Mc Graw Hill

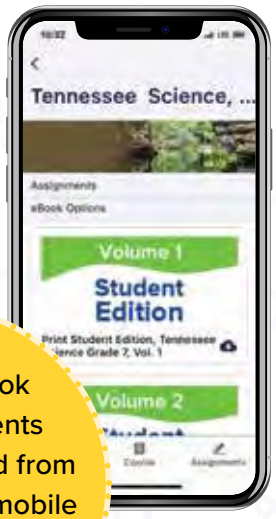
Program Overview
Grades 6–8

Tennessee Science

Welcome to *Tennessee Science* 6–8

Engaging, Flexible, Cross-Curricular Learning

Tennessee Science provides an in-depth, collaborative, project-based learning experience designed to engage students, empower them to ask questions, and learn to think critically. Designed with the Tennessee Academic Standards for Science in mind, *Tennessee Science* provides the structure for students to develop a solid background of foundational science knowledge while they learn to practice problem solving and critical thinking skills inherent in science.



Student eBook and assignments can be accessed from anywhere on a mobile device using the K–12 Portal App!

Tap Into and Extend Student Curiosity

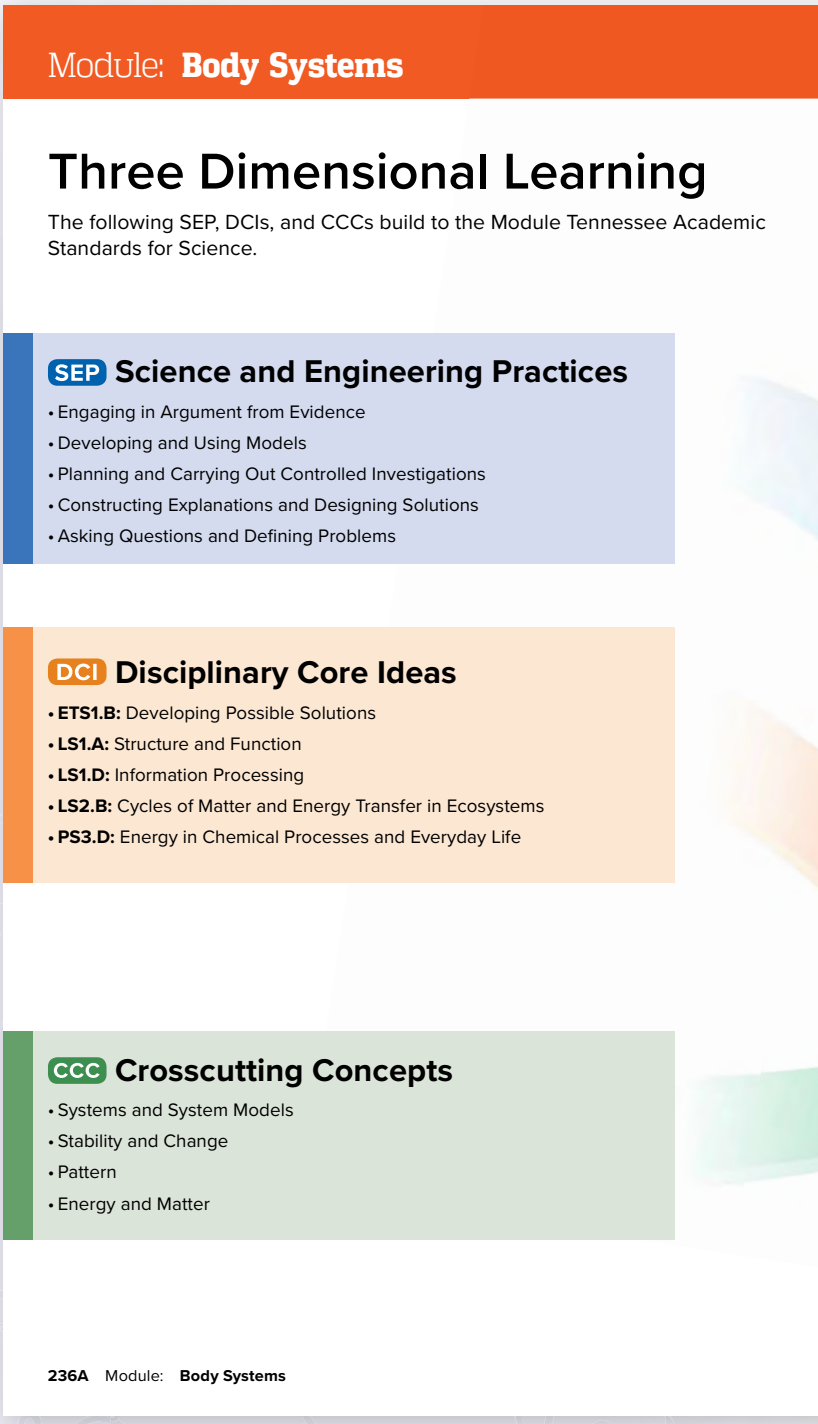
Middle school students have a wealth of new experiences competing for their attention which can lead to challenges with learning engagement. With *Tennessee Science*, each module and lesson are designed with student interest and curiosity in mind. When fueled by curiosity, students look to the world around them through the investigation of real-world phenomena in interesting, innovative, and hands-on ways. A new generation of innovators is ready to take on today's challenges to become tomorrow's scientists.

Designed for the Rigor of the Tennessee Academic Standards for Science

Tennessee Science ensures that Tennessee educators have the resources and tools to deliver high-quality instruction to help students meet the rigor and challenge of the Tennessee Academic Standards for Science.

Comprehensive Tennessee Academic Standards for Science Planning

At the beginning of each module, Tennessee Academic Standards for Science codes and descriptions help teachers quickly see performance expectations addressed in the module.



Module: **Body Systems**

Three Dimensional Learning

The following SEP, DCIs, and CCCs build to the Module Tennessee Academic Standards for Science.

SEP Science and Engineering Practices

- Engaging in Argument from Evidence
- Developing and Using Models
- Planning and Carrying Out Controlled Investigations
- Constructing Explanations and Designing Solutions
- Asking Questions and Defining Problems

DCI Disciplinary Core Ideas

- **ETS1.B:** Developing Possible Solutions
- **LS1.A:** Structure and Function
- **LS1.D:** Information Processing
- **LS2.B:** Cycles of Matter and Energy Transfer in Ecosystems
- **PS3.D:** Energy in Chemical Processes and Everyday Life

CCC Crosscutting Concepts

- Systems and System Models
- Stability and Change
- Pattern
- Energy and Matter

236A Module: **Body Systems**

Tennessee State Academic Standards for Science. https://www.tn.gov/education/districts/academic-standards.html

Tennessee Academic Standards for Science

7.ETS1.1 Examine a problem from the medical field (e.g., prosthetic limbs, organ transplants) and design a solution taking into consideration the criteria, constraints, and relevant scientific principles of the problem that may limit possible solutions.

7.LS1.1 Develop models that identify and explain the structure and function of major cell organelles and structures (i.e., vacuoles, chloroplasts, lysosomes, mitochondria, cell membrane, cell wall, nucleus, cytoplasm) as they contribute to the life activities within a system.

7.LS1.2 Obtain information about the cellular structures of unicellular and multicellular organisms across kingdoms and domains in order to compare how these structures support the functions (i.e., obtain food, water, waste disposal, and the environment in which they live) of the organism.

7.LS1.3 Develop and use a hierarchical model of a multicellular organism to explain that the body of humans and other animals is a system of multiple interacting subsystems specialized for particular body functions [e.g., digestion, respiration, excretion, circulation, sensation (nervous and integumentary), locomotion (musculoskeletal), reproduction, and immunity.

7.LS1.5 Obtain and communicate information to provide evidence that illustrates the causal relationships between information received by sensory receptors and behavior, both immediate and over longer time scales.

7.LS2.1 Develop a model to depict the cycling of matter, including carbon and oxygen, and the flow of energy among biotic and abiotic parts of an ecosystem.

7.PS3.2 Develop a model to explain how food is utilized through chemical reactions to form new molecules that support growth, resulting in the release of energy as matter moves through an organism.

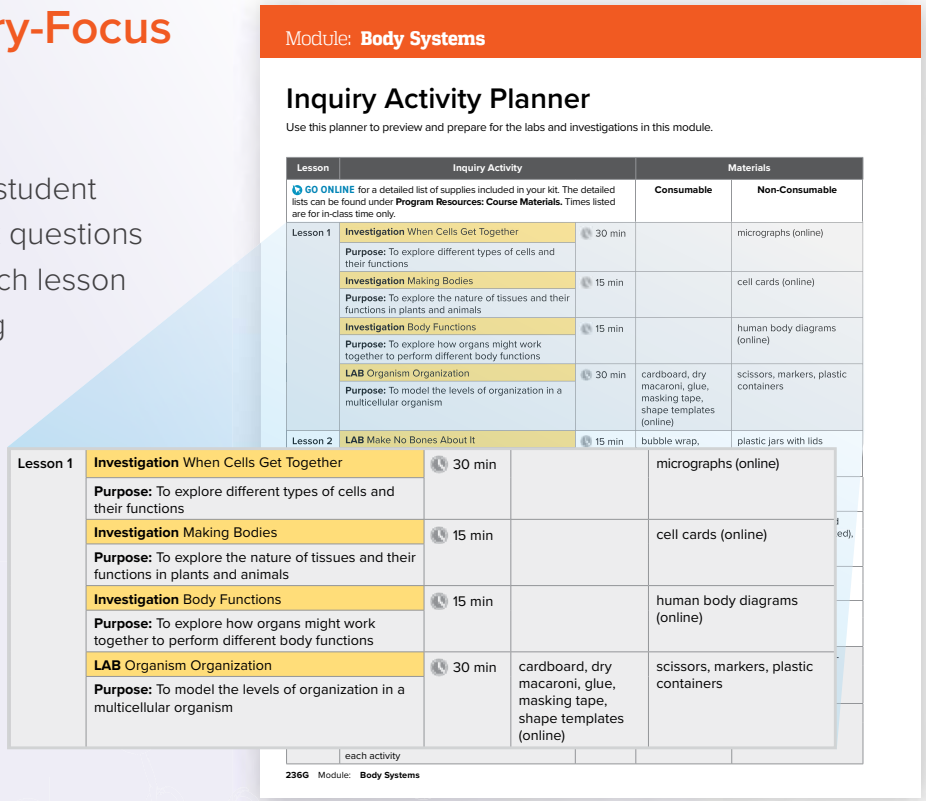
CROSS-CURRICULAR Connections

In addition to in-depth coverage of the three dimensions, this module also covers connections to Physical Science, Engineering, History, Math, Reading, and Writing topics.

Module: **Body Systems 236B**

Designed for an Inquiry-Focus for Proficiency

Tennessee Science is infused with inquiry-based learning to capture student interest and empower them to ask questions and think more critically. Within each lesson are multiple inquiry-based learning opportunities designed to give students the practice they need to achieve proficiency and succeed with science and engineering practices.



Module: **Body Systems**

Inquiry Activity Planner

Use this planner to preview and prepare for the labs and investigations in this module.

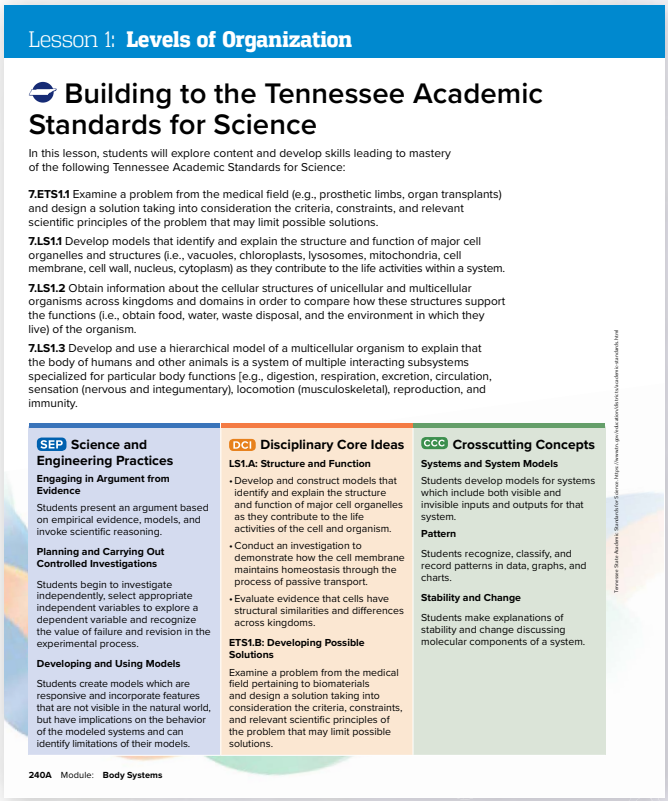
Lesson	Inquiry Activity		Materials	
	GO ONLINE for a detailed list of supplies included in your kit. The detailed lists can be found under **Program Resources: Course Materials.** Times listed are for in-class time only.		**Consumable**	**Non-Consumable**
Lesson 1	**Investigation** When Cells Get Together **Purpose:** To explore different types of cells and their functions	30 min		micrographs (online)
	Investigation Making Bodies **Purpose:** To explore the nature of tissues and their functions in plants and animals	15 min		cell cards (online)
	Investigation Body Functions **Purpose:** To explore how organs might work together to perform different body functions	15 min		human body diagrams (online)
	LAB Organism Organization **Purpose:** To model the levels of organization in a multicellular organism	30 min	cardboard, dry macaroni, glue, masking tape, shape templates (online)	scissors, markers, plastic containers
Lesson 2	**LAB** Make No Bones About It	15 min	bubble wrap,	plastic jars with lids
	each activity			

Lesson 1	**Investigation** When Cells Get Together **Purpose:** To explore different types of cells and their functions	30 min		micrographs (online)
	Investigation Making Bodies **Purpose:** To explore the nature of tissues and their functions in plants and animals	15 min		cell cards (online)
	Investigation Body Functions **Purpose:** To explore how organs might work together to perform different body functions	15 min		human body diagrams (online)
	LAB Organism Organization **Purpose:** To model the levels of organization in a multicellular organism	30 min	cardboard, dry macaroni, glue, masking tape, shape templates (online)	scissors, markers, plastic containers

Disciplinary Core Idea Progression

Each module includes a table illustrating in detail the Disciplinary Core Idea Progressions across Grades K–8.

Grades 3–5	Grades 6–8	Grades 9–12
LS1.A: Structure and Function		
• Analyze the internal and external structures that aquatic and land animals and plants have to support survival, growth, behavior, and reproduction.	• Develop and construct models that identify and explain the structure and function of major cell organelles as they contribute to the life activities of the cell and organism. • Conduct an investigation to demonstrate how the cell membrane maintains homeostasis through the process of passive transport. • Evaluate evidence that cells have structural similarities and differences across kingdoms.	• Evaluate comparative models of various cell types with a focus on organic molecules that make up cellular structures. • Integrate evidence to develop a structural model of a DNA molecule. Using the model, develop and communicate an explanation for how DNA serves as a template for self-replication and encodes biological information.



Lesson 1: **Levels of Organization**

Building to the Tennessee Academic Standards for Science

In this lesson, students will explore content and develop skills leading to mastery of the following Tennessee Academic Standards for Science:

7.ETS1.1 Examine a problem from the medical field (e.g., prosthetic limbs, organ transplants) and design a solution taking into consideration the criteria, constraints, and relevant scientific principles of the problem that may limit possible solutions.

7.LS1.1 Develop models that identify and explain the structure and function of major cell organelles and structures (i.e., vacuoles, chloroplasts, lysosomes, mitochondria, cell membrane, cell wall, nucleus, cytoplasm) as they contribute to the life activities within a system.

7.LS1.2 Obtain information about the cellular structures of unicellular and multicellular organisms across kingdoms and domains in order to compare how these structures support the functions (i.e., obtain food, water, waste disposal, and the environment in which they live) of the organism.

7.LS1.3 Develop and use a hierarchical model of a multicellular organism to explain that the body of humans and other animals is a system of multiple interacting subsystems specialized for particular body functions [e.g., digestion, respiration, excretion, circulation, sensation (nervous and integumentary), locomotion (musculoskeletal), reproduction, and immunity.

SEP Science and Engineering Practices

Engaging in Argument from Evidence

Students present an argument based on empirical evidence, models, and invoke scientific reasoning.

Planning and Carrying Out Controlled Investigations

Students begin to investigate independently, select appropriate independent variables to explore a dependent variable and recognize the value of failure and revision in the experimental process.

Developing and Using Models

Students create models which are responsive and incorporate features that are not visible in the natural world, but have implications on the behavior of the modeled systems and can identify limitations of their models.

DCI Disciplinary Core Ideas

LS1.A: Structure and Function

- Develop and construct models that identify and explain the structure and function of major cell organelles as they contribute to the life activities of the cell and organism.
- Conduct an investigation to demonstrate how the cell membrane maintains homeostasis through the process of passive transport.
- Evaluate evidence that cells have structural similarities and differences across kingdoms.

ETS1.B: Developing Possible Solutions

Examine a problem from the medical field pertaining to biomaterials and design a solution taking into consideration the criteria, constraints, and relevant scientific principles of the problem that may limit possible solutions.

CCC Crosscutting Concepts

Systems and System Models

Students develop models for systems which include both visible and invisible inputs and outputs for that system.

Pattern

Students recognize, classify, and record patterns in data, graphs, and charts.

Stability and Change

Students make explanations of stability and change discussing molecular components of a system.

Focused Lesson Planning for Effective Standards-Based Instruction

Within the lesson opener, find the extension of Building to the Tennessee Academic Standards for Science to help focus student learning by standard and integrated Science and Engineering Practices, Disciplinary Core Ideas, and Crosscutting Concepts.

Three Dimensions at a Glance

Throughout this module and in the culminating module project, students will integrate relevant Science and Engineering Practices (SEPs) and Crosscutting Concepts (CCCs) into their learning and understanding of the Disciplinary Core Ideas (DCIs). Use this chart to locate where students will encounter each of the three dimensions. **Bold** font indicates the SEPs, CCCs, and DCIs that build to the module Tennessee Academic Standards.

DIMENSIONS	LESSON 1	LESSON 2	LESSON 3	LESSON 4	LESSON 5	MODULE PROJECT
SEP Asking Questions and Defining Problems	•				•	
SEP Developing and Using Models	•	•	•	•	•	
SEP Analyzing and Interpreting Data		•	•		•	
SEP Using Mathematics and Computational Thinking					•	
SEP Constructing Explanations and Designing Solutions	•	•	•		•	
SEP Engaging in Argument from Evidence	•	•	•	•	•	•
SEP Obtaining, Evaluating, and Communicating Information		•	•	•	•	•
DCI LS1.A: Structure and Function	•	•	•	•	•	•
DCI LS1.D: Information Processing					•	•
DCI LS2.B Cycles of Matter and Energy Transfer in Ecosystems			•	•	•	
DCI ETS1.B: Developing Possible Solutions	•	•			•	
DCI PS3.D: Energy in Chemical Processes and Everyday Life.			•			
CCC Cause and Effect		•	•		•	•
CCC Systems and System Models	•	•	•	•	•	•
CCC Energy and Matter			•	•		
CCC Structure and Function	•	•	•	•	•	

Three Dimensions at a Glance Building to Tennessee Academic Standards

Use this chart to locate where students will encounter each of the three dimensions that build to the Tennessee Academic Standards expectations within the module.

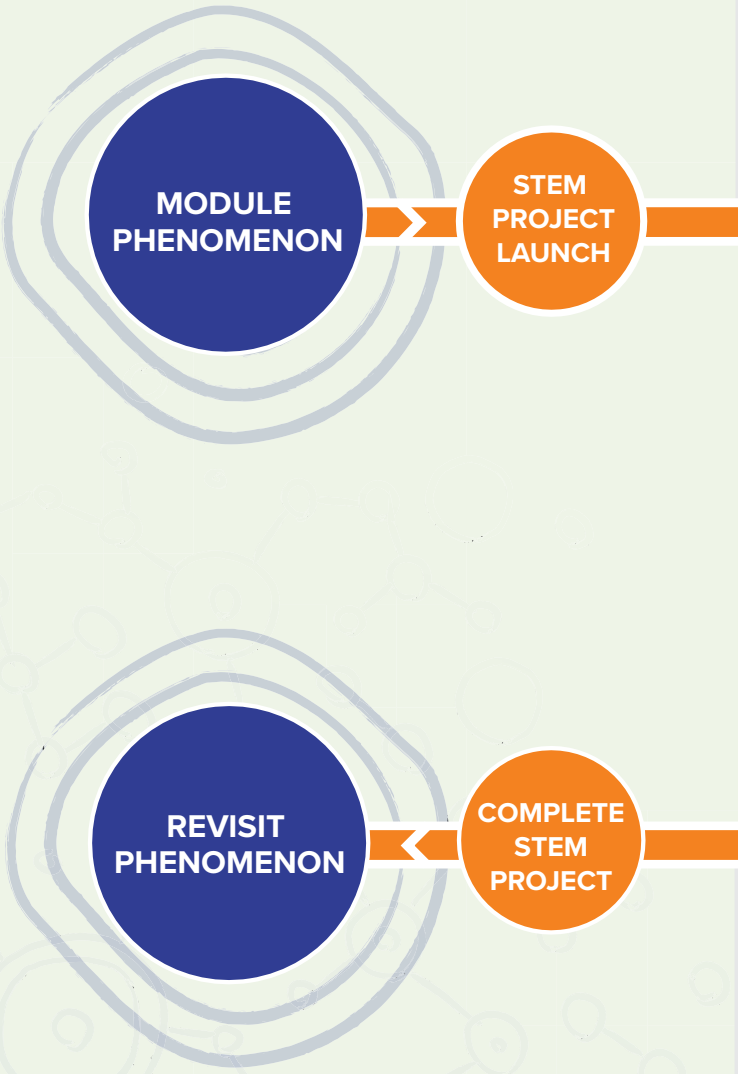
Learning Through Storylines

Students are surrounded by natural phenomena.

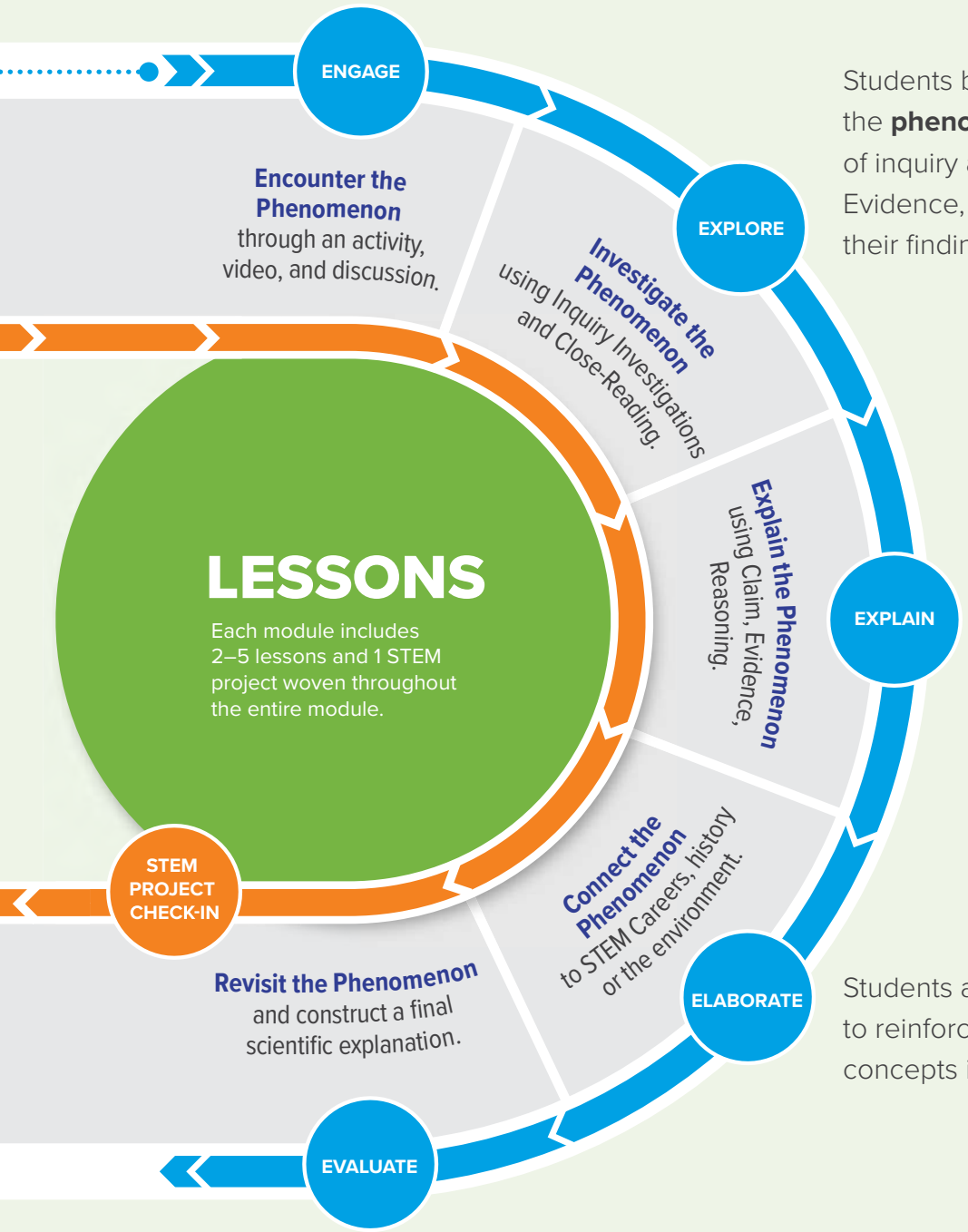
These phenomena are the centerpiece of each *Tennessee Science* module and lesson; find Module Storylines as the anchor to engage students as they investigate each lesson-level phenomenon. Within each lesson-level phenomenon, they will gather pieces of the puzzle to help solve and explain the module-level phenomenon.

Students experience the topic through multiple related phenomena. This strategy offers students multiple entry points for connection to their lives and a deeper understanding of the world around them.

Tennessee Science is built around the 5E framework to guide students toward scientific understanding using a thorough and methodical process aligned with Tennessee Academic Standards for Science.



Each module and lesson in *Tennessee Science* begins by introducing a natural **phenomenon**, which students are charged with investigating as they progress through the text.



Students begin to explore and investigate the **phenomenon** through different types of inquiry activities, using the CER (Claim, Evidence, Reasoning) framework to record their findings and results.

Students delve into an array of informational text, supportive resources, and interactive activities designed to help them synthesize and convey their understanding of **phenomena** while practicing close-reading skills.

Students apply knowledge to new situations to reinforce deep understanding of lesson concepts introduced by the **phenomenon**.

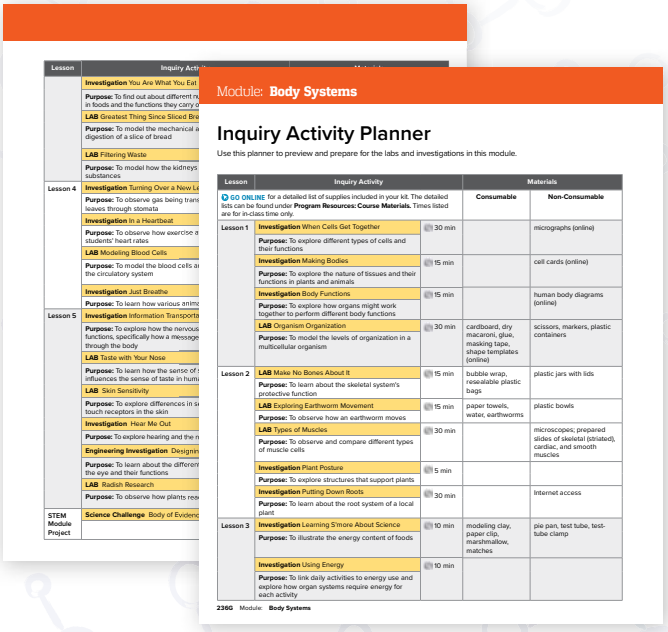
Students explain the **phenomenon** so that teachers can gauge progress and assess understanding.

Empower Students With Hands-On, Inquiry-Based Learning

During two to three Inquiry Activities per lesson—typically found in Explore/Explain or Elaborate—students use the same techniques as scientists and engineers as they use their results and findings to communicate their understanding. These Inquiry Activities drive home science topics in meaningful, engaging ways.

There are five types of Inquiry Activities in *Tennessee Science* that enable students to investigate phenomena and record findings in the same way as real-world practitioners do:

- Hands-On
- Engineering
- Investigations
- Simulations
- Data Analysis



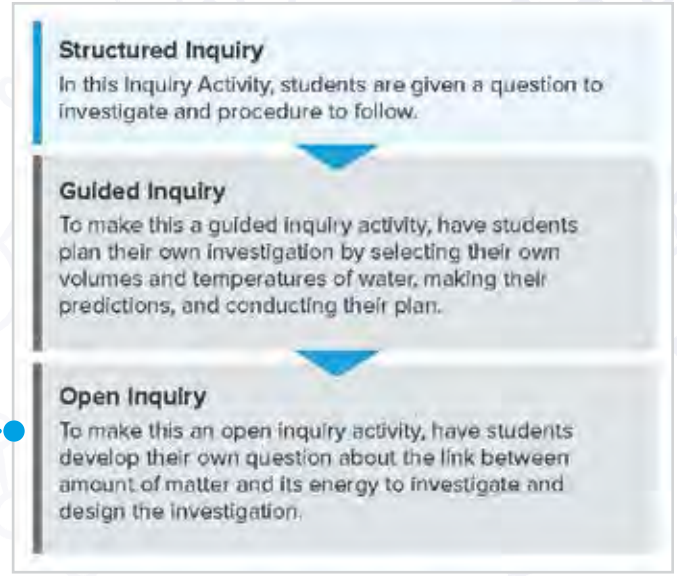
Inquiry Activity Planning

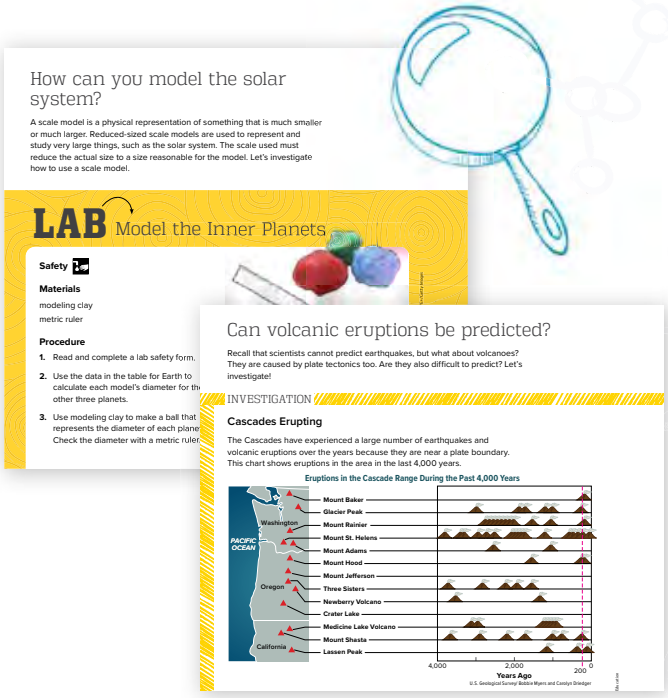
Planning and preparing for students to become elbows-deep in science is made easier with the *Tennessee Science* Inquiry Activity Planner that clearly identifies all the materials needed within the module.

Inquiry Spectrum

Not all inquiry activities are the same. Depending upon the available time and student readiness, structured inquiry might be perfect, or your class may be ready for open inquiry. The *Tennessee Science* Inquiry Spectrum provides flexible options to adjust the inquiry level to align with the learning needs of each student.

Each lesson offers inquiry activities developed with a recommended inquiry spectrum level, giving you the flexibility to modify the level of instruction based on your students' needs.





Student-Driven Data Analysis

All Inquiry Activities in *Tennessee Science* promote student engagement and allow each student to develop skills in both inquiry and science and engineering skills. The combination of Investigations and Labs enable students to cover the full range of the inquiry spectrum.

Labs provide students an opportunity to conduct an investigation and gather their own data to analyze, interpret, and apply to the lesson and module phenomena.

Investigations offer students practice with data sets, graphs and other scientific scenarios to further hone their abilities to think like scientists.

Collaboration Kits

When students are engaged in their learning, they succeed, and nothing is more engaging than rolling up your sleeves and digging into hands-on activities. Developed to support engagement, *Tennessee Science* Collaboration Kits make it easy to innovate and incorporate investigative thinking about core science concepts.

Support Every Learner

Tennessee Science incorporates the research-based Universal Design Learning Principles to ensure that all students have access to rigorous curriculum.

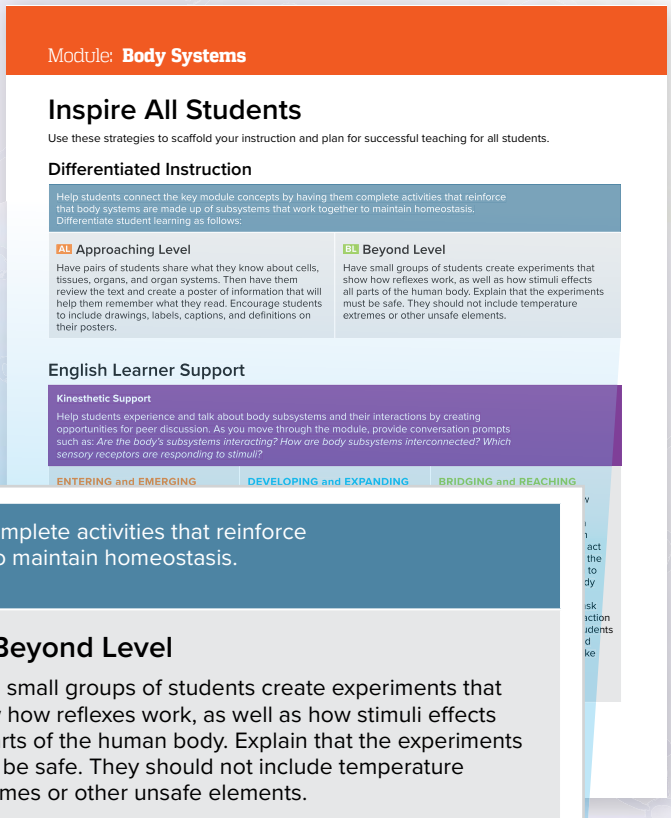
Support with practical strategies is found at the module and lesson level at multiple points. The Leveled text aligns with the Lexile ranges appropriate for each grade level.

Uniting Phenomena

Phenomena-driven instruction levels the playing field for learners by allowing them to access the core science instruction via a shared experience by observing a highly relevant real-world phenomenon. These shared experiences with supporting instruction ensure learning is truly accessible to ALL students.

Differentiated Instruction

Robust differentiation support including guiding questions for different student levels, as well as differentiation guidance is found in the Teacher's Edition. Module and lesson level practice strategies are also found at multiple points.


Module: **Body Systems**

Inspire All Students

Use these strategies to scaffold your instruction and plan for successful teaching for all students.

Differentiated Instruction

Help students connect the key module concepts by having them complete activities that reinforce that body systems are made up of subsystems that work together to maintain homeostasis. Differentiate student learning as follows:

AL **Approaching Level**

Have pairs of students share what they know about cells, tissues, organs, and organ systems. Then have them review the text and create a poster of information that will help them remember what they read. Encourage students to include drawings, labels, captions, and definitions on their posters.

BL **Beyond Level**

Have small groups of students create experiments that show how reflexes work, as well as how stimuli effects all parts of the human body. Explain that the experiments must be safe. They should not include temperature extremes or other unsafe elements.

English Learner Support

Kinesthetic Support

Help students experience and talk about body subsystems and their interactions by creating opportunities for peer discussion. As you move through the module, provide conversation prompts such as: *Are the body's subsystems interacting? How are body subsystems interconnected? Which sensory receptors are responding to stimuli?*

ENTERING and EMERGING | DEVELOPING and EXPANDING | BRIDGING and REACHING

Help students connect the key module concepts by having them complete activities that reinforce that body systems are made up of subsystems that work together to maintain homeostasis. Differentiate student learning as follows:

AL **Approaching Level**

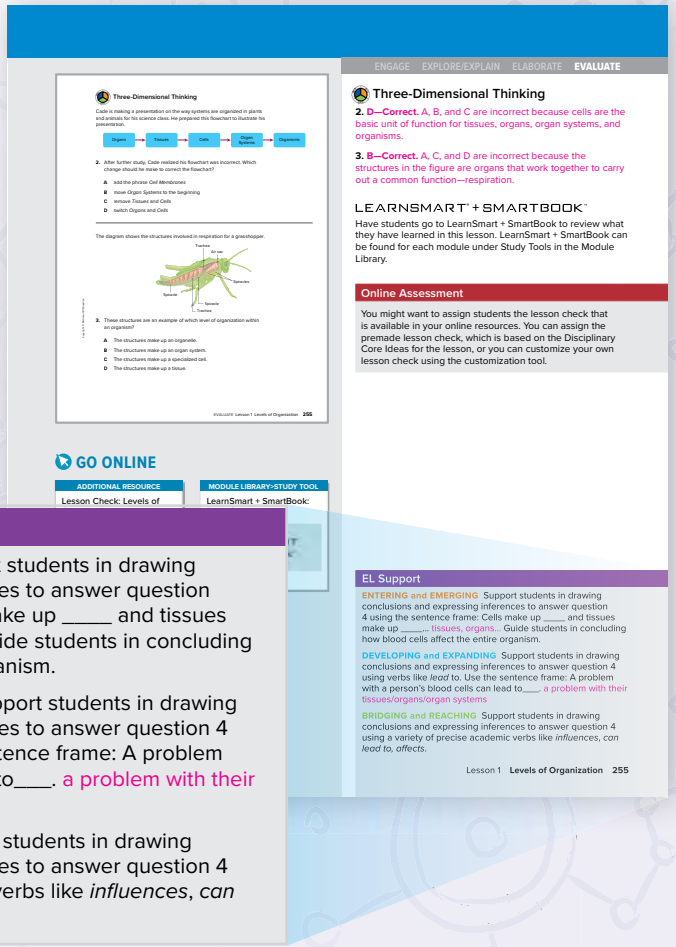
Have pairs of students share what they know about cells, tissues, organs, and organ systems. Then have them review the text and create a poster of information that will help them remember what they read. Encourage students to include drawings, labels, captions, and definitions on their posters.

BL **Beyond Level**

Have small groups of students create experiments that show how reflexes work, as well as how stimuli effects all parts of the human body. Explain that the experiments must be safe. They should not include temperature extremes or other unsafe elements.

English Learner Support

Tennessee Science applies the best instructional practices for teaching EL students. Each module and lesson have scaffolded activities that offer students of any level of English language proficiency the opportunity to engage in academically challenging science and engineering content while supporting language acquisition.

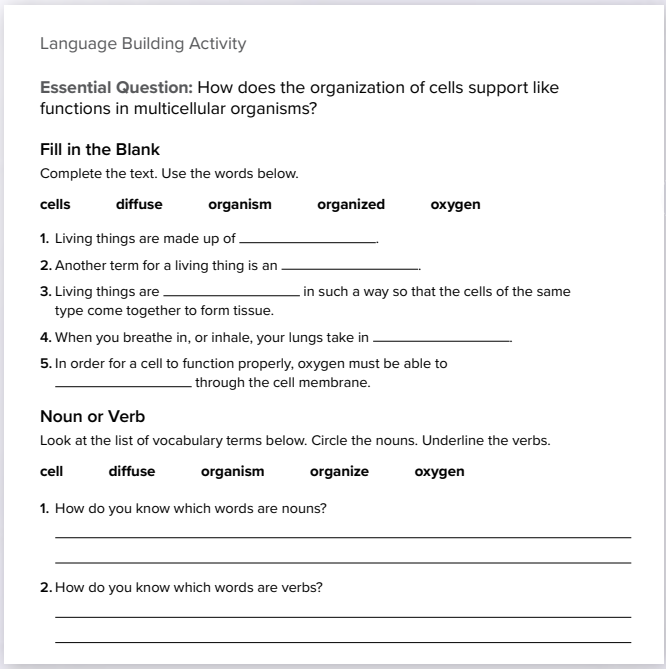


EL Support

ENTERING and EMERGING Support students in drawing conclusions and expressing inferences to answer question 4 using the sentence frame: Cells make up _____ and tissues make up _____... tissues, organs... Guide students in concluding how blood cells affect the entire organism.

DEVELOPING and EXPANDING Support students in drawing conclusions and expressing inferences to answer question 4 using verbs like *lead* to. Use the sentence frame: A problem with a person's blood cells can lead to____. a problem with their tissues/organs/organ systems

BRIDGING and REACHING Support students in drawing conclusions and expressing inferences to answer question 4 using a variety of precise academic verbs like *influences*, *can lead to, affects*.



Language Building Activity

Essential Question: How does the organization of cells support like functions in multicellular organisms?

Fill in the Blank

Complete the text. Use the words below.

cells **diffuse** **organism** **organized** **oxygen**

1. Living things are made up of _____.
2. Another term for a living thing is an _____.
3. Living things are _____ in such a way so that the cells of the same type come together to form tissue.
4. When you breathe in, or inhale, your lungs take in _____.
5. In order for a cell to function properly, oxygen must be able to _____ through the cell membrane.

Noun or Verb

Look at the list of vocabulary terms below. Circle the nouns. Underline the verbs.

cell **diffuse** **organism** **organize** **oxygen**

1. How do you know which words are nouns?

_____

_____

2. How do you know which words are verbs?

_____

_____

Language Building Resources

Tennessee Science lessons carefully and purposefully integrate reading, writing, speaking, listening, and collaborating into each lesson. This structure provides ELL students with purposeful language usage and resource access to convey their understanding.

Bring Science to Life

Tennessee Science transports 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.

Simulations

Simulations offer a chance to experience real life scenarios that depict true events. These proven tools improve learning as well as create safe and engaging learning environments where failure is possible, something that is often missed when students are learning.

Virtual Labs

Virtual Labs provide an alternative engaging way for students to interact with an experiment that cannot always be done in a classroom setting. These interactive Virtual Labs are found throughout your *Tennessee Science* program.

Interactive Text

Engage students in online literacy learning with tools like text to speech, note-taking, and text highlighting. Interacting with learning creates a dynamic experience that's more engaging and will improve student learning and retention.

Project Based Learning

Tennessee Science provides activities and instruction that progress toward a culminating STEM Module project where students meet grade-level Performance Expectations.

Kahoot!

Help students review important material in an engaging way with fun, game show-like quizzes using Kahoot!

Videos

Enhance teaching and learning with videos that reinforce concepts and spark discussion. Videos encourage students to hone their analytical skills by analyzing media using the theories and concepts they are studying and to experience worlds beyond their own.

McGraw Hill K–12 Portal App

Students can access their content anywhere, any time, on any device—with or without internet access—using the McGraw HIll K–12 Portal App.

Cross-Curricular Connections

When students study science, they practice and build upon other skill sets along the way.

Tennessee Science has been designed to maximize opportunities for cross-curricular connections, integrating ELA/Literacy and Mathematics standards so they are prepared for success on the TCAP.

Other connections, such as those listed below, are found throughout *Tennessee Science* Lessons. These connections are found vertically and horizontally across disciplines as students approach a single phenomenon from different perspectives.

- Physical Science
- Earth Science
- Environmental
- Health
- Writing
- Reading

PHYSICAL SCIENCE Connection Water does not actually disappear from a puddle or a cloud. It evaporates. **Evaporation** is the process by which a liquid, such as water, changes into a gas. When the Sun shines on a body of water, water near the surface absorbs thermal energy and becomes warmer. As a molecule of water absorbs energy, it begins to vibrate faster. When it has enough energy, it breaks away from other water molecules. It rises into the atmosphere as a particle of gas called water vapor. Like other gases in the atmosphere, water vapor is invisible.

ENGINEERING Connection About 97 percent of Earth's water is salty. People can't drink salt water. Using what you've learned about the water cycle, explain which processes could be used to design a device for turning salt water into freshwater.

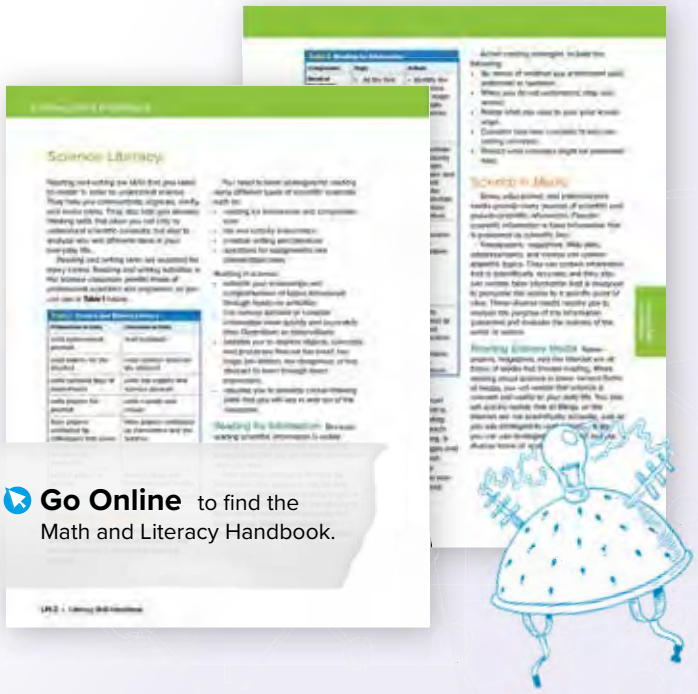
Integrated Engineering

Tennessee Science supports teachers and students with the integration of engineering into the science curriculum. For broad support, teachers and students can access the Science and Engineering Handbook, which provides simple, approachable descriptions of the Science and Engineering practices. Students can also practice these skills by applying them as they read through the handbook. The Student Edition also helps students understand the integration of engineering through lab explorations and module projects, where the science and engineering practices are interwoven with other concepts and content.


INTRODUCTION

Defining STEM

Go Online to find the Science and Engineering Handbook to learn more about each of the eight SEPs.


Science Literacy

Go Online to find the Math and Literacy Handbook.

Math and Literacy Handbook

Tennessee Science supports students with literacy and math access through the Literacy Handbook and the Math Handbook. Each of these handbooks provides background information, student support, and examples that get students ready to make the connections they need to science.

STEM Career Connection

STEM Career Connection allow students to connect with science by seeing potential career paths, as well as how what they're studying connects to the real world. Students can read about the STEM career, and then do an activity for further exploration in the It's Your Turn section of the feature.

STEM CAREER Connection


A Day in the Life of a Yuba River Waterkeeper

Many people work together to protect and preserve the Yuba River. One important role is that of a waterkeeper. Waterkeepers work with the public and government officials to ensure that future generations have a healthy river to enjoy.

One of the most important tasks for a waterkeeper is water-quality monitoring. Waterkeepers test water temperature, oxygen content, and pollutants. One test uses a black and white disk called a Secchi disk to measure turbidity, or how clear the water is. The disk is attached to a rope and lowered into the river. The deeper it can be lowered and remain visible, the less sediment the water likely contains.

On any given day, a waterkeeper can be a detective, a teacher, an ambassador, or a scientist. The keepers of the Yuba River monitor its health, identify and solve water quality problems, and educate the public about the importance of clean water.

It's Your Turn

ENVIRONMENTAL Connection Imagine you are a waterkeeper for a river near your home or school. Investigate the quality of the water and what types of plants and wildlife depend on the river. Create a short presentation for a group of younger students to teach them the importance of protecting California's rivers.

30 ELABORATE Module: The Water Cycle

Tennessee Assessment Strategies

Tennessee Science includes a variety of assessment options to support teachers with differentiation strategies and support students on their journey to mastery of the Tennessee Academic Standards for Science and culminating with success on the Tennessee Comprehensive Assessment Program (TCAP).

Each *Tennessee Science* lesson begins with a Formative Assessment Science Probe.

Page Keeley, M.Ed.

Page Keeley's Science Probes present the lesson phenomenon in an engaging way to promote student thinking and discussion, revealing commonly-held preconceptions students bring to their learning to guide differentiated instruction strategies.

Formative Assessment

Formative assessment, embedded at many points throughout each module and lesson, facilitates student reflection on their thinking (metacognition) and allows teachers to dynamically differentiate instruction. The table below shows the types of formative assessment resources in *Tennessee Science* found online and in print.

FEATURE	INSTRUCTIONAL PURPOSE
Page Keeley Science Probes	Found at the beginning of each lesson, **Science Probes** reveal student preconceptions to guide instruction.
Claim-Evidence-Reasoning	With the **CER Framework** (Claim/Evidence/Reasoning), found in all lessons, students will make claims and document their reasoning during the EXPLORE phase, and add evidence and adjust their claims as needed later in the lesson.
Three-Dimensional Thinking Questions	Students will encounter questions that address at least two of the three dimensions of the Tennessee Academic Standards for Science.
LABS and INVESTIGATIONS	In each **Lab** or **Investigation** (2–3 per lesson), students may encounter analyzing and concluding questions that help build Three-Dimensional Thinking.

Summative Assessment

Summative assessment tools at the module and lesson level help ensure lasting learning and alignment of student skills to the Performance Expectations with the following summative assessment tools found in *Tennessee Science* in print Student Editions and online.

FEATURE	INSTRUCTIONAL PURPOSE
Module Pretest	The **Module Pretests**, found at the beginning of each module, assess prerequisite knowledge of Disciplinary Core Ideas from prior grades to evaluate student readiness for the module.
Three-Dimensional Thinking Questions	At the end of the lessons, students will demonstrate their understanding of at least two of the three dimensions of Tennessee Academic Standards for Science to develop three-dimensional thinking skills.
Lesson Check	Found in every lesson online, **Lesson Checks** determine how students are building a progression of learning toward the Performance Expectations.
Module Test	Found at the end of each module online, **Module Tests** evaluate student proficiency against the performance of the module with multiple choice, extended response, constructed response, and performance-task items.
STEM Module Project Performance-Based Rubrics	With each STEM Module Project students will complete **Performance-Based Rubrics** and answer summative questions to demonstrate how they've applied their knowledge and understanding of the Performance Expectations to their project.
Vocabulary Check	Through online interactives, students practice and check their understanding of science language. Immediate feedback from the system is provided.

LEARNSMART®

LearnSmart® with *SmartBook®* transforms the way students read. A proven, adaptive learning program, *LearnSmart* individualizes instruction to help students study more efficiently and retain more knowledge.

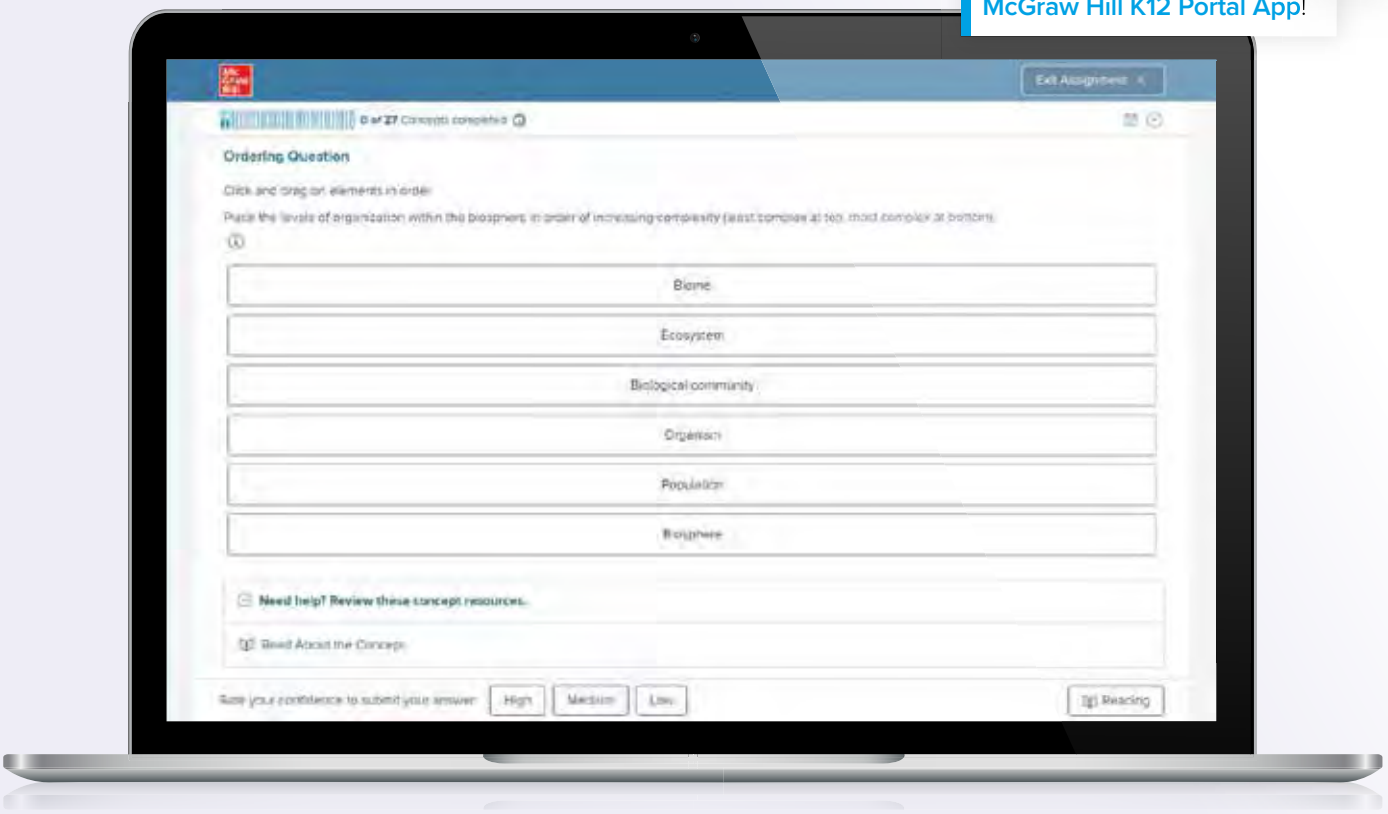
- Improves reading comprehension by highlighting the most critical content a student needs to know
- Provides practice and review to identify where students are excelling or where more support is needed
- Prompts students to check their understanding and confirm content retention
- Includes detailed reports to help you identify at-risk students or topics for whole-group instruction

Adaptive Learning With *LearnSmart®* With *SmartBook®*

Each student enters the classroom with different strengths, interests, and abilities. Eliminate guesswork and get to the heart of their learning needs with adaptive, comprehensive differentiation.

PROGRAM FEATURE!

Smartbook is also available offline with the McGraw Hill K12 Portal App!



The secret is *LearnSmart* with *SmartBook*, the first and only adaptive reading experience designed to change the way students read and learn. As the student progresses, *SmartBook* highlights the most impactful concepts the student needs to learn. When *LearnSmart* detects what a student is most likely to forget, that content is presented for review to improve the student's knowledge retention.

Real-Time Reporting Tools

Find efficiencies by managing and tracking individual student progress and the progress of the whole class. Teachers can focus on what students don't understand or still need to learn, rather than what they've already mastered.

See the duration students take to complete the assignment compared to the estimate.

Challenging concepts are revealed as students wrap up assignments, giving teachers the chance to reinforce topics before the next lesson.

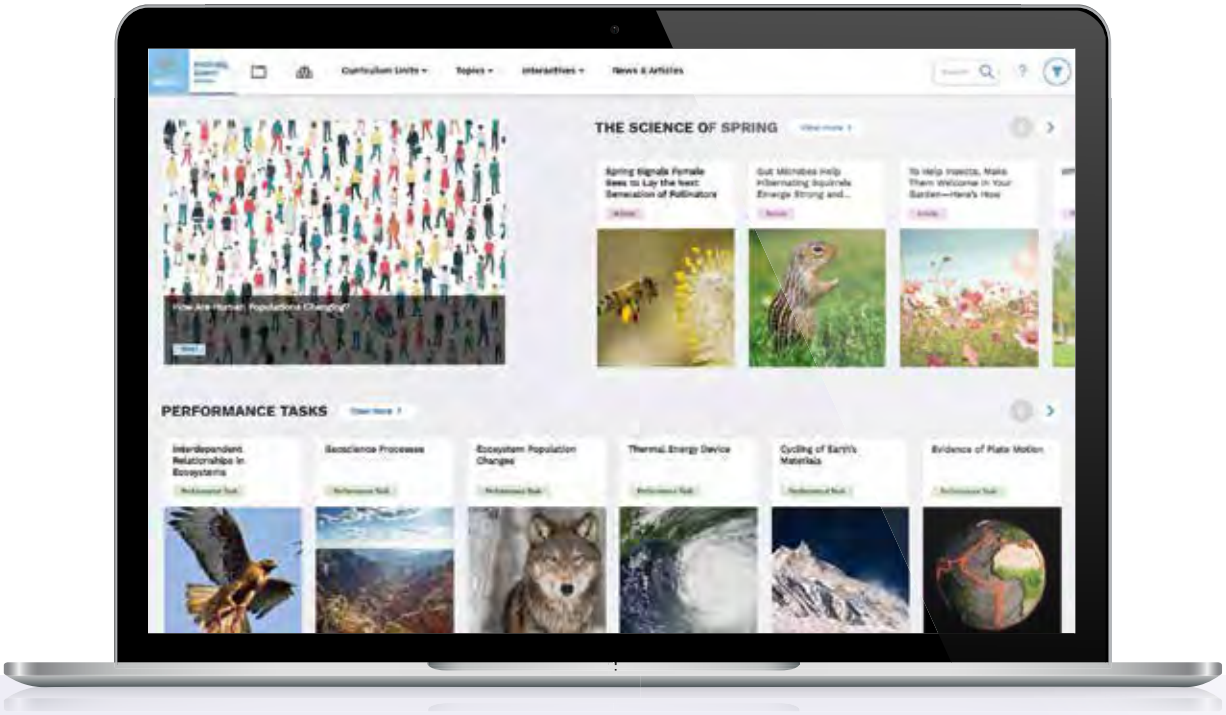
Track progress on the assignment as students work through the questions.

Breakdown reporting to the individual student level.

Drive Deeper Science Learning With *Actively Learn*

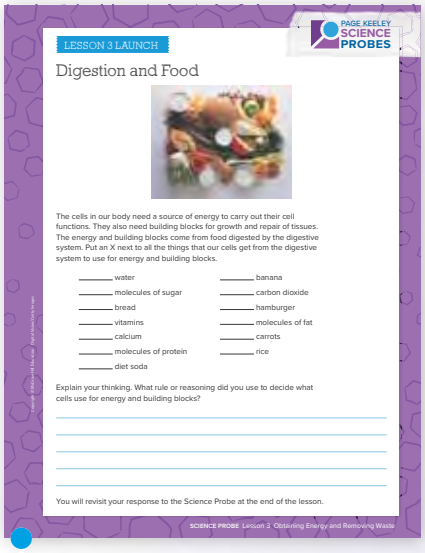
As educators, we know how important it is to keep students engaged.

That's why each *Tennessee Science* module and lesson is designed to tap into students' natural curiosity about the world around them through the investigation of real-world phenomena. Student engagement is further fueled through an innovative digital experience, and connections to real-world applications.



- **Engaging, relevant, standards-based content** for all learners
- **Science texts, articles, and videos** at each student's level
- **Inquiry-driven science simulations** that bring natural phenomena to life
- **TUVA Data Sets and PhET Simulations** include teacher instructional support
- **Interactive reading and study aids** that promote active collaboration
- **Rich, cross-curricular connections** to other subjects
- **Powerful tools** that let teachers customize content or upload their own
- **Access to student data** to inform instructional decisions

Fuel Student Engagement Using the World Around Them

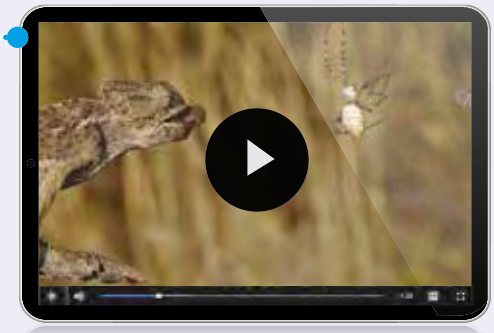


Science Probes

Page Keeley Science Probes are module launch questions centered around relevant phenomena designed to interest and get students talking about their ideas. When students do the talking, it is evidence that they are thinking and provides you an avenue to uncover and resolve commonly-held preconceptions or misconceptions.

Visualizing Phenomena in Action

Phenomenon Videos enable students to observe scientific topics in action, providing a visual experience that encourages thinking and collaborative conversations.



Virtual Labs

Extend experiments beyond the classroom setting. With Virtual Lab, students have an engaging, alternative, digital interaction to interact with an experiment.

STEM Module Project

Planning and Completing the Science Challenge
How will you meet this goal? The concepts you will learn throughout this module will help you plan and complete the Science Challenge. Just follow the prompts at the end of each lesson!

STEM Module Projects

Introduce students to real-world STEM Science or Engineering Challenge to get them thinking about questions they have, what plan they can put in place to complete the challenge, and begin experiencing the same engineering-design processes, including research and experimentation, just like science professionals do.

State Assessment Guide

Organized by unit and module structure for each grade, the State Assessment Guide will provide your students with guided and independent practice, with assessment items along with rubrics designed to prepare students for the end of course assessments..

Use this guide in your classroom in a variety of ways to meet the needs of your students.

- ✓ Use the guided practice and independent practice sections before a Module Test to provide extra support.
- ✓ Use the practice sections after a Module Test but before a Unit Test for remediation.
- ✓ Administer the independent practice section first and use the guided practice as remediation.
- ✓ Use the Unit Test before implementing a Tennessee Science unit for pre-assessment to serve as a benchmark, or after to identify reteaching opportunities.

Seamless Integration Services

We are proud to work with schools across Tennessee to implement our programs into a range of classroom environments using different platforms. Both our Integration team and our Digital Technical Support team are ready to support you and your implementation.

To learn more, visit **mheducation.com/tennessee**.

Google Classroom

Clever

PowerSchool

CANVAS BY INSTRUCTURE

schoology

Continued Professional Learning

Professional Development

We know it can be a challenge to implement a new science program with new standards. That's why *Tennessee Science* comes with a library of relevant, self-paced, professional learning videos and modules to support you from implementation through instructional progression and mastery, all available 24/7, from any device.

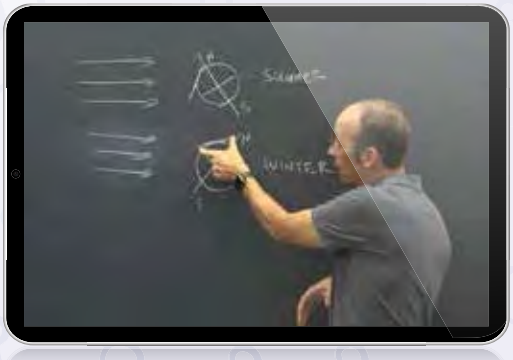
Program Implementation Support

Implementation support provides everything you need to know to get up to speed on the first day of school.

Quick Start Videos explain program basics to help get you started.

Digital Platform Support

In the Technical Support Resource Library, you will find step-by-step instructions for each of your digital tools to help you feel confident planning, teaching, and assessing in the digital experience. Step-by-step instructions for each of your digital tools help you feel confident planning, teaching, and assessing with digital.



Ongoing Pedagogy Support

With *Tennessee Science*, you will find a wide range of resources on key instructional and pedagogical topics, including videos from our program authors and consultants.

- **STEM Classroom Videos** model lessons from real classrooms.
- **Science Preconceptions Videos** review common preconceptions and strategies to overcome them.
- **Instructional Coaching Videos** discuss best practice strategies and the "Why" behind the success.
- **Teacher Activity Videos** show planning tips and expected results to help with hands-on activity time.
- **Science Pedagogy Micro-Courses** provide facilitation guides for both self-guided or small group courses.

Tennessee Science

Learn More at mheducation.com/tennessee

Mc Graw Hill

SC.1053533