



Pearson

6–8 PROGRAM OVERVIEW



elevate<sup>science</sup>

TAKE **SCIENCE** TO THE NEXT LEVEL



# The Next Level of Inquiry and Wonder

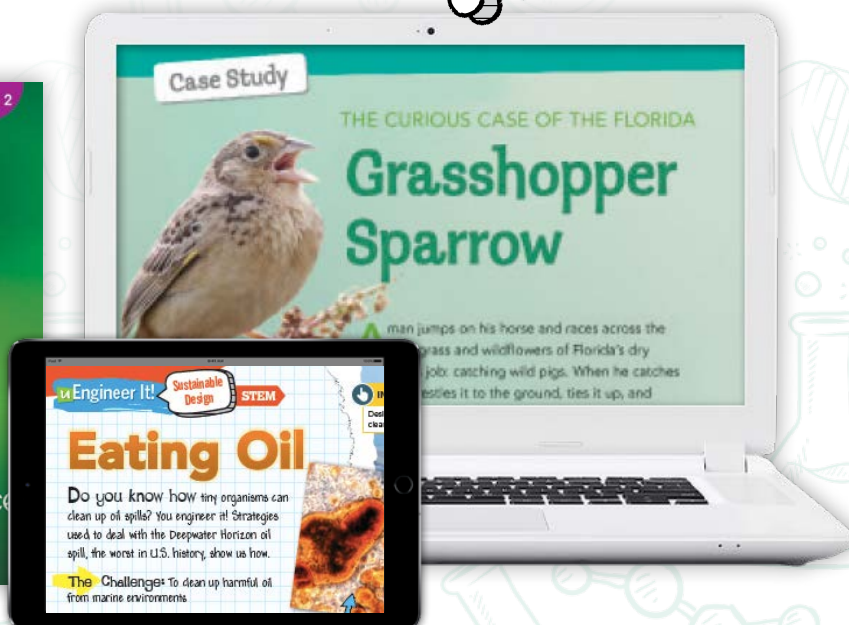
Motivate every student to reach higher and go further.

**Elevate Science** is a complete 6–8 science program that elevates thinking, learning, and teaching. This blended print and digital curriculum prepares students for the challenges of tomorrow!

## TAKE **SCIENCE** TO THE NEXT LEVEL

- Real-world, relevant, and interesting topics introduce the core ideas.
- Student-centered investigations utilize the science/engineering practices.
- Problem-based learning promotes application and student understanding.

PRINT, DIGITAL,  
OR BLENDED  
LEARNING



## elevate<sup>thinking</sup>



Promote Investigation, Critical Thinking, and Analysis

- Phenomena-based Quests
- STEM and engineering activities
- Interdisciplinary connections

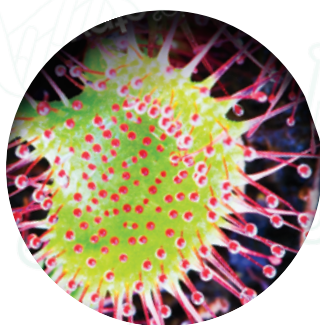


## elevate<sup>learning</sup>



Foster Three-dimensional Learning

- Encourages innovation, collaboration, and creativity
- Promotes understanding, application, and synthesis
- Fosters the use of claims, evidence, and reasoning



## elevate<sup>teaching</sup>



Transform Learning and Manage Changing Classrooms

- Scaffolded questions guide discussions and promote thinking
- ELD and Differentiated Instruction strategies
- Supports the 5E Learning Model



## Promote Investigation, Critical Thinking, and Reasoning

Exploration is the heart of science. The Quest problem-based activity anchors each topic. Students “figure out” the problem’s solution as they navigate the topic’s lessons. It’s real science with engaging phenomena. Students apply their knowledge and skills to master new science standards.

### Phenomena-Based Learning

#### Quest KICKOFF

##### What do you think is causing Pleasant Pond to turn green?

In 2016, algal blooms turned bodies of water green and slimy in Florida, Utah, California, and many other states. These blooms put people and ecosystems in danger. Scientists that study lakes and other inland bodies of water, known as limnologists, are working to predict and prevent future algal blooms. In this problem-based Quest activity, you will investigate an algal bloom at a lake and determine its cause. In labs and digital activities, you will apply what you learn in each lesson to help you gather evidence to solve the mystery. With enough evidence, you will be able to identify what you believe is the cause of the algal bloom and present a solution in the Findings activity.

**INTERACTIVITY**  
Mystery at Pleasant Pond



**NBC LEARN VIDEO**  
After watching the above Quest Kickoff Video, which explores the effects of a toxic algal bloom in Lake Erie, think about the impact that shutting down the water supply might have on your community. Record your ideas below.

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An algae bloom can seriously disrupt an ecosystem by interfering with an organism's ability to find food or function properly.

#### Quest CHECK-IN

##### IN LESSON 1

What are some possible causes of the algal bloom in the pond? Evaluate data to identify possible explanations for the problems at the pond.

**INTERACTIVITY**  
Suspicious Activities

#### Quest CHECK-IN

##### IN LESSON 2

How do nutrients affect organisms in an aquatic environment? Investigate how the nonliving factors can affect the organisms in a pond.

**INTERACTIVITY**  
Nutrients and Aquatic Organisms

#### Quest CHECK-IN

##### IN LESSON 3

How are cycles of matter and energy affected by environmental change? Explore the cycling of matter and the flow of energy among organisms in a pond.

**INTERACTIVITY**  
Matter and Energy in a Pond

##### IN LESSON 4

How do human activities impact ecosystems? Consider how people can cause unintended changes in an ecosystem such as a pond.

#### Quest FINDINGS

##### Complete the Quest!

Write a news story explaining what you think the cause of the algal bloom is. Tell how it has impacted the ecosystem and include a proposal for restoring the pond.

**INTERACTIVITY**  
Reflections on a Pond

386 Ecosystems and How They Change


387

### ▲ QUEST FOR IDEAS, ANSWERS, AND EVIDENCE

Uck! What turned this pond green? In this Quest, students investigate factors influencing algae blooms.



## Connect It!

 Shade in one of the arrows to indicate the direction in which energy flows between the frog and the fly.

**Analyze Systems** Where do you think the plants in the image get the energy they need to grow and survive?

.....

.....

.....

## CONNECTIONS

Learning is structured and intentional. Students explore the topic phenomenon throughout the lessons.

## QUEST CHECK-INS

What materials are needed to solve the Quest? Check-Ins ask students to reflect on the problem as they design their solutions.

## Quest CHECK-IN

In this lesson, you learned about the general roles that organisms can play in an ecosystem, as well as how relationships among those roles can be modeled through food chains, food webs, and energy pyramids.

**Apply Concepts** How might knowing about energy roles help you understand what's happening in the pond?

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## Quest FINDINGS

### Complete the Quest!

Write a news story stating your findings. Identify what you believe is the cause of the algal bloom at Pleasant Pond and describe the impact it has had on the populations of organisms that inhabit this ecosystem. Include a proposal on how to restore Pleasant Pond back to its pristine state using evidence from your investigation.

**Cause and Effect** What is the connection between the water in Pleasant Pond—an abiotic factor—and the biotic factors?

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## QUEST FINDINGS

At the close of each topic, students synthesize information and construct explanations as they complete their Quest.



# The Next Level of **STEM** Education

*Elevate Science* connects Science, Technology, Engineering, and Mathematics in every topic, at every grade. STEM activities fuel innovation, problem solving, collaboration, and reasoning—skills for future careers.

## **Quest** KICKOFF

What do you think is causing Pleasant Pond to turn green?

### ◀ **STEM QUEST KICKOFF**

Students use STEM practices to solve the Quest problem in each topic.

### **HANDS-ON LAB**

**Connect** Explore how communities change in response to natural disasters.

### **HANDS-ON LAB**

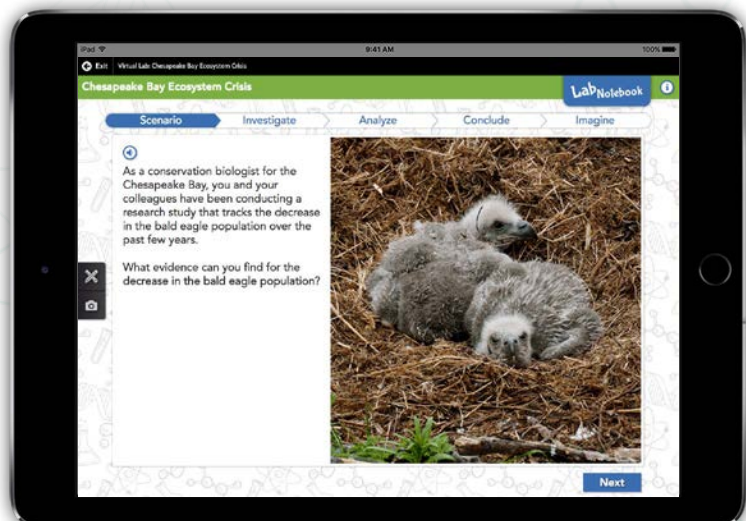
**Investigate** Observe how decomposers get energy.

### **HANDS-ON LAB**

**Investigate** Model how space can be a limiting factor.

### ▶ **STEM LABS**

Make STEM hands-on! STEM Labs let students experiment, model, design, and construct.





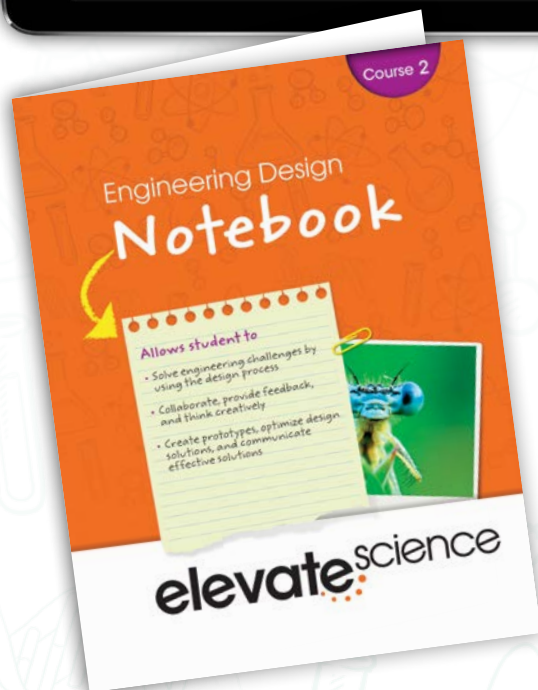


## STEM CONNECTIONS

STEM Connections help students think critically about real-world problems.

## ENGINEER IT! LAB

Students engage in engineering practices to design, build, and apply core ideas to new situations.



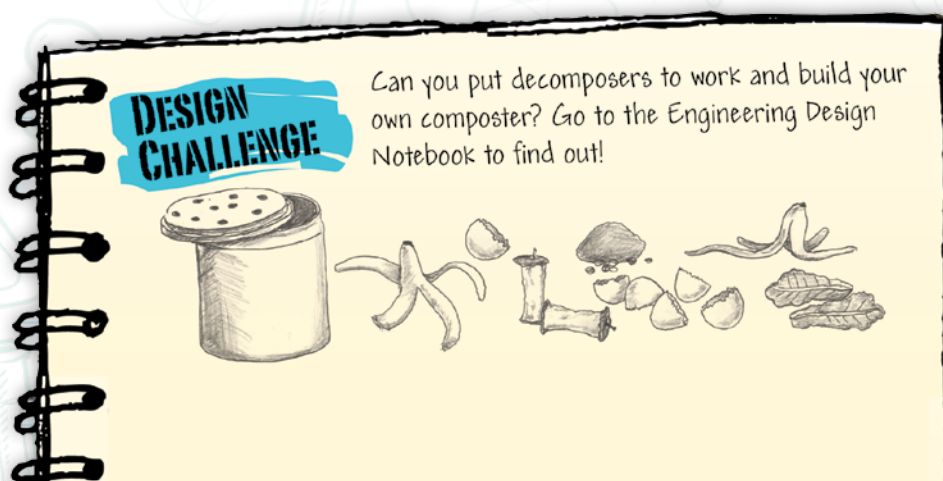
## ENGINEERING DESIGN NOTEBOOK

A recording journal allows students to ideate, design, prototype, build, and improve their inventions.



## ENGINEERING CONNECTION

Integrate science and engineering practices throughout the curriculum.





## Focus on the NEW Standards and the Science/Engineering Practices

The new science standards emphasize the practice of scientific inquiry and analysis. *Elevate Science* provides a variety of student interactions that shift the cognitive expectation from simple answers to higher-level, critical-thought responses. Explicit strategies guide the learner while hands-on investigations focus on open-ended inquiry.



### CONNECT IT!

Students engage with the phenomena and connect it to the disciplinary core idea.

### PLAN IT!

Students develop procedures to test their ideas.

### MODEL IT!

Students logically think through their ideas to explain and apply concepts.

### DESIGN IT!

Ample space for students to sketch out ideas to test their solutions.

### QUESTION IT!

Students demonstrate their understanding and application of the key concepts.

### Connect It!

**Male northern cardinals express the trait for bright red wing color. Circle the male cardinal.**

**Predict** List four more visible characteristics that these birds will pass on to their offspring. Then list the inherited trait that their offspring will possess.

Visible Characteristics	Inherited Traits
	bill color
	face color

### Plan It!

#### Develop a Procedure

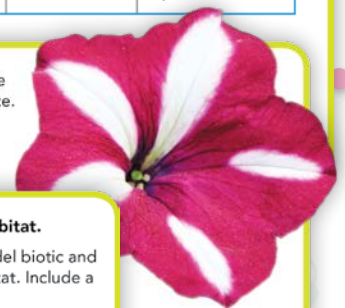
Consider five other traits that Mendel investigated. Explain how you could repeat Mendel's procedure for one of these traits and what the likely results would be.

Apply  
No, it  
inform

Trait	Dominant	Non dominant
seed shape	round	wrinkled
seed color	yellow	green
pod color	green	yellow
flower color	purple	white
pod position on stem	side of stem	top of stem

### Model It!

**Apply Concepts** Draw the parents of this flower in the box assuming the flower's color is determined by codominance.



### Design It!

**There are different biotic and abiotic factors in a habitat.**

**Develop Models** Using common materials to model biotic and abiotic factors, draw how you could model a local habitat. Include a key to identify what the different materials represent.

### Question It!

#### We Got the Beak!

**Identify Knowns** The finches in **Figure 8** show variations due to adaptation. Suppose someone asks you what caused a bird's beak to change to begin with. How would you answer the person?

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## ▼ CLASSROOM MATERIALS KITS

Organized equipment kits provide the materials to support all of the program labs.



## ▼ uENGINEER IT! MAKER CRATES

Encourage creative building and tinkering. These crates contain materials to support and extend the uEngineer It! Labs.



Materials are packaged to facilitate easy and efficient set-up

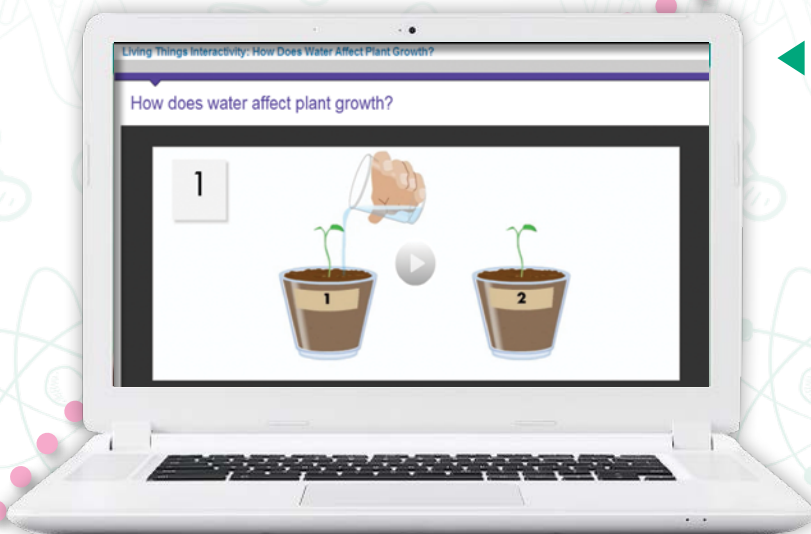
## littleBits

### littleBITS EXTENSION KITS

Inspire inventors! Students can make programmable robots, vehicles, and machines using simple, modular electronics.

## ◀ VIRTUAL LABS

Virtual science simulations engage digital learners. Plus nothing gets broken!





# The Next Level of Integration

Raise the bar on ELD/Literacy and Mathematics Standards.

**Elevate Science** helps students think about, read about, write about, and talk about science. By integrating crucial skills, you'll "elevate" results in all disciplines.



## Focus on ELD/Literacy Standards

### Literacy Connection

#### Integrate with Visuals

Why is an energy pyramid shaped like a triangle with the point on top? Use evidence from the text to support your answer.

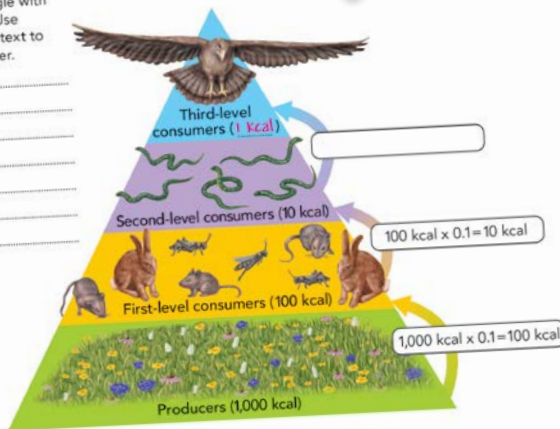
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### Energy Pyramid

**Figure 5** This energy pyramid diagram shows the energy available at each level of a food web and how it is calculated. Energy is measured in kilocalories, or kcal.

**Calculate** Using the pattern of energy movement shown in the figure, write in the missing equation for the missing energy at the third-level consumer level to the hawk at the top.

### LITERACY CONNECTION

Every topic targets a critical literacy skill, such as using evidence from texts to make well-defended claims.

### Literacy Connection

**Draw Comparative Inferences** Identify locations in both the diagram and the text that describe the similarities and differences between DNA and RNA.

### Literacy Connection

#### Cite Textual Evidence

Underline two sentences that tell how changes to genes in body cells differ from changes to genes in sex cells.



## Connections

**Literacy** Cite Textual Evidence

**Math** Represent Relationships

**READING CHECK** Summarize Text How do birth and death rates affect a population's size?

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.....

## READING CHECK

Formative assessment opportunities help you provide feedback to improve students' learning.

## Mathematics Standards

### MATH TOOLBOX

Bring math relevance and depth to science! Integrated math practices apply concepts to real situations.

### Math Toolbox

**Construct Graphs** Guide students as they complete the math activity.

- As a class, fill in the x-axis with increments of 10 and the y-axis on the right side with increments of 200.
- Ask: How is this graph different from most? (There are two y-axes to show two data sets with very different ranges. We will plot the two data sets using different colors to make it easier to tell them apart.)

### Math Toolbox

**Represent Relationships** Guide students in completing the Math Toolbox activity.

- Ask students to write down what they notice about the data in the chart.
- Project the graph and have volunteers identify each data point on the graph. Connect the points with a line.
- Have students describe how the deer population has changed from 2000 to 2010.
- Ask: What might have caused the change in population?

### Math Toolbox

#### Graphing Population Changes

Changes in a population over time, such as white-tailed deer in Ohio, can be displayed in a graph.

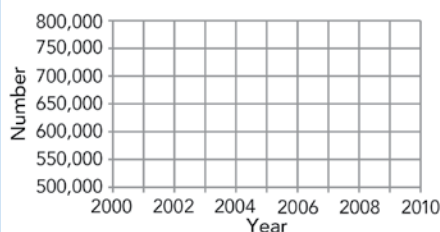


1. **Represent Relationships** Use the data table to complete a graph of the changes in the deer population. Then describe the trend in the graph.

2. **Cause and Effect** What factors do you think might be responsible for the changes in the deer population?

Deer Population Trends, 2000–2010

Year	Population (estimated)	Year	Population (estimated)
2000	525,000	2006	770,000
2001	560,000	2007	725,000
2002	620,000	2008	745,000
2003	670,000	2009	750,000
2004	715,000	2010	710,000
2005	720,000		



SOURCE: Ohio Department of Natural Resources



# The Next Level of Assessment and Differentiation

In a differentiated classroom, all learners have a better chance of mastering the new science standards. *Elevate Science* helps teachers make strong connections between assessment and differentiated instruction.

## Assessment for Three-Dimensional Learning

### LESSON CHECK

Formative assessment in every lesson helps you monitor and support student progress.

**LESSON 1 Check**

- Identify** Identify the levels of organization in an ecosystem from smallest to largest.
- Interpret Data** Does the data support the idea that this population size is relatively stable? Give evidence to support your answer.

Answer questions 2 and 3 using the graph below.

**Changes in Mouse Population**

Year	Births	Deaths
1	15	10
2	20	15
3	25	20
4	30	25

- Patterns** What trends do you observe in the mouse population for the four years?
- Analyze Systems** Why is climate considered to be a limiting factor for populations in an ecosystem?

### EVIDENCE-BASED ASSESSMENT

Put students on the path to success with practice aligned towards demonstrating their mastery of science concepts.

**TOPIC 9 Review and Assess**

- Living Things and the Environment**
  - Which of the following describes a population?
    - A. 85 great white sharks off Cape Cod
    - B. thousands of dolphins and whales around Hawaii
    - C. a mating pair of seagulls migrating to an island
    - D. corals, sponges, algae, reef fish, lobsters, and giant clams
  - Which of the following is a biotic factor that might limit a population of mice?
    - A. water for the mice to drink
    - B. rainy weather that floods the mice's nests
    - C. owls that prey on the mice
    - D. rocks in which the mice can hide from predators
  - In terms of its effect on population, which factor is most similar to birth rate?
    - A. immigration
    - B. density
    - C. emigration
    - D. carrying capacity
  - Apply Concepts** Name two biotic and two abiotic factors you might find in a desert ecosystem.
- Energy Flow in Ecosystems**
  - Which of the following terms describes a straight series of connections among organisms that feed on each other?
    - A. food web
    - B. ecosystem
    - C. community
    - D. food chain
  - Mushrooms and bacteria are important in an ecosystem.
    - A. predators
    - B. decomposers
    - C. producers
    - D. herbivores
  - Construct Explanations** What energy pyramid shows?
- Develop Models** Draw a food web that illustrates the relationships among grasshopper, a mouse, a rabbit, hawk. Use the following information:
  - A. grass: producer
  - B. grasshopper: first-level consumer
  - C. mouse and rabbit: first- and second-level consumers
  - D. coyote: second- and third-level consumers
  - E. hawk: third-level consumer

**TOPIC 7 Review and Assess**

**Evidence-Based Assessment**

An oceanographic research team is investigating patterns in surface ocean currents around the globe. After collecting the data, they develop a map to record information about major surface currents in the ocean. Their map shows both the directions of the surface currents and the temperature of the water carried by the currents.

**KEY**

- Blue arrow: Cold current
- Red arrow: Warm current

### END-OF-TOPIC ASSESSMENT

Summative assessment at the end of each topic helps to refine teaching practices.

**Demonstrate Lab**

**Changes in an Ecosystem**

**Background**

Forest fires have a bad reputation! Indeed, many forest fires can endanger habitats, human life, and property. But, forest fires can also serve an important function by changing the physical and biological components in a longleaf pine ecosystem. How does a forest fire disrupt a longleaf pine forest and affect populations of organisms?

**Materials** (per pair)

- tree shadow circles handout
- scissors
- transparent tape

**Safety**

Be sure to follow all safety guidelines provided by your teacher. The Safety Appendix of your textbook provides more details about the safety icons.

### PERFORMANCE-BASED ASSESSMENT

End-of-topic performance assessments allow students to demonstrate mastery of the new science standards.

## ELD SUPPORT

ELD.K12.ELL.SI.1, ELD.K12.ELL.SC.1

**Writing** Use these prompts for students at different proficiency levels to help them write about the main ideas on the page.

**Entering** Draw a picture of two organisms that need each other to survive.

**Beginning** Write and complete the following sentence: In some relationships, two species \_\_\_\_\_ on one another. (depend)

**Developing** Look at the photo of the banded mongoose and the warthog. Describe their relationship.

**Expanding** Tell what kind of relationship is shown in the photo of the hummingbird and the flower. Give evidence to support your answer.

**Bridging** Write a paragraph that compares and contrasts mutualism and commensalism.

## ELD and Differentiation



### ELD SUPPORT

Integrate English language development for varying proficiency levels.

### SCAFFOLDED QUESTIONS

Use the questions below to assess students' depth of understanding of the content on this page. Have students support their responses with evidence from the text.

**Compare** How does secondary succession differ from primary succession? (*Secondary succession occurs in an area where an ecosystem has been disturbed, but soil and some organisms still remain. Primary succession occurs where there is no soil and there are no organisms present.*)

**DOK 2**

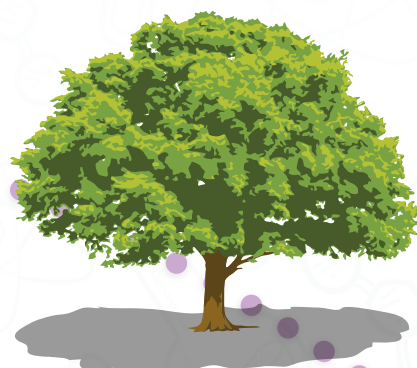
**Distinguish** What kind of succession would occur in an area that has been damaged by floods? (*Secondary succession would occur because it is likely that soil and some organisms would be left behind after the flood.*) **DOK 3**

### SCAFFOLDED QUESTIONS

Reduce student frustration and help them focus on **Depth of Knowledge (DOK)**.

### DEPTH OF KNOWLEDGE (DOK)

Multiple DOK-level questions help students focus on the "Big Ideas."



### DIFFERENTIATED INSTRUCTION

#### L1 Support Struggling Students

Ask students to suppose that they are reporters who want to find out more about field biologists and what they do. Have students pose questions to you about the career. Then switch roles and ask questions to the students.

#### L3 Support Advanced Students

Organize students in pairs. One student will be a field biologist working in a specific environment and the other student will be a reporter. Have each reporter give a mock interview to the field biologist, asking specific questions about what they are studying in the environment, any tools they use, and interactions they have observed between living and nonliving things.

### HANDS-ON LAB

GO ONLINE to download...

#### Investigate Lab

**Observing Decomposers** Students will observe how materials decay in a compost pile.

**Class Time** 20 min × 10 days

**Group Size** pairs

**Materials (per group)** 2-liter plastic bottle, potting soil, kitchen waste, garden waste, plastic wrap, spray water bottle, toothpick (1), pair of scissors (1), rubber band (1), earthworms (5)

### Focus on Mastery!

**Connect It! Construct Explanations** Organize students into smaller groups. Before they complete the activity, have them discuss the following questions:

- What characteristics do living things have? (They find or make food. They are made up of cells. They grow and change over time. They reproduce.)
- What characteristics do nonliving things have? (They do not need food. They are not made up of cells. They do not reproduce. They do not grow and change.)

Most students will identify rocks, soil, and water as nonliving things in the photo of the watering hole. In order to help them identify air as a nonliving thing, ask: What nonliving thing in the photo cannot be seen, smelled, or touched? (air)

### DIFFERENTIATED INSTRUCTION

On-the-spot strategies help support struggling students and advanced learners.

### GUIDING INQUIRY

Find useful procedures to guide inquiry when more support is needed.

### FOCUS ON MASTERY

Help students achieve mastery by focusing on the Science and Engineering Practices.

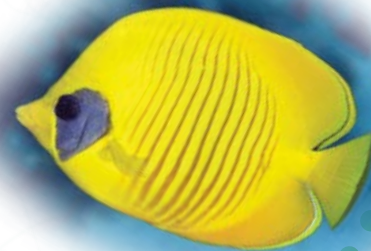


## Transform Learning and Manage Changing Classrooms

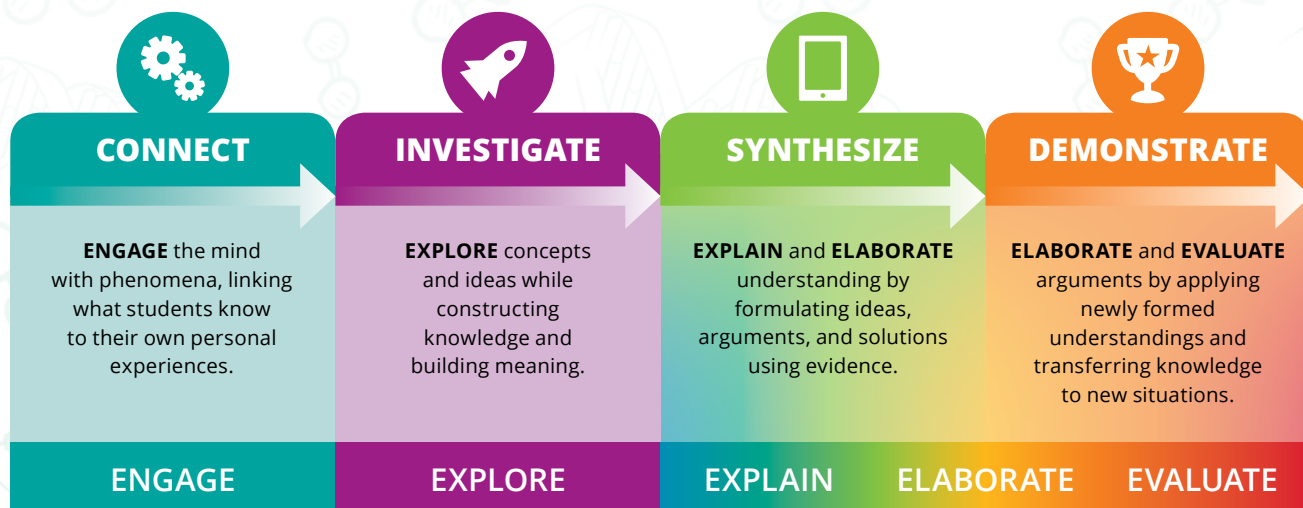
Feel confident teaching science! *Elevate Science* helps teachers create a learning culture that's nimble, personalized, and student-centered. The curriculum includes all needed resources to implement the new science standards identified at point of use.

### Focused on Inquiry-Based Teaching

*Elevate Science* integrates 5E learning in a new CISD Instructional Model (Connect, Investigate, Synthesize, Demonstrate) and provides an instructional plan designed for today's blended learning environment. Students expand their current thinking as they investigate real problems, synthesize their knowledge in new situations, and demonstrate their understanding of core ideas.



### 5E Learning Intersects with 21<sup>st</sup> Century Competencies

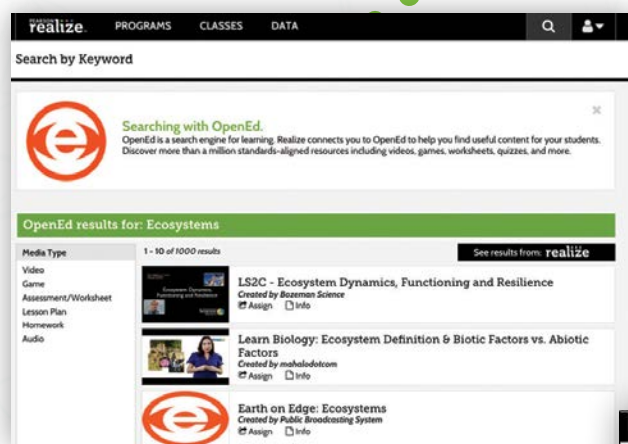
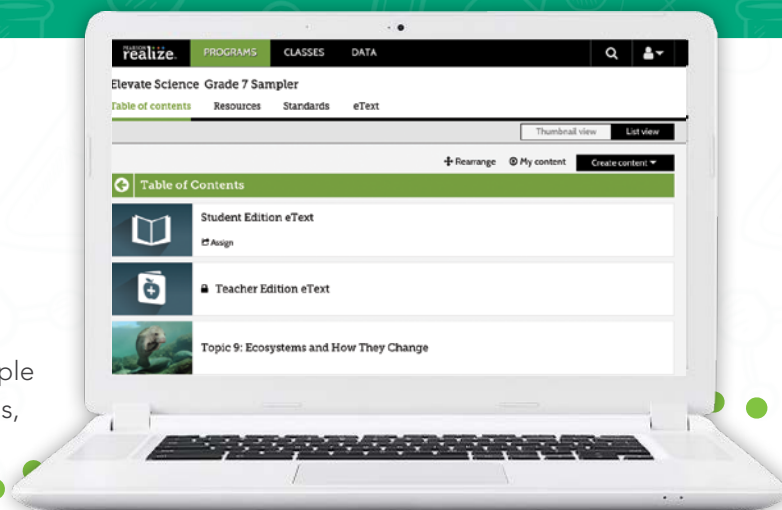


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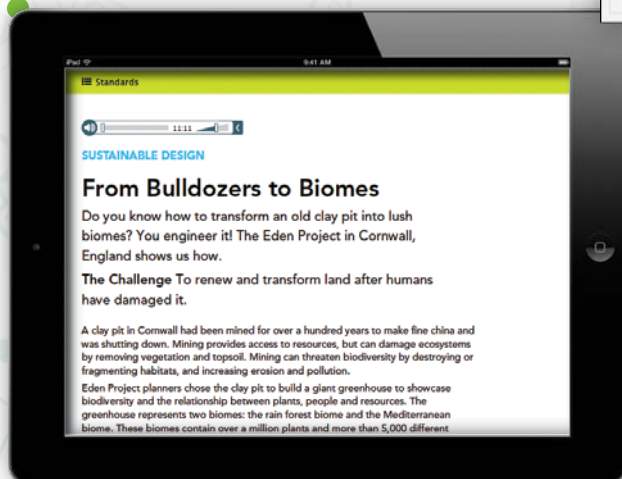
## TEACH THE STANDARDS

Search by standard or keyword. It's simple and easy to access lessons, assignments, and tools.



## ACCESS STUDENT DATA

Check students' mastery of the science standards. View progress, time spent on task, and assignments.



## MAKE IT YOUR OWN

Add Google docs and OpenEd resources! Modify content and assignments. Easily integrate your class rosters.

For a full description of our online resources, visit [PearsonSchool.com/ElevateSci](http://PearsonSchool.com/ElevateSci)



## WORK OFFLINE OR ONLINE

The Realize™ Reader eText lets students work offline. Everything stays in sync when reconnected to the web.

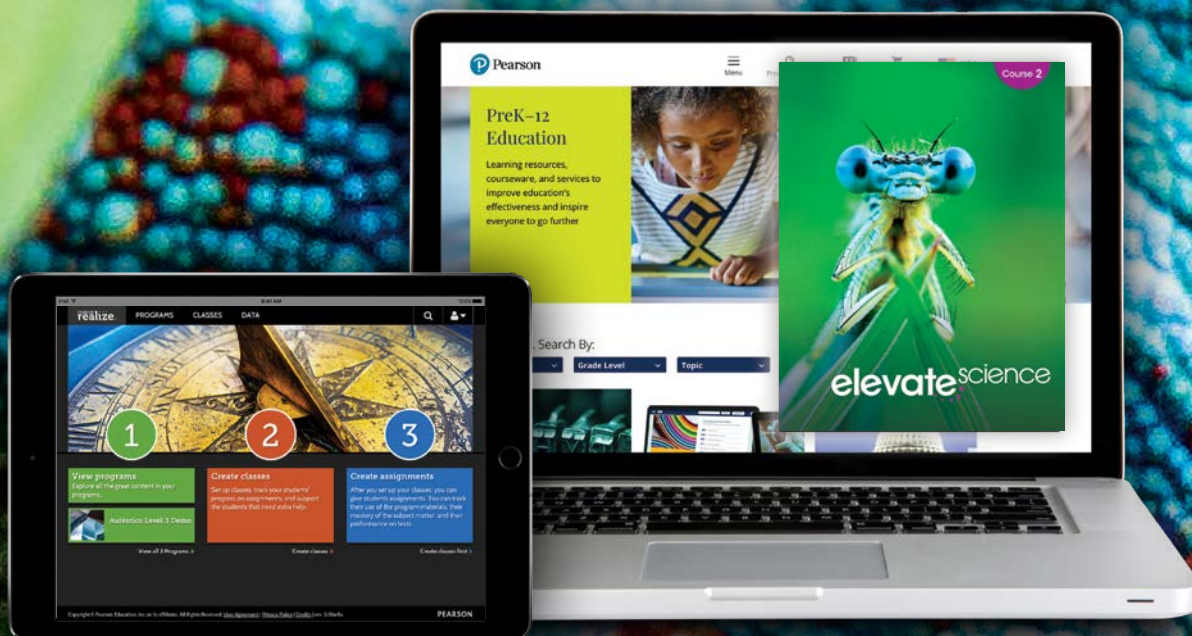


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**TRY THE ONLINE PROGRAM!**

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**Go online to access your digital resources.**

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