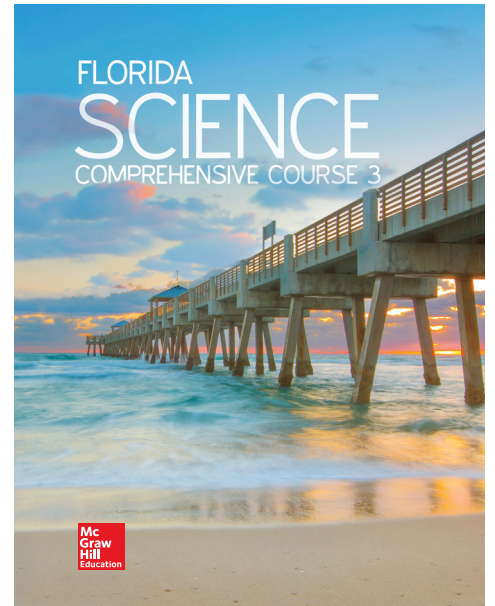
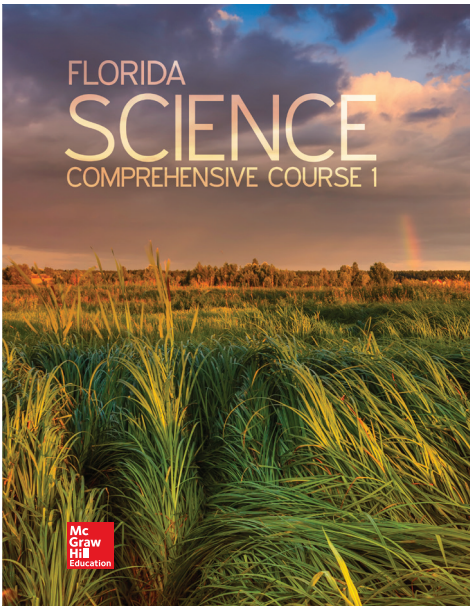




Middle School Florida Science





WELCOME TO Florida Science

Florida Middle School Science is about connecting science content, rigor, engagement and adaptive instruction for student success.

As your trusted partner, we deliver to you an effective, innovative and inspiring middle school science curriculum that meets your Florida state standards.

With **Florida Science**, you'll find the essential tools to support your classroom needs.

- Page Keeley Science Probes
- LearnSmart® adaptive learning technology with integrated Smartbook®
- Robust Assessment Support
- PBL's & Rigorous Student Materials
- Inquiry-Based Learning
- Engaging Student Content
- Practical Professional Development

Florida Science gives you the freedom, flexibility, and resources to create unique lessons that will prepare students for success in the classroom - and in STEM-related careers.

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Science Probes



Ms. Keeley is the former President of NSTA (National Science Teachers Association) and the recently retired Senior Science Program Director at the Maine Mathematics and Science Alliance, where she directed projects in the areas of leadership, standards-based curriculum and instruction, formative assessment, professional development design, and instructional coaching. She provides professional development and consultation services to school districts, math-science partnership (MSP) projects, university programs, and math/science organizations throughout the United States.

How to Use Science Probes

- Research has established that it is important to identify and correct students' misconceptions about natural phenomena and scientific concepts in order to facilitate their learning in science.
- Probes are designed to identify common misconceptions, as well as enhance metacognition for students by making them more aware of their existing ideas.
- Probes can be used before teaching a chapter to make you aware of concepts that may be stumbling blocks for students and to initiate student thinking and discussion about the concepts they will study.
- Probes also can be used to monitor student learning throughout the course of instruction to determine if students have corrected their understandings of natural phenomena and scientific concepts, and to assess their increasing grasp of the topics.



When do we use our brains?

Teacher Notes


Best answer is Tony: I think we use our brains all the time, even when we are unconscious or asleep. The brain is always working. The brain is part of the central nervous system. It controls both voluntary functions, such as thinking and moving, and involuntary functions, such as breathing and digesting food.

My idea is that the brain is the control center of the body, and it functions all the time. A common misconception is that the brain is responsible only for voluntary functions. Students who chose Laura may believe this. Students who chose Abby may believe that the brain takes a "rest" at night or when we are unconscious. Preconceptions from television shows or stories of someone who is pronounced "brain dead" but is still living and breathing may contribute to the idea that the brain does not function during loss of consciousness.

To the need to make sure that students discuss about the brain and the parts of the brain that are performed during sleep.

Name _____ Date _____

When do we use our brains?



Three friends argued about the brain. They had different ideas about when they use their brains. This is what they said:

Abby: I think we use our brains only when we are conscious. When we are unconscious or asleep, another part of our nervous system takes over.

Laura: I think we use our brains when we are conscious, but only when we are doing something like thinking, speaking, eating, moving, and other intentional things. When we are unconscious or asleep, another part of our nervous system takes over.

Tony: I think we use our brains all the time, even when we are unconscious or asleep. The brain is always working.

Circle the person you agree with the most. Explain your thinking about the brain.

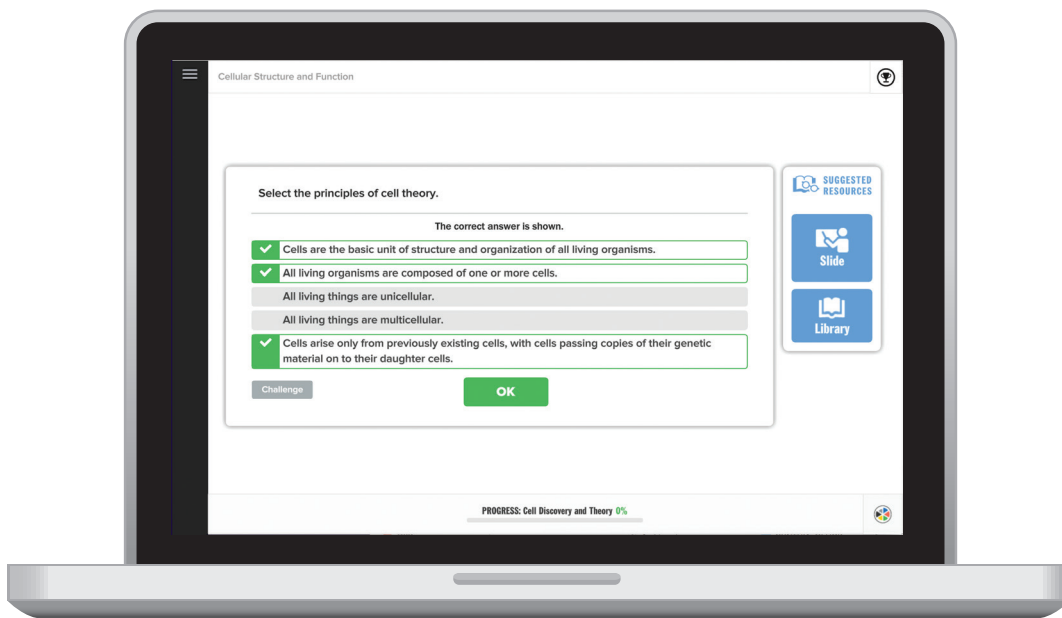
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Help students learn faster, study more efficiently, and retain more knowledge.

The **LearnSmart**® adaptive learning engine with **SmartBook**® gives every student a unique learning path and every teacher the power to reach all students in class.

SmartBook® is an eBook whose text is fully integrated with **LearnSmart**® technology. As a student reads, this technology determines precisely which learning objectives each student understands or struggles with, highlighting the most critical content for the student to read next.

LEARNSMART®



Pinpoint knowledge gaps for individual students and across classes

Empower students to personalize their learning experience with optimal learning paths so they spend more time on what they don't know with **LearnSmart**®.

- Practice of basic science concepts to improve recall and application before moving on.
- Additional exposure and increased practice to master new concepts.
- Presentation of concepts individual students struggle to master.

Support Each Students Unique Needs

LearnSmart® is a proven adaptive learning program that helps students' success by providing a personalized learning path that's based on their responses to questions, as well as their confidence about the answers they provide.

Using revolutionary adaptive technology, **LearnSmart®** builds a learning experience unique to each student's individual needs.

LearnSmart® gives students an advantage - **improving learning outcomes** by ensuring every minute a student spends studying is the most productive minute possible.

SMARTBOOK®



Maximize Study Time

- Within **LearnSmart®**, discover **Smartbook®**, the only adaptive reading experience designed to transform the way students read.
- The interactive challenge format highlights content and helps each student identify content they know, don't know, and are most likely to forget.
- **Learning Resources** close knowledge gaps by immediately clarifying the concepts the student finds most challenging.
- Teachers receive detailed reports of student progress.

Access a LearnSmart® Demo at www.connected.mcgraw-hill.com

Username: FL612SCIDEMO | Password: fl2018science

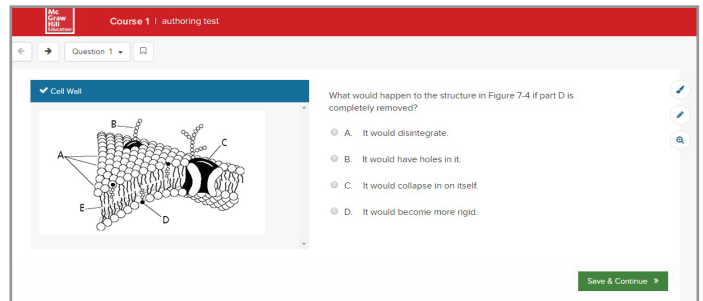
Go to Course > Menu > Resources > Program Resources > LearnSmart®

Robust Assessment Support

Take student achievement to the next level with Online Assessment

Online Assessment gives you the ability to monitor students' progress and make data-driven instructional decisions.

- Use Online Assessment to create tests and assignments.
- Access to Florida-specific Online Assessment questions available at each course level.
- Professional development resources include pertinent information on science standards and implementation best practices, available 24/7.



Air Pressure Ideas
Six students looked at a barometer, a weather device that measures air pressure. They had different ideas about air pressure. This is what they thought.

Kimberly: I think air has to be moving to create air pressure.
Stern: Air pressure is a downward force.
Wae: The higher in the atmosphere, the greater the air pressure.
Jeff: Air pressure is the amount of air above you.
Oliver: Air pressure is the weight of the air above you.
Converse: I think air pressure is the force of air molecules hitting each other.
Jay: When air pressure is high, it means there is a lot of air above you.

Circle the number of Describe your ideas.

NGSSS Benchmark Mini-Assessment

Multiple Choice: Pick the correct answer.
Use the image below to answer question 1 and 2.

Sea Otter Population

Year	Population
1982	1000
1983	1000
1984	1000
1985	1000
1986	1000
1987	1000
1988	1000
1989	1000
1990	1000
1991	1000
1992	1000
1993	1000
1994	1000
1995	1000
1996	1000
1997	1000
1998	1000
1999	1000
2000	1000
2001	1000
2002	1000
2003	1000
2004	1000
2005	1000
2006	1000
2007	1000
2008	1000
2009	1000
2010	1000
2011	1000
2012	1000
2013	1000
2014	1000
2015	1000
2016	1000
2017	1000
2018	1000
2019	1000
2020	1000

1. What does each dot on the y-axis represent?
(A) the number of individuals in a sea otter population
(B) the breeding season
(C) total area in which a population lives
(D) mortality rates

2. What does the lowest point on the dark line represent?
(A) a year in which very few pups were born
(B) a year in which many pups were born
(C) a year in which very few adults survived
(D) a year in which many adults survived

Types of Moves, 2013-2014

Move Type	Percentage
From abroad	3.5%
Different state	4.0%
Different county same state	20.0%
Same county	72.5%


3. Imagine that your neighbor is moving out of their house. Where are they most likely moving?
(A) abroad
(B) to a different state
(C) to a different county
(D) within the same county

4. Your new neighbor has moved to your neighborhood from a different country. What type of move did your new neighbor make?
(A) abroad
(B) to a different state
(C) to a different county
(D) within the same county

5. Gophers move into a new field where there is plenty of roots to dig new burrows. This is an example of
(A) overpopulation
(B) immigration
(C) carrying capacity
(D) competition

Robust Assessment Support

- Explore Formative Assessment Probes designed by Page Keeley.
- Florida-specific Online Assessment questions at each grade level.
- “Check in” with students throughout the chapter with Key Concept Checks, Reading Checks and Visual Checks.
- Print and digital lesson reviews also give a quick snapshot of students’ understanding.
- The built-in assessment strand throughout your Florida Science Program will help your students stay on track.
- Test-taking strategies for the Statewide Science Assessment in grade 8.
- Florida Science also includes NGSSS Reviews, Chapter & Lesson reviews, as well as Benchmark Assessment tests (Mini-Bats).

 **connectED** is a time-saving online portal that has all of your digital program resources in one place.



ConnectED allows you to:

- Build lesson plans with easy-to-find print and digital resources.
- Search for activities to meet a variety of learning modalities.
- Teach with technology by providing virtual manipulatives, lesson animations, whole-class presentations and more.
- Personalize instruction with print and digital resources.
- Provide students with anytime, anywhere access to student resources and tools, including eBooks, tutorials, animations, and the eGlossary.
- Access to Online Assessment, track student progress, generate reports, and differentiate instruction.

With ConnectEd Mobile you can browse your course content on the go.

The app includes a powerful eBook engine where you can download, view, and interact with your books.

Science in Action

Florida Science offers you diverse lab opportunities to deepen your students' understanding of Science.

Use these lab activities included in every chapter to bring science to life for your students.

- Launch Labs
- MiniLabs
- Skill Practice
- Inquiry Labs
- Virtual Labs

More lab resources are available to you through ConnectED.

VIRTUAL LABS

Cell Reproduction

How can cancer cells be recognized?

Purpose
In this Investigation you will explore the similarities and differences between the cell cycles of normal cells and cancer cells.

Objectives:

- Identify the various phases of the cell cycle.
- Compare and contrast the cell cycles of normal and cancer cells.

Procedure:

1. Click the TV to watch the video about the cell cycle.
2. Click Information to read about cancer statistics and risk factors.
3. On the biology laboratory navigation

Journal Calculator Table

Table of Contents

- Interphase
- Prophase
- Metaphase
- Anaphase
- Telophase

Normal Lung

Tissue Slides


Check

Reset Return

Name _____ Date _____

PAGE KEELEY SCIENCE PROBES

Natural Resources



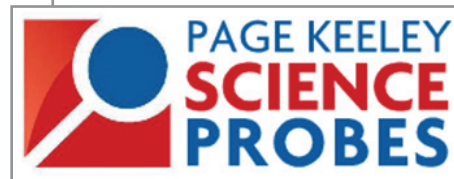
Four friends argued about natural resources and their impact on the environment. This is what they said:

Kate: It is better to use natural resources because they don't harm our environment like human-made resources.

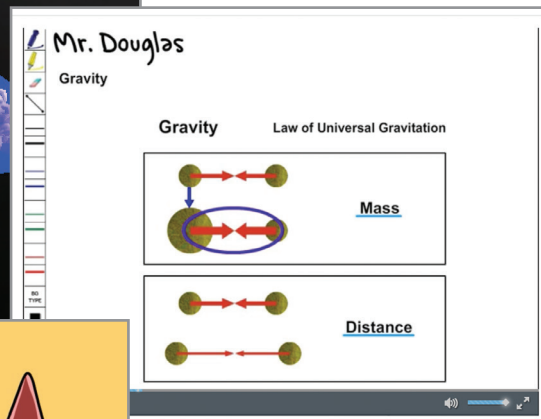
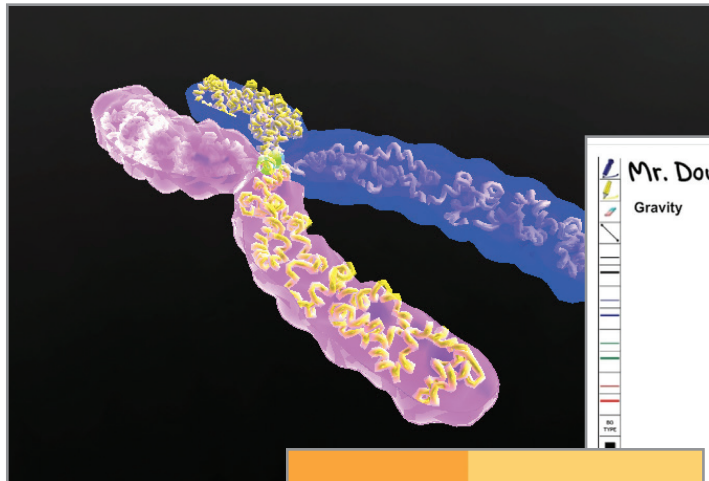
Clint: It is better to use human-made resources because they don't harm our environment like natural resources.

Abby: It doesn't matter—both natural and human-made resources can harm the environment.

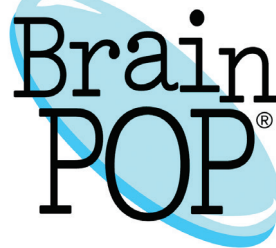
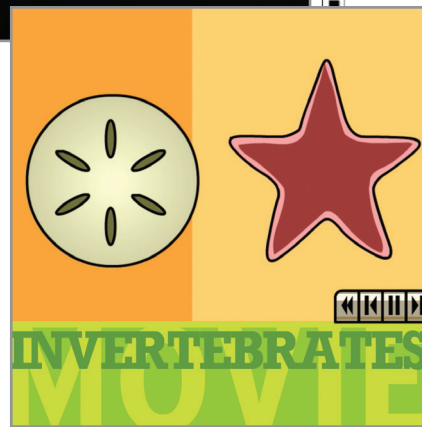
© HILL Companies



Page Keeley Science Probes will help uncover student misconceptions.



Expanded features such as Personal Tutor, BrainPOP[®], and VIVED[®] go beyond the limitations of the printed page.



Apply Interactive Practice

Students have their own digital learning platform called the **ConnectED Student Center**, complete with student worksheets and digital resources. Assignments you create appear in their to-do lists. Students can message you directly and submit their work.

Use expanded **Student Center** features such as **Personal Tutor**, **BrainPOP[®]**, and **VIVED[®]** videos to go beyond the limitations of the printed page and bring science into your students' lives like never before.

Project-Based Learning Activities (PBLs)

Engage and motivate students with hands-on project based activities and real world applications.

Project-Based Learning (PBLs) Activities

- PBL activities that reflect the full scope of science content standards for your Florida Science needs.
- Help students build confidence and keep them motivated lesson-to-lesson with engaging PBLs to deepen their understanding of science content through **real-world applications**.
- PBLs integrate traditional science with engineering content. Truly interactive student resources, learning activities, and worksheets are embedded for point-of-use access.
- Students can use these dynamic resources immediately to practice new concepts as they are introduced.

Science and Engineering Practices Handbook

- Support students in their scientific investigations and engineering projects.
- Online reference book.
- Provides students with background information, definitions, examples, and Quick Practice activities.

Defining Problems

Defining problems is an engineering practice that underlies any technological solution. The different components of this practice are briefly summarized below.

1. Engineers design solutions to problems.
2. Problem statements outline the problem and the solution.
3. Asking questions is part of engineering as well as science.

Defining problems doesn't involve a dictionary or a math worksheet. Engineers study how people do things and try to make the experience better. If people don't have a way to do something yet, engineers invent it. Engineers have to consider many factors when defining a problem.

Seeking a Solution


Engineers identify problems for people and society and then design solutions to those problems. The solution could be a process, a system, or an object, such as a tool. Space suits worn by astronauts are technological solutions designed by engineers. When coming up with any solution, engineers must consider many criteria.

Criteria are requirements or specifications for a product to be successful.

Criteria for a space suit may include the size of the person wearing it, how easy it is to move around in, and the temperatures it can withstand. Engineers also have certain constraints on every solution.

Constraints are limitations on a product's design.

For example, some materials may not be durable enough or may be too expensive to use. Major constraints include time, energy, space, and the availability of tools and materials. Other important constraints are the number of people working on the project, how much money is available for the project, and what information about the project exists.



Space suits have many criteria for safety and functionality.

Science and Engineering Practices - Asking Questions and Defining Problems

10

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Science and Engineering Practices Handbook

Weather Wardrobe



Your science class is taking a week-long field trip to Shoshone National Forest the day after tomorrow. Your teacher reminds everyone to dress appropriately for the weather.

Your assignment is to collect weather data to determine how you should pack for your field trip.

Inquiry Based Learning

Powerful Inquiry

Inquiry based activities like, Problem-Based Learning modules, Explore Activities, a variety of labs and more can be found throughout the Florida Science Program.

Each lesson begins with an Explore Activity, that can be answered with hands-on activities, group work, discussion and reading.

LESSON 2.4
Climates of Earth

Explore Activity

Rain, rain go away...or stay?

Every summer, many parts of India are drenched by rains caused by monsoons. These rains commonly last from July to September. In western and central India, these rains account for about 90% of the area's yearly rainfall. Agriculture in this area is heavily dependent on the monsoon as a source of water. A decrease in monsoon rains can result in water shortages and a decrease in crop yields.

What is the yearly weather pattern like where you live? Why would understanding the yearly pattern of weather be important? Write or illustrate your ideas in the space below.

Vocabulary
climate
rain shadow
specific heat
microclimate

ESSENTIAL QUESTIONS

- What is climate?
- Why is one climate different from another?
- How are climates classified?

Lab Manager
Go to your Lab Manual or visit connected.mcgraw-hill.com to perform the lab for this lesson.

Skill Practice: Can reflection of the Sun's rays change the climate? CAPS: 6.EE.1, 6.EE.2, 6.EE.3, 6.EE.4, 6.EE.5, 6.EE.6, 6.EE.7, 6.EE.8, 6.EE.9

Mini-Lab: What factors affect climate? SC.6.E.7.B.6, SC.6.E.7.B.8, SC.6.E.7.B.9

Clouds have different shapes and can be found at different altitudes.

Stratus clouds
- flat, white, and layered
- altitude up to 2,000 m

Cumulus clouds
- fluffy, heaped, or piled up
- 2,000 to 6,000 m altitude

Cirrus clouds
- wispy
- above 6,000 m

FOLDABLES
Make a horizontal two-tab book and label the tabs as illustrated. Use it to collect information on clouds and fog. Find similarities and differences.

Clouds and Fog
When you exhale outside on a cold winter day, you can see the water vapor in your breath condense into a foggy cloud in front of your face. This also happens when warm air containing water vapor cools as it rises in the atmosphere. When the cooling air reaches the dew point, water vapor condenses on small particles in the air and forms droplets. Surrounded by thousands of other droplets, these small droplets block and reflect light. This makes them visible as clouds.

Clouds are water droplets or ice crystals suspended in the atmosphere. Clouds can have different shapes and be present at different altitudes within the atmosphere. Because we observe that clouds move, we recognize that water and thermal energy are transported from one location to another. Recall that clouds are also important in reflecting some of the Sun's incoming radiation.

A cloud that forms near Earth's surface is called fog. Fog is a suspension of water droplets or ice crystals close to or at Earth's surface. Fog reduces visibility, the distance a person can see into the atmosphere.

LAB Manager

Skill Practice: How can you collect weather data and predict the weather?
SC.6.E.7.6

Hands-On Labs

Launch labs: 10-20 minutes

These are quick, engaging labs that encourage students to ask questions.

Mini labs: 15-20 minutes

These labs focus on and reinforce specific Key Concepts explained in the reading.

Skill Practice: 20-40 minutes

These labs provide in-depth practice of a specific inquiry skill that students will apply in the end of chapter lab.

End of Chapter: 1-2 class periods

This is a culminating lab in which students apply inquiry skills and science concepts in an in-depth investigation.

Teacher Support: Your TE contains content support, teaching tips and lab instruction that will help you be confident in each lab. Lab material lists can be found online within your teacher resources.

Rigorous Differentiation Support

Improving students' reading skills will improve their success in the science classroom.

Differentiation Support

Address multiple learning styles using activities tailored for approaching level, on level, or beyond level students as well as providing accommodations for English Language Learners (ELL).

Each lesson provides easy-to-use resources that consider the needs of all students.

Teacher Toolbox allows you to extend beyond the traditional instruction, providing activities, fun facts and more.

Differentiated Instruction

- Identify Systems** Present students with several photos that contain representatives of Earth's systems. For each photo, have them identify as many representatives of each of Earth's systems as possible.
- Prepare a Lesson** Have students prepare a short lesson that reviews information about Earth's systems. Encourage students to use visuals that they find or create as part of the lesson.
- Earth's Systems** Have students use colored pencils or markers to draw a picture of Earth. Have students label examples that represent each of Earth's systems.

Activity

Humans and Earth's Systems Have students use digital cameras to capture examples of how humans interact with each of Earth's systems within the school. Students should choose two or three sample photos to display and explain to the class. Remind students to respect other people's request to decline photo participation. Photos might include students getting a drink from a water fountain (Earth's water), certain materials used to construct the building, such as cement (solid Earth), an open window in a classroom (atmosphere), or fruits and vegetables in the cafeteria (biosphere).

Fun Fact
The Biosphere Scientists have identified about 2 million species living on Earth today. Although this seems like a high number, it is estimated that there are between 5 million and 300 million species on Earth.

Teacher Toolbox

Activity
Humans and Earth's Systems Have students use digital cameras to capture examples of how humans interact with each of Earth's systems within the school. Students should choose two or three sample photos to display and explain to the class. Remind students to respect other people's request to decline photo participation. Photos might include students getting a drink from a water fountain (Earth's water), certain materials used to construct the building, such as cement (solid Earth), an open window in a classroom (atmosphere), or fruits and vegetables in the cafeteria (biosphere).

Reading Essentials

English Language Learners

- Teacher Edition with strategies to modify activities and lesson content.
- **Multilingual eGlossary** with definitions for each vocabulary word in 13 languages.
- Vocabulary support is available in the margins of each chapter as well as close reading strategies.
- Improve reading skills with chapter resource files - Vocabulary Practice pages, language arts applications.
- **Reading Essentials:** Student Edition content written for struggling readers. Active reading strategies facilitate learning.

Student Engagement

Create a teaching environment in which students are curious and actively engaged in learning.

Engaging Student Content

Engaging Student Text: Write in text for your students to truly engage with the content.

Videos and Animations: This science program offers a variety of animations and videos that relate specifically to the content in each chapter.

Engagement Toolbox: Your TE contains a variety of hands-on demos and activities. Videos and other bell ringers kick off each lesson, focus your students, and encourage active learning.

Stunning Visuals: Exciting and colorful visuals grab students' attention and teach difficult concepts in a way that students can understand.

Dinah Zike/Foldables: Hands-on study organizers in every lesson. Students put content in their own words.

Relative Humidity
Think about how a sponge can absorb water. At some point, it becomes full and cannot absorb any more water. In the same way, air can only contain a certain amount of water vapor. When air is saturated, it contains as much water vapor as possible. Temperature determines the maximum amount of water vapor air can contain. Warm air can contain more water vapor than cold air. The amount of water vapor present in the air compared to the maximum amount of water vapor the air could contain at that temperature is called relative humidity.

Relative humidity is measured using an instrument called a psychrometer and is given as a percent. For example, air with a relative humidity of 100 percent cannot contain any more moisture and dew or rain will form. Air that contains only half the water vapor it could hold has a relative humidity of 50 percent.

Dew Point
When a sponge becomes saturated with water, the water starts to drip from the sponge. Similarly, when air becomes saturated with water vapor, the water vapor will condense and form water droplets. When air near the ground becomes saturated and the temperature is above 0°C, water vapor will condense and form dew. If the ground temperature is below 0°C, water vapor will condense and form ice crystals or frost. When air higher in the atmosphere condenses to a liquid, clouds form. The graph shows the total amount of water vapor that air can contain at different temperatures.

When the temperature decreases, the air can hold less moisture. The air becomes saturated, condensation occurs, and dew forms. The temperature at which air is saturated and condensation can occur is called the dew point.

Close Reading
5. Underline what happens to the air as temperature decreases.

Compare	
Relative Humidity	Dew Point

LAB Manager
MiniLab: When will dew form? SC.8.E.5.4

Maximum Water Vapor in Air
Temperature (°C)

7
6
5
4
3

Practical Professional Development

Designed on the principles of effective professional development

- Self-paced courses
- Foldables
- Science and Engineering Practice Videos
- On-demand webinars
- Page Keeley Science Probes

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visit mheducation.com/prek-12 or contact your
Florida Sales Representative.



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