SAVVAS

PROGRAM OVERVIEW
GRADES 6-8


elevate science

elevate science

# uDo! uLearn!

Let students experience the wonder of science—the doing, questioning, and digging. ***Elevate Science*** supports teaching the Next Generation Science Standards. Students investigate phenomena, engineer solutions, and demonstrate their understanding of key concepts. ***Elevate Science*** connects the heart of science knowledge with the science of "doing."

## uDemonstrate

Students **exhibit proficiency** in key concepts and science and engineering practices.



## uInvestigate

Students **experience phenomena** to build scientific and engineering understanding.

## uEngineer

Students **build and design solutions** to real-world problems to practice and apply SEPs.

# Flexible Implementation Options

Meet our most flexible science program yet. ***Elevate Science*** offers three options for Grades 6-8 to meet your district's NGSS Course Map. Teach with print, digital, or a combination of both.

## Course 1, Course 2, Course 3

- Prescribed Integrated Science -


## Life, Earth, and Physical Science

- Domain Specific -

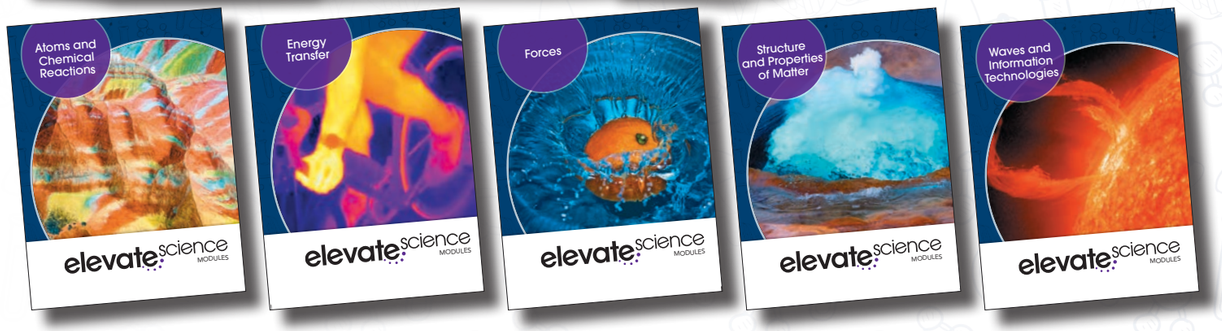

Next Generation Science Standards is a registered trademark of Achieve. Neither Achieve nor the lead states and partners that developed the Next Generation Science Standards were involved in the production of this product, and do not endorse it.



## Science Modules

- 12 Modules for Districts Building Their Own Curriculum -

### Physical Science




### Earth Science


### Life Science

# Activate Phenomena

The **Topic Opener** introduces the central idea and awakens students' restless curiosity. The **Essential Question** jumpstarts conversation and generates the need for investigation.

### Launch with a Phenomenon

Use Topic Opener images to spark a classroom discussion and engage students in the phenomenon before diving into instruction.

### Digital Resources

Use online digital resources to further engage students in the phenomenon.

### Next Generation Science Standards

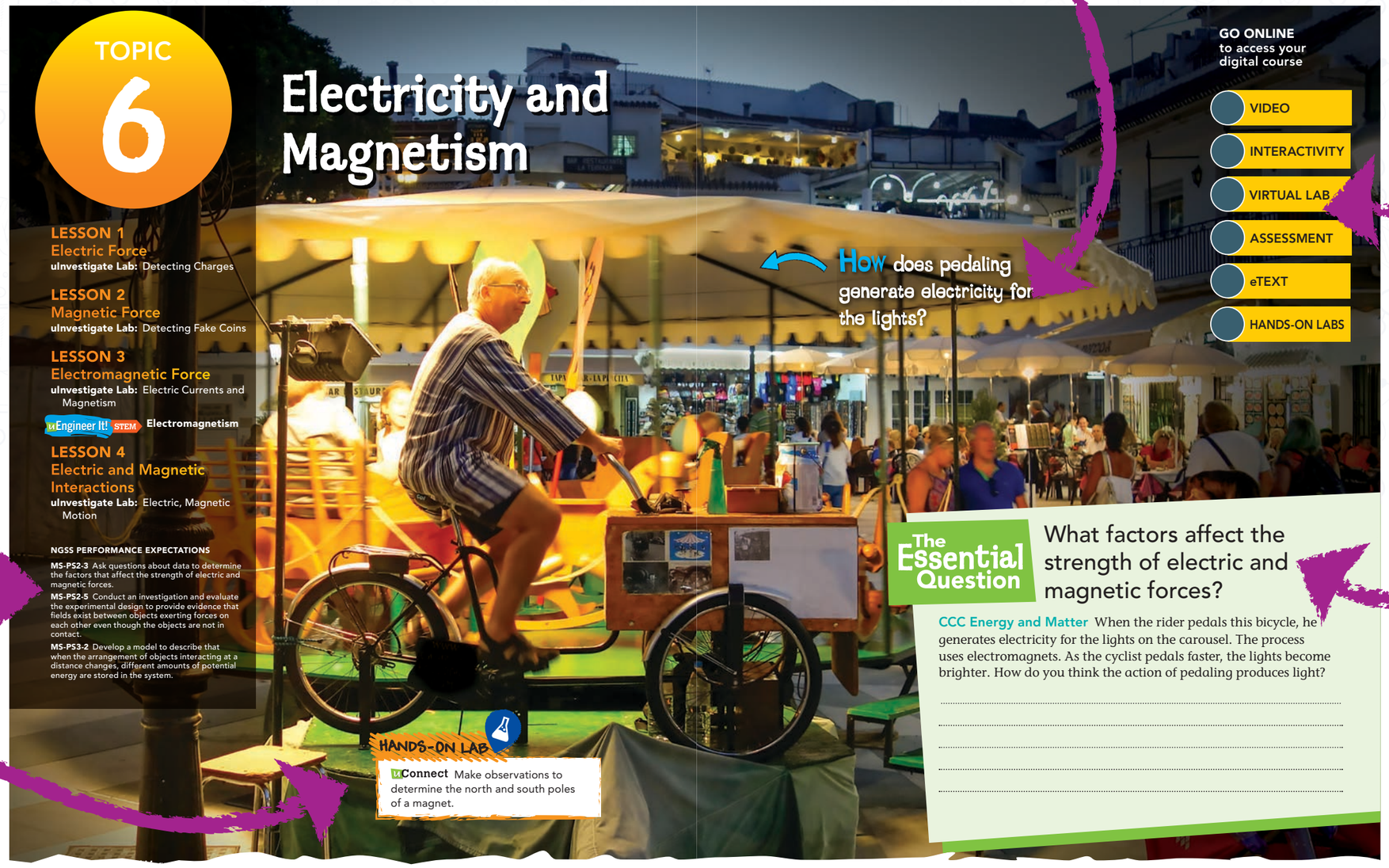
Identifies the essential focus across the Topic exploration.

### Hands-on Lab

Activate the phenomenon with a quick hands-on investigation.

### Essential Question

Build excitement around the phenomenon through student discourse.



# Go on a Quest Adventure

Each topic in ***Elevate Science*** begins with a **Quest** problem-based challenge centered on **phenomenon** to encourage open-ended inquiry.

The **Quest** presents an authentic storyline, reinforcing the key concepts and linking the lessons together in a logical progression that builds student understanding.

**Quest Kickoff**
Launch the problem-based challenge, engaging the student in the phenomenon featured in the topic.

**Quest Check-In**
Each lesson connects student learning to the problem-based challenge.

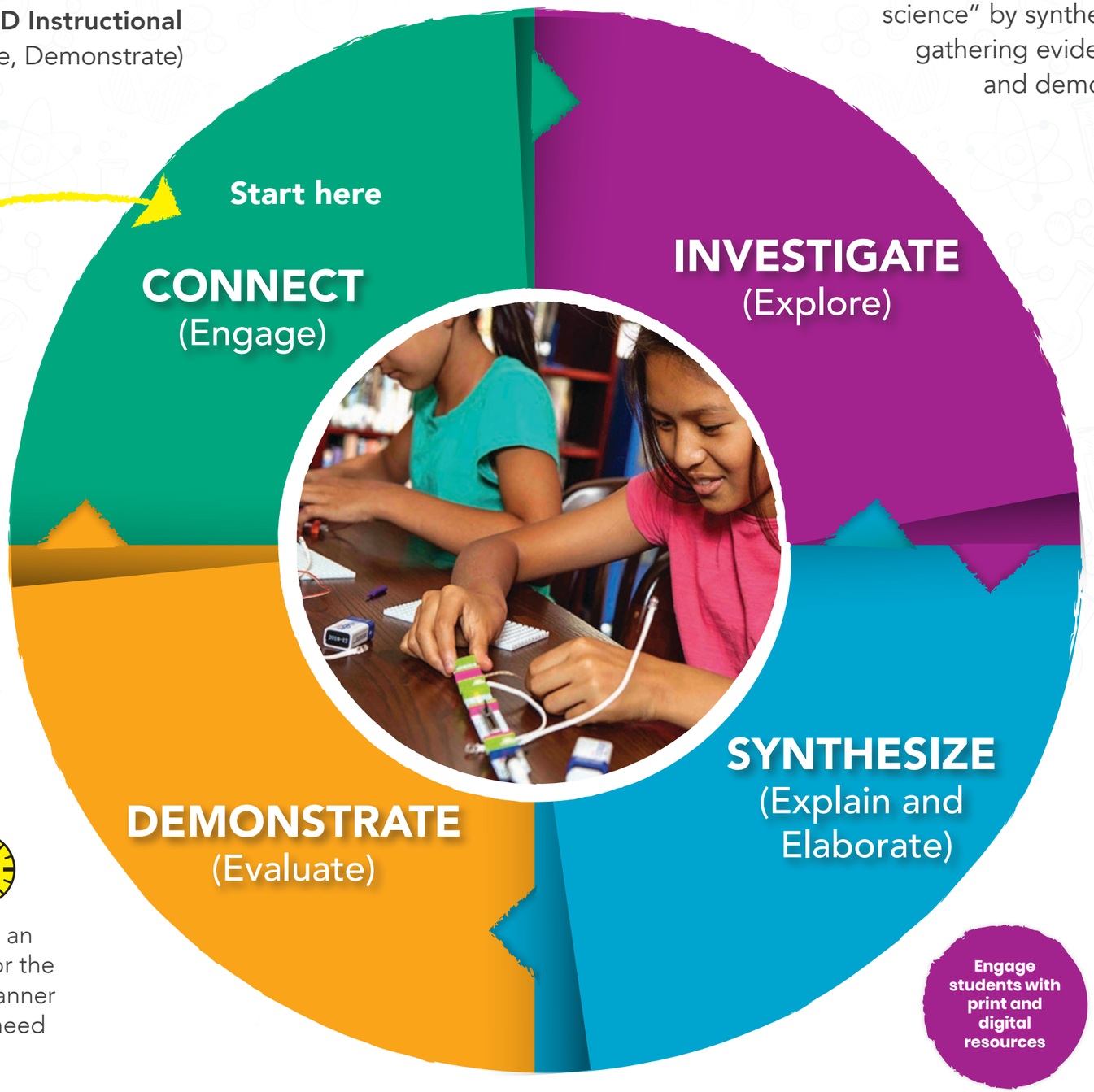
**Quest Findings**
Students present solutions to the original challenge using the evidence at the end of a topic.

**Quests** inspire students to pursue Science-related careers.

## Empower Students

Based on the 5E learning cycle, the **CISD Instructional Model** (Connect, Investigate, Synthesize, Demonstrate) empowers students to become more self-directed, curious, and accountable.

Using print and digital resources, students "do science" by synthesizing ideas, asking questions, gathering evidence, analyzing and using data, and demonstrating their understanding.




### CONNECT
(Engage)

- Phenomena Interactions
  - Observable
  - Hands-on
  - Digital

### DEMONSTRATE
(Evaluate)

- Formative Assessments with Remediation Activities
- Rubrics

### INVESTIGATE
(Explore)

- *u*Investigate Labs
- Interactivities
- Virtual Labs
- Science Notebooking Activities

### SYNTHESIZE
(Explain and Elaborate)

- Interactive Model It, Question It, Design It
- Quest Interactivities, Labs, and Check-Ins
- Hands-on Labs
- Focus on Mastery Activities
- Science Notebooking Activities
- Enrichment Activities

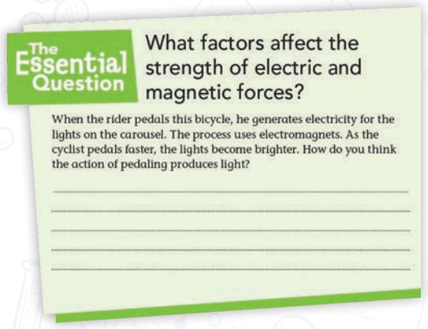
### Short on Time?

No worries! We have built in an **alternate route**. Just look for the yellow clock in the lesson planner to ensure you teach all you need in less time.

# Investigate and Understand Phenomena

***Elevate Science*** provides scaffolded lab activities to explore the phenomenon featured within a topic. Students follow the Inquiry Steps to Mastery below to experience science like scientists and engineers.

**1**


The Essential Question

What factors affect the strength of electric and magnetic forces?

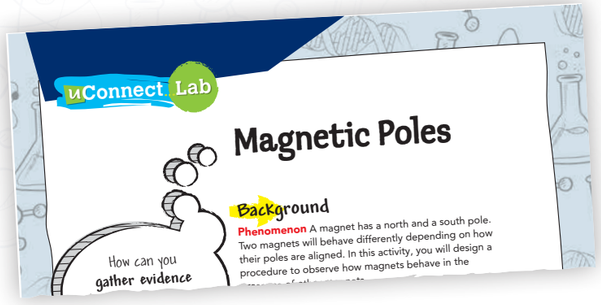
When the rider pedals this bicycle, he generates electricity for the lights on the carousel. The process uses electromagnets. As the cyclist pedals faster, the lights become brighter. How do you think the action of pedaling produces light?

The **Essential Question** introduces the topic's phenomenon, exposes the Big Idea, and engages students in discourse.

**2**

## *u*Connect Lab

- Activates the phenomenon
- Builds a foundational, common experience
- Connects core ideas with science and engineering practices

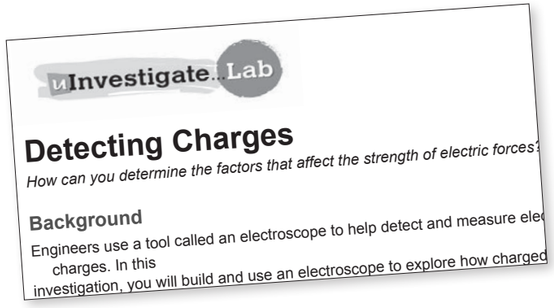

uConnect Lab

Magnetic Poles

How can you gather evidence

Background

Phenomenon A magnet has a north and a south pole. Two magnets will behave differently depending on how their poles are aligned. In this activity, you will design a procedure to observe how magnets behave in the


uInvestigate Lab

Detecting Charges

*How can you determine the factors that affect the strength of electric forces?*

Background

Engineers use a tool called an electroscope to help detect and measure elec charges. In this investigation, you will build and use an electroscope to explore how charged

**3**

## *u*Investigate Lab

- Explores the topic's core ideas
- Encourages students to construct knowledge while connecting concepts
- Supports evidence gathering as students move along the Quest

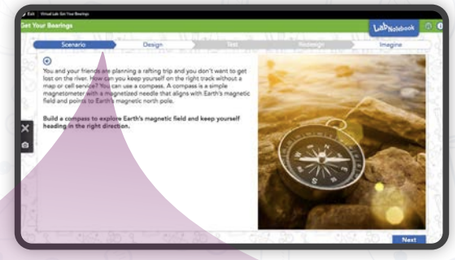




**4**

## Virtual Lab

- Quick, accessible, multivariable digital investigations
- Provides instant feedback for students
- Develops skills for evidence gathering and critical thinking




Scenario → Investigate → Analyze → Conclude → Imagine

**5**


uEngineer It! Sustainable Design STEM

littleBits

DESIGNING TO PREVENT Destruction

VIDEO Watch how underwater earthquakes displace water.

How do you design a building that can withstand the forceful waves of a tsunami? You engineer it!

The Challenge: To construct tsunami-safe buildings.

Phenomenon A seafloor earthquake can displace water above it, causing a tsunami to form. When the tsunami reaches land, giant waves cause widespread destruction.

Because parts of the United States are at risk for tsunamis, U.S. engineers have developed new building standards to save lives. They studied new design concepts. Strong columns enable buildings to stand, even when battered by tons of water and debris. Exits on upper floors allow people to get out when lower floors are flooded.

To develop standards, engineers visited Japan, where an earthquake and tsunami in 2011 caused terrible losses of life and property. The engineers also used wave research to model tsunamis and their impact on buildings.

These engineers hope that hospitals, schools, and police stations, if built to the new standards, can then provide shelter for people fleeing danger.

Though much smaller than the one that struck Japan in 2011, a 1964 tsunami devastated Crescent City, California, shown above.

It is a challenge to design and engineer structures that can withstand the force of a tsunami. Under new standards, schools would be built to withstand the force of water and debris. This increases the cost of construction, but the improved safety far outweighs the added cost.

DESIGN CHALLENGE Can you design a structure that will withstand the force of a tsunami? Go to the Engineering Design Notebook to find out!

Tsunami-safe area

Classrooms

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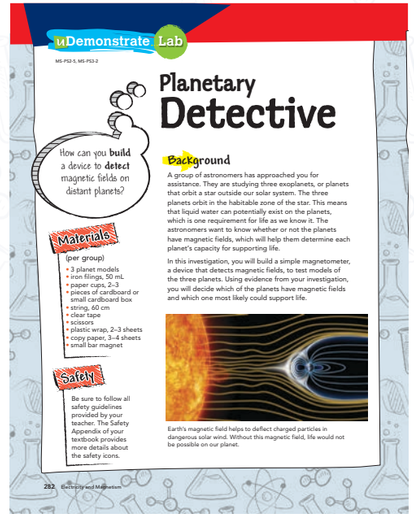
## *u*Engineer It! STEM Lab

- Models the engineering and design process
- Develops critical thinking and communication skills
- Encourages creativity and collaboration

Downloadable and editable labs online

**6**


uDemonstrate Lab

MS-PS2-5, MS-PS2-2

Planetary Detective

How can you build a device to detect magnetic fields on distant planets?

Materials

(per group)

- 3 planet models
- iron filings, 50 mL
- paper cups, 2–3
- pieces of cardboard or small cardboard box
- string, 60 cm
- clear tape
- scissors
- plastic wrap, 2–3 sheets
- copy paper, 3–4 sheets
- small bar magnet

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.

Background

A group of astronomers has approached you for assistance. They are studying three exoplanets, or planets that orbit a star outside our solar system. The three planets orbit in the habitable zone of the star. This means that liquid water can potentially exist on the planets, which is one requirement for life as we know it. The astronomers want to know whether or not the planets have magnetic fields, which will help them determine each planet's capacity for supporting life.

In this investigation, you will build a simple magnetometer, a device that detects magnetic fields, to test models of the three planets. Using evidence from your investigation, you will decide which of the planets have magnetic fields and which one most likely could support life.

Earth's magnetic field helps to deflect charged particles in dangerous solar wind. Without this magnetic field, life would not be possible on our planet.

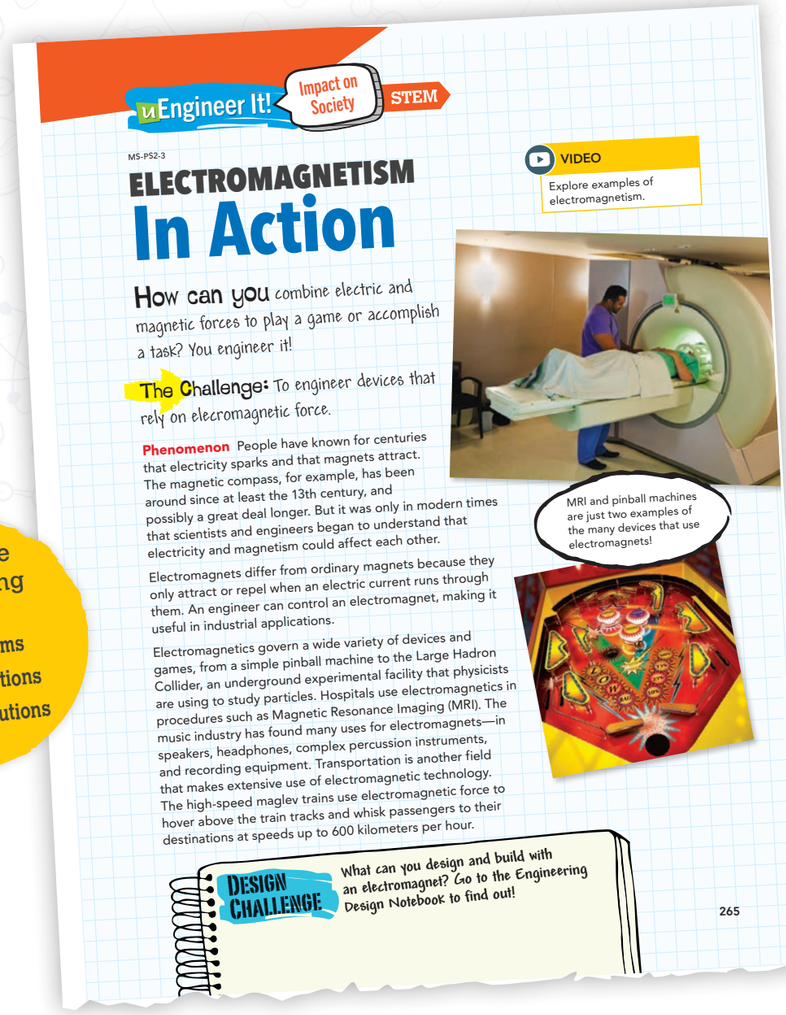
282 Electricity and Magnetism

## *u*Demonstrate

- Summative performance-based assessment opportunity at topic close
- Makes use of Claim-Evidence-Reasoning
- Reflects three-dimensional learning

# Innovate, Design, and Engineer *It*!

***Elevate Science*** engages and empowers all students to be the world's next generation of inventors, explorers, innovators, and scientists by inspiring a craving for exploration.


uEngineer It! Impact on Society STEM

MS-PS2-3

ELECTROMAGNETISM In Action

VIDEO
Explore examples of electromagnetism.

**How can you** combine electric and magnetic forces to play a game or accomplish a task? You engineer it!

**The Challenge:** To engineer devices that rely on elecromagnetic force.

**Phenomenon** People have known for centuries that electricity sparks and that magnets attract. The magnetic compass, for example, has been around since at least the 13th century, and possibly a great deal longer. But it was only in modern times that scientists and engineers began to understand that electricity and magnetism could affect each other.

Electromagnets differ from ordinary magnets because they only attract or repel when an electric current runs through them. An engineer can control an electromagnet, making it useful in industrial applications.

Electromagnetics govern a wide variety of devices and games, from a simple pinball machine to the Large Hadron Collider, an underground experimental facility that physicists are using to study particles. Hospitals use electromagnetics in procedures such as Magnetic Resonance Imaging (MRI). The music industry has found many uses for electromagnets—in speakers, headphones, complex percussion instruments, and recording equipment. Transportation is another field that makes extensive use of electromagnetic technology. The high-speed maglev trains use electromagnetic force to hover above the train tracks and whisk passengers to their destinations at speeds up to 600 kilometers per hour.

MRI and pinball machines are just two examples of the many devices that use electromagnets!

DESIGN CHALLENGE What can you design and build with an electromagnet? Go to the Engineering Design Notebook to find out!

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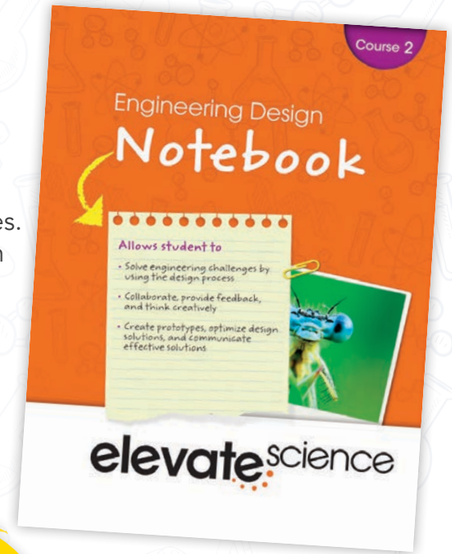
Follows the Engineering Process
- Define Problems
- Develop Solutions
- Optimize Solutions

## *u*Engineer It! with the Engineering Design Notebook

A consumable, student-focused, design notebook allows students to record solutions to the ***uEngineer It!*** design challenges. Each design challenge moves students through the engineering design process.

- Problem identification
- Proposed design solution
- Testing design improvements
- Communicating problem resolution




littleBits activities further energize STEM/STEAM innovation and inventiveness.

## uEngineer It! Maker Crates

Students channel "inventor" creativity with materials that support the engineering design process. Each kit includes plenty of reusable materials for ongoing innovation, iteration, and design improvement.

# Collect Evidence, Communicate, Demonstrate

***Elevate Science*** is rich with assessment opportunities to inform teaching and improve learning.

## Examples of Assessments Found in *Elevate Science*

### Diagnostic

- Entry-level
- Readiness

### Formative

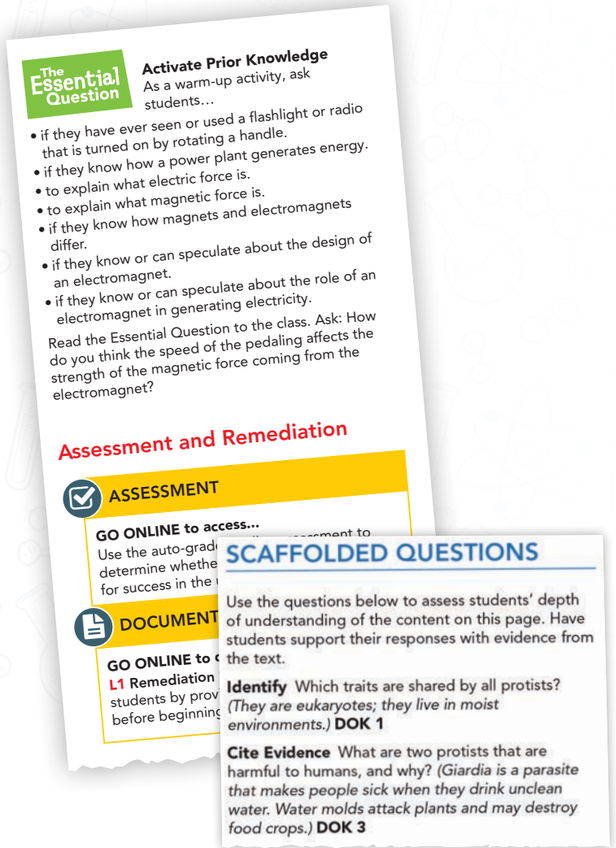
- Scaffolded Question Probes
- Checkpoint Questions
- Lesson Checks
- Lesson Quizzes
- Topic Reviews
- *u*Investigate Labs

### Summative

- Topic Tests
- Evidence-Based Assessments
- Benchmark Assessments
- End-of-Year Assessments

### Performance Tasks

- *u*Demonstrate Labs
- *u*Engineer It! STEM Labs
- Virtual Labs
- Quests


The Essential Question

**Activate Prior Knowledge**
As a warm-up activity, ask students…

- if they have ever seen or used a flashlight or radio that is turned on by rotating a handle.
- if they know how a power plant generates energy.
- to explain what electric force is.
- to explain what magnetic force is.
- if they know how magnets and electromagnets differ.
- if they know or can speculate about the design of an electromagnet.
- if they know or can speculate about the role of an electromagnet in generating electricity.

Read the Essential Question to the class. Ask: How do you think the speed of the pedaling affects the strength of the magnetic force coming from the electromagnet?

Assessment and Remediation

ASSESSMENT

GO ONLINE to access…
Use the auto-grad… determine whethe… for success in the …

DOCUMENT

GO ONLINE to …
L1 Remediation
students by prov… before beginning …

SCAFFOLDED QUESTIONS

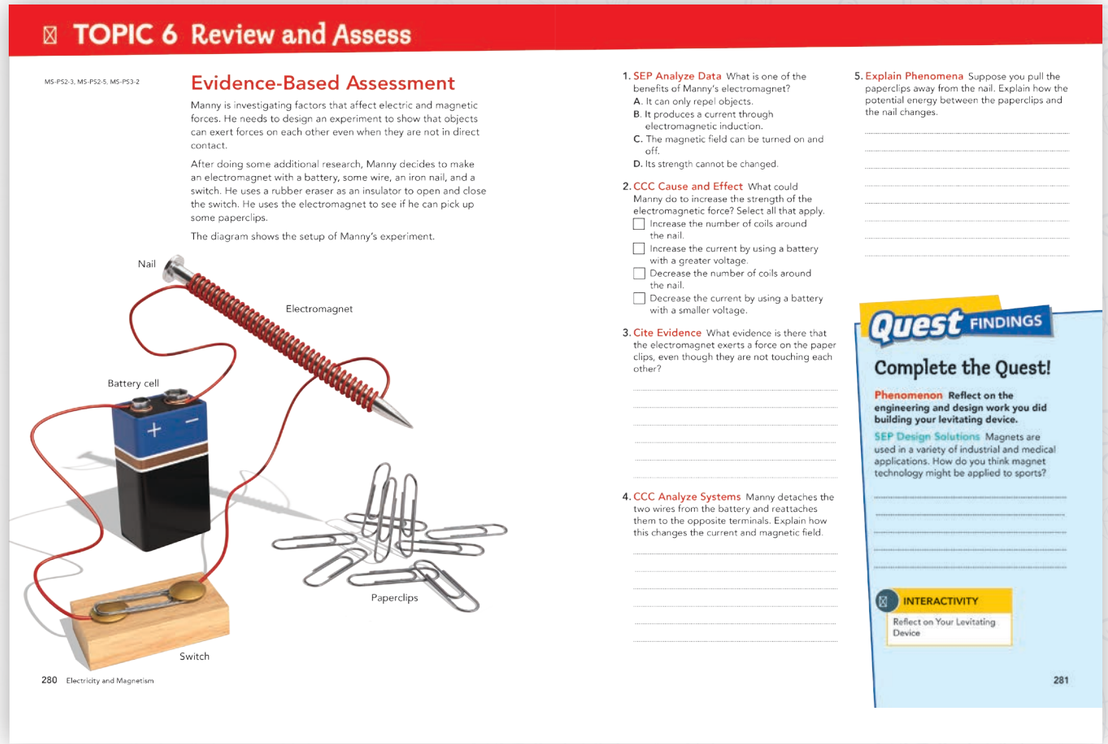
Use the questions below to assess students' depth of understanding of the content on this page. Have students support their responses with evidence from the text.

**Identify** Which traits are shared by all protists? *(They are eukaryotes; they live in moist environments.)* **DOK 1**

**Cite Evidence** What are two protists that are harmful to humans, and why? *(Giardia is a parasite that makes people sick when they drink unclean water. Water molds attack plants and may destroy food crops.)* **DOK 3**

### Scaffolded Questions

- Probes students' prior knowledge before beginning a topic
- Questions increase in difficulty and complexity
- Includes a depth of knowledge (DOK) level


TOPIC 6 Review and Assess

MS-PS2-3, MS-PS2-5, MS-PS3-2

Evidence-Based Assessment

Manny is investigating factors that affect electric and magnetic forces. He needs to design an experiment to show that objects can exert forces on each other even when they are not in direct contact.

After doing some additional research, Manny decides to make an electromagnet with a battery, some wire, an iron nail, and a switch. He uses a rubber eraser as an insulator to open and close the switch. He uses the electromagnet to see if he can pick up some paperclips.

The diagram shows the setup of Manny's experiment.

Nail
Electromagnet
Battery cell
Paperclips
Switch

1. SEP Analyze Data What is one of the benefits of Manny's electromagnet?
   A. It can only repel objects.
   B. It produces a current through electromagnetic induction.
   C. The magnetic field can be turned on and off.
   D. Its strength cannot be changed.
2. CCC Cause and Effect What could Manny do to increase the strength of the electromagnetic force? Select all that apply.
   - ☐ Increase the number of coils around the nail.
   - ☐ Increase the current by using a battery with a greater voltage.
   - ☐ Decrease the number of coils around the nail.
   - ☐ Decrease the current by using a battery with a smaller voltage.
3. Cite Evidence What evidence is there that the electromagnet exerts a force on the paper clips, even though they are not touching each other?
4. CCC Analyze Systems Manny detaches the two wires from the battery and reattaches them to the opposite terminals. Explain how this changes the current and magnetic field.
5. Explain Phenomena Suppose you pull the paperclips away from the nail. Explain how the potential energy between the paperclips and the nail changes.

Quest FINDINGS

Complete the Quest!

Phenomenon Reflect on the engineering and design work you did building your levitating device.

SEP Design Solutions Magnets are used in a variety of industrial and medical applications. How do you think magnet technology might be applied to sports?

INTERACTIVITY
Reflect on Your Levitating Device

280 Electricity and Magnetism

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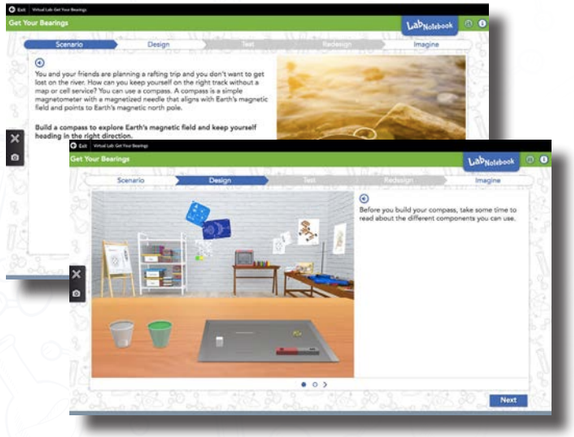
### Evidence-Based Assessments

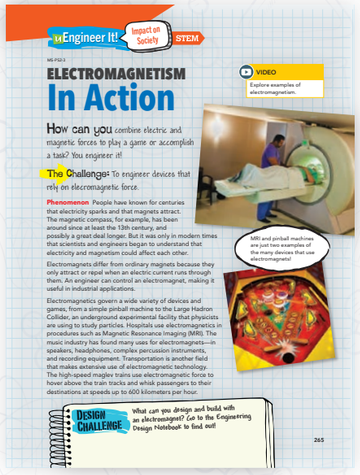
Evidence-Based Assessments found at the end of each topic present a scenario-based, multi-component task. The task will not only simultaneously assess multiple practices, but also measure a student's conceptual understanding of the topic's science ideas.

# Design. Build. Test. Repeat!

## Virtual Lab

- Quick, accessible, efficient digital investigations
- Open-ended with multiple simulations
- Assesses all dimensions of the Performance Expectation



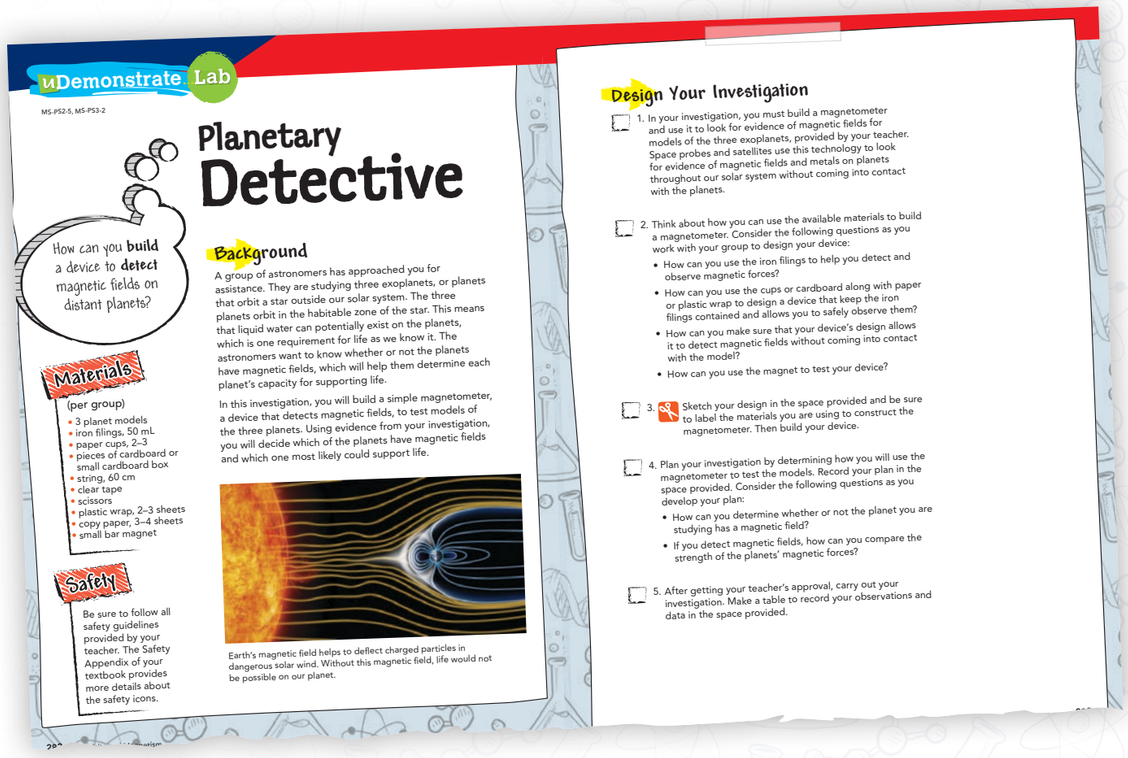

## uEngineer It! STEM Lab

Focuses on the Nature of Science and Engineering standards, where students apply the topic knowledge to an engineering challenge or problem.

## Quests

- **Quest Kickoff** provides authentic, open-inquiry experiences with a real-world phenomenon.
- Check-in tasks separately assess student proficiency in individual dimensions.
- **Quest Findings** determine students' ability to integrate the three dimensions in a specific context.




## uDemonstrate Lab

The *u*Demonstrate labs conclude every topic. Labs integrate all the dimensions of the performance expectations. Students will investigate by building and observing models and designing and engineering solutions. Each *u*Demonstrate has a complete rubric included online to guide and assess students' work.

# Teaching Made Easy

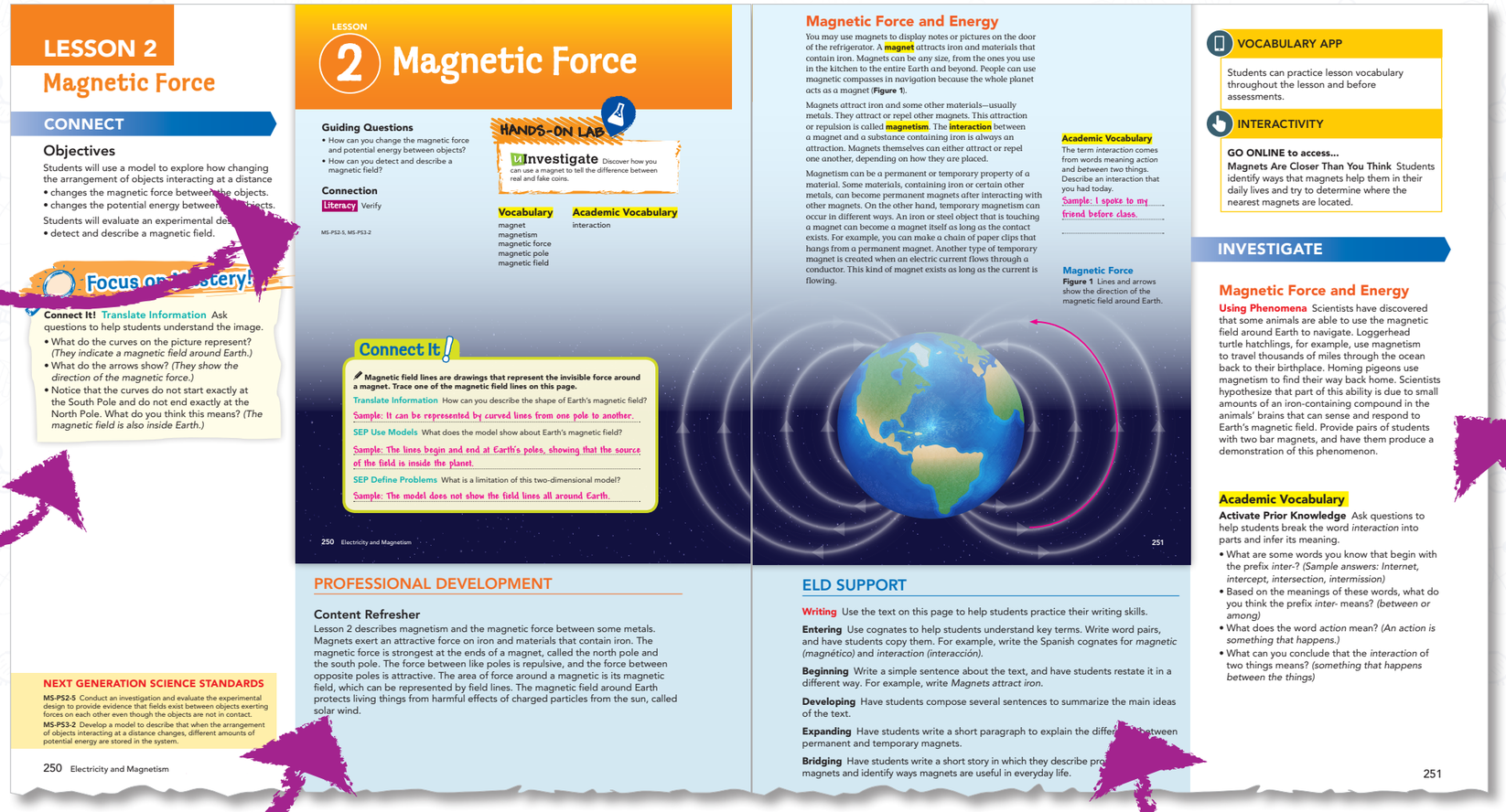
***Elevate Science*** provides point-of-use resources to support the diverse needs of students.

## Convenient Integration of ELA and Math Skills

Literacy Connections, Math Toolboxes, and visual literacy opportunities provide standards-based connections and are purposefully placed to enhance student understanding.

## Teaching Tips

- Address preconceptions
- Content-area connections
- Engineering and design practices




Activate prior knowledge to connect students to important science concepts.

## Ongoing Professional Learning

Fine-tune your teaching practices.


## Professional Development Videos

Preview a lesson and understand strategies and outcomes.

## Targeted Teaching and Learning

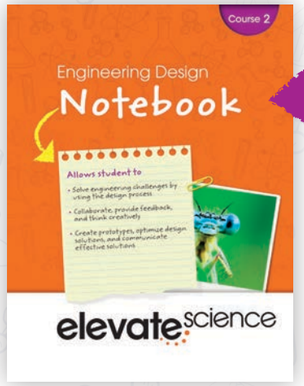
Support differentiation for all students:

- ELD
- Special Education
- Below Level
- Advanced Level

# Do the Science!

## Engineering Design Notebook

Presents scenarios and guides students through the engineering design process.






## Write-In Student Editions

Support the development of writing and thinking about science.

**Lots of kits for hands-on science!**

## Classroom Material Kits

Provides most of the supplies necessary to do all the hands-on investigations. Includes both consumable and non-consumable materials.

### Teacher Materials Include:

- Teacher Edition
- Teacher Lab Resource



## Award-winning Digital Platform

**Savvas Realize™ Platform** allows for flexibility in teaching and learning.

- Seamless Google integration
  - Google Classroom™
  - Google Drive™
- Rearrange or hide topics
- Customize lessons


**Partner**

Google for Education

## Digital Resources

- Savvas Realize™ Reader Student eText
- Interactivities
- Animations
- Games
- Videos
- Virtual Labs
- Lab Worksheets
- Quest Checklists
- Enrichments
- School-to-Home Letters
- Multilingual Glossary
- Assessments
  - Readiness
  - Quizzes
  - Topic Tests
  - Benchmark
  - Performance-Based
  - End-of-topic
  - Course Level
  - Rubrics
  - Exam*View*®
- Teacher Edition eText
- Teacher Support
- Reading Strategies
- Target Reading Skills
- Test-Taking Strategies

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