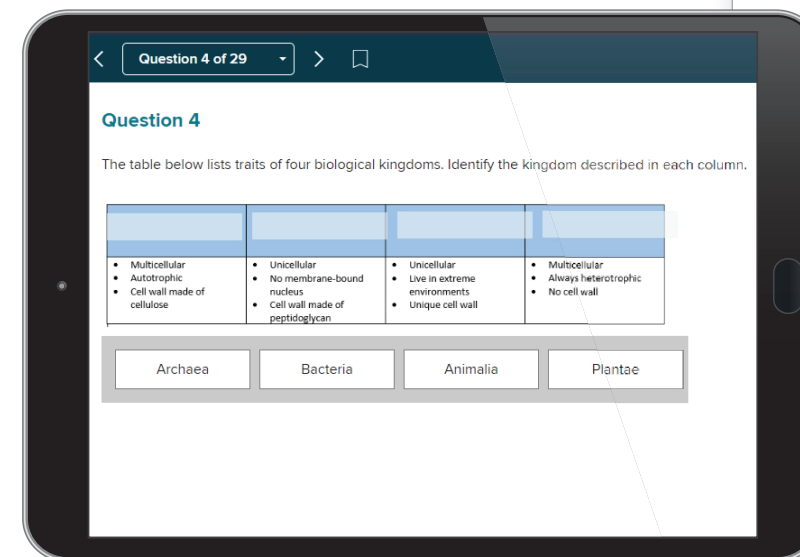
- **Chapter pre-tests** are available online to kick off lessons by evaluating current student understanding.
- **Page Keeley Formative Assessment Science Probes** help illuminate students' preconceptions about a topic and provide a measure of growth at the end of each lesson.
- **TEKS Refresh** allows you to assign students LearnSmart problems to help close foundational knowledge gaps.
- Throughout the Teacher's Edition, **Apply It Activities** 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 adaptive learning technology** for the new TEKS gives students a chance to take learning into their own hands while granting you insight into their knowledge and abilities.



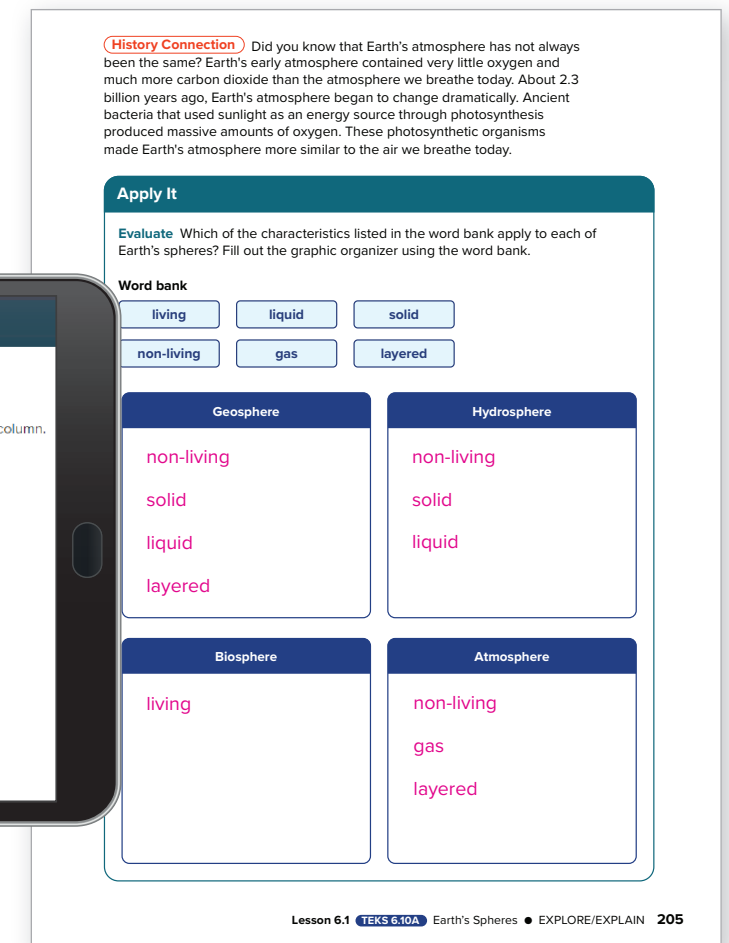
TEKS Refresh

## Summative Assessment Tools

- **Exit Tickets** quiz students at the end of every lesson to assess understanding—available in print and digital formats.
- **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.
- **Lesson Quizzes** in the student edition and online help teachers access students' knowledge and skills from the lesson.



Tech-Enhanced Items



Apply It Activities