

# NGSS



## Review and Digital Navigation Guide

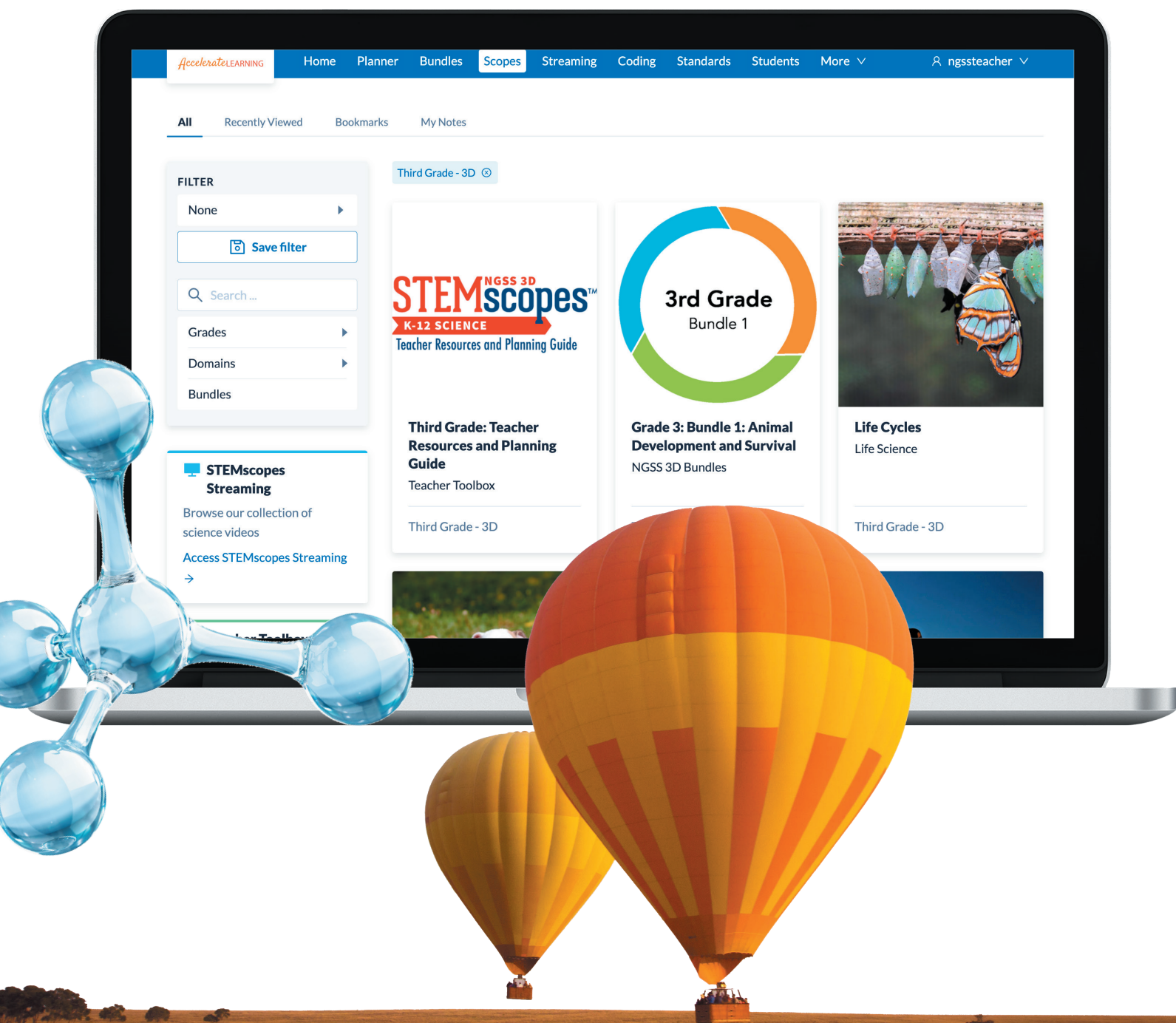


# Welcome to STEMscopes NGSS 3D!

STEMscopes NGSS 3D shifts the paradigm of traditional science instruction to student-centered, phenomena-based STEM learning. Based on the 5E instructional model and designed for the Next Generation Science Standards, STEMscopes NGSS 3D supports diverse learners. Embedded language supports, dedicated interventions and acceleration modules, and in-depth breakdowns in each lesson meet the needs of all students. Be more than a science teacher: be a STEM teacher.

**Don't miss out!** Log in to explore everything you need to teach STEMscopes NGSS 3D, including our Teacher Toolbox, program instructions, standards alignment, and more.

Visit <https://www.acceleratelearning.com/science/> and request a preview!





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## MEET STEMSCOPES NGSS 3D

# WHO WE ARE

Accelerate Learning, Inc. produces STEMscopes™, a comprehensive suite of results-oriented STEM curriculum and professional development solutions used by more than **9 million students** and **600,000 teachers** across all **50 states**. Created by educators for educators, STEMscopes is highly adaptable and affordable, and supports instruction in any kind of learning environment.

## MORE THAN DIGITAL

**The Accelerate Learning, Inc. team created STEMscopes NGSS 3D to serve teachers and students regardless of their classroom setup or access to technology.**

STEMscopes NGSS 3D is a phenomena-driven, comprehensive STEM solution, fully aligned to the Next Generation Science Standards (NGSS). We provide educators with blended, adaptable resources that empower hands-on science learning around meaningful, real-world phenomena. Built by teachers for teachers, our research-based curriculum evolved out of an initiative at Rice University, a nationally recognized institution, to develop and support STEM initiatives for advanced STEM education.

## OUR SOLUTION

- Hands-on, collaborative experiences using the 5E+IA lesson model
- A wealth of applicable real-world phenomena using SEPs, DCIs, and CCCs
- Adaptations for any teaching style, whether you're a new or veteran teacher
- Resources in both English and Spanish to support multilingual learners

## ACCOLADES & CONNECTIONS

Accelerate Learning's STEM solutions earned awards in three categories of the 2022 Educators Pick Best of STEM Awards. The Educators Pick Best of STEM Awards is the only program created for educators and judged by a qualified panel of STEM educators.

The 21st annual American Business Awards honored Accelerate Learning, Inc. with two Stevie Awards in the Education category group. STEMscopes Science captured the top prize, the Gold Stevie Award, in the Science Instructional Solution category. Judges in ABA's Science Instructional Solution category stated,

“STEMscopes Science shows a commitment to effective learning and continuous improvement and has amazing efficacy results and improvement in passing rates.”



# KINDERGARTEN STORYLINES

	<b>BUNDLES &amp; SCOPES</b> (UNITS AND CHAPTERS)	<b>BUNDLE</b> <b>PERFORMANCE TASK</b>	<b>ANCHORING</b> <b>PHENOMENA DRIVING</b> <b>QUESTION</b>	<b>PEs</b>	<b>TIME</b>
<b>BUNDLE 1</b>	<b>HUMANS AND THE NEEDS OF ORGANISMS</b> Animal Needs Plant Needs Reducing Human Impact	Students create a poster to protect the plants and animals in the rain forest from being affected by a hotel being developed.	What effect would humans building a hotel have on the plants and animals in the rain forest?	<b>K-LS1-1</b> <b>K-ESS2-2</b> <b>K-ESS3-3</b>	<b>5 weeks</b>
<b>BUNDLE 2</b>	<b>DEALING WITH WEATHER</b> Weather Conditions Weather Patterns Weather Hazards Energy from the Sun	Students apply knowledge of weather conditions and the effects of the Sun in order to build a playground cover that protects against different types of weather.	How can we respond to different weather conditions and the effects of the Sun?	<b>K-ESS2-1</b> <b>K-ESS3-2</b> <b>K-PS3-1</b> <b>K-PS3-2</b>	<b>5 weeks</b>
<b>BUNDLE 3</b>	<b>LIVING THINGS AND THEIR HABITATS</b> Habitats Organisms' Impact on Environments Uses of Natural Resources	Students will write a story from the perspective of an animal moving into a new exhibit at the zoo.	How can an animal meet its needs in a man-made habitat?	<b>K-ESS2-2</b> <b>K-ESS3-1</b>	<b>5 weeks</b>
<b>BUNDLE 4</b>	<b>USING FORCE TO CHANGE MOTION</b> Pushes and Pulls Speed and Direction	Students will create a game using pushes and pulls.	How can we change an object's motion?	<b>K-PS2-1</b> <b>K-PS2-2</b>	<b>3 weeks</b>
<i>*The order of the instructional bundles in STEMscopes NGSS is suggested but not required. Bundles, and even scopes, can be adjusted to fit the needs of individual campuses, districts, and teachers.</i>					

# 1ST GRADE STORYLINES

	<b>BUNDLES &amp; SCOPES</b> (UNITS AND CHAPTERS)	<b>BUNDLE</b> <b>PERFORMANCE TASK</b>	<b>ANCHORING</b> <b>PHENOMENA DRIVING</b> <b>QUESTION</b>	<b>PEs</b>	<b>TIME</b>
<b>BUNDLE 1</b>	<b>DESIGN FROM NATURE</b> Parts of Animals Animal Survival Parts of Plants Plant Survival	Students will use what they learn about plant and animal structures to design a new tool.	How can humans learn from the way plants and animals use their external parts to survive?	<b>1-LS1-1</b>	<b>8 weeks</b>
<b>BUNDLE 2</b>	<b>PARENTS AND THEIR OFFSPRING</b> Protecting the Young Animal Trait Inheritance and Variation Plant Trait Inheritance and Variation	Students will apply their knowledge of protective behaviors and of trait inheritance and variation with plants and animals by writing a segment for a wildlife TV show.	Do baby animals look exactly like their parents?  Do new plants look exactly like the parent plant?	<b>1-LS1-2</b> <b>1-LS3-1</b>	<b>6 weeks</b>
<b>BUNDLE 3</b>	<b>PATTERNS IN THE SKY</b> Seasonal Patterns Patterns in Space	Students will apply their knowledge of the patterns of sunrise, sunset, and the motion of the Sun, Moon, and stars by creating a new alarm clock for the Space Museum gift shop.	What patterns do we see in the day and night sky?	<b>1-ESS1-1</b> <b>1-ESS1-2</b>	<b>4 weeks</b>
<b>BUNDLE 4</b>	<b>COMMUNICATING WITH LIGHT AND SOUND</b> Sound Behavior of Light Communication	Students will design a device that uses light and sound as a new form of communication.	How can light and sound be used to communicate?	<b>1-PS4-1</b> <b>1-PS4-2</b> <b>1-PS4-3</b> <b>1-PS4-4</b>	<b>5 weeks</b>

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# 2ND GRADE STORYLINES

	<b>BUNDLES &amp; SCOPES (UNITS AND CHAPTERS)</b>	<b>BUNDLE PERFORMANCE TASK</b>	<b>ANCHORING PHENOMENA DRIVING QUESTION</b>	<b>PEs</b>	<b>TIME</b>
<b>BUNDLE 1</b>	<b>ORGANISMS-NEEDS AND INTERACTIONS</b> What Plants Need Animal and Plant Dependence Diversity of Living Things	The student's mission is to draw and label a restored habitat that was once destroyed by fire.	What do plants and animals need to survive, grow, and reproduce?	<b>2-LS2-1</b> <b>2-LS2-2</b> <b>2-LS4-1</b>	<b>8 weeks</b>
<b>BUNDLE 2</b>	<b>DEALING WITH CHANGES TO THE EARTH</b> Quick Changes to Land Slow Changes to Land Effects of Wind and Water	Students will determine what slow and fast changes to a landscape are changed by mudslides and come up with a prevention plan.	How do slow and fast changes to Earth affect the landscape?	<b>2-ESS1-1</b> <b>2-ESS2-1</b>	<b>6 weeks</b>
<b>BUNDLE 3</b>	<b>MAPPING LAND AND WATER</b> Mapping Our World Forms of Water on Earth	The student's mission is to create a map that includes icebergs, the coastline, islands, and any landforms visible from the ocean.	How can the shapes and types of landforms and water in an area be presented?	<b>2-ESS2-2</b> <b>2-ESS2-3</b>	<b>4 weeks</b>
<b>BUNDLE 4</b>	<b>SELECTING AND USING MATERIALS IN THE DESIGN PROCESS</b> Properties and States of Matter Properties of Materials Building Blocks of Matter Changes from Heat	The student's mission is to create lists of materials that have the ability to keep food and drinks cold, foods that do not change their state or shape when heat is added and then when they are re-cooled, and materials that, along with a backpack, could be used to make into a shelter. They will then create a blueprint of materials that could be taken on a rainy-day camping trip and that fit in the backpack.	Based on their physical properties, what materials are best suited to protect food and provide shelter on a rainy-day camping trip?	<b>2-PS1-1</b> <b>2-PS1-2</b> <b>2-PS1-3</b> <b>2-PS1-4</b>	<b>5 weeks</b>

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# 3RD GRADE STORYLINES

	<b>BUNDLES &amp; SCOPES</b> (UNITS AND CHAPTERS)	<b>BUNDLE</b> <b>PERFORMANCE TASK</b>	<b>ANCHORING</b> <b>PHENOMENA DRIVING</b> <b>QUESTION</b>	<b>PEs</b>	<b>TIME</b>
<b>BUNDLE 1</b>	<b>ANIMAL DEVELOPMENT AND SURVIVAL</b> Life Cycles Social and Group Behavior	The student's mission is to research an animal and its environment in order to create a diorama showing the plant and animal life cycles and the benefits of the animal living in a group.	What information can we display in a visitors' center about our new animal?	<b>3-LS1-1</b> <b>3-LS2-1</b>	<b>4 weeks</b>
<b>BUNDLE 2</b>	<b>ENVIRONMENTS AND THE TRAITS OF ORGANISMS</b> Inheritance and Variation of Traits Environmental Traits Adaptations Environmental Changes and Effects	The student's mission is to write and perform a play about an animal family's struggle to survive in a new environment.	How can an animal adapt to a new environment?	<b>3-LS3-1</b> <b>3-LS3-2</b> <b>3-LS4-3</b> <b>3-LS4-4</b>	<b>7 weeks</b>
<b>BUNDLE 3</b>	<b>ORGANISMS CHANGE OVER TIME</b> Plant and Animal Extinction Fossils Survival of the Fittest	The student's mission is to learn about how fossils can indicate what the animal looked like, where it lived, how its traits helped it survive, and what might have caused it to die. They will then design a poster showing what information the student learned about a specific fossil.	What can a fossil tell us about its life and the environment in which it lived?	<b>3-LS4-1</b> <b>3-LS4-2</b>	<b>6 weeks</b>
<b>BUNDLE 4</b>	<b>DEALING WITH HAZARDOUS WEATHER WORLDWIDE</b> Weather and Climate Processes and Impacts of Natural Hazards	The student's mission is to develop a presentation for the community on how to reduce the impact of the high-risk weather that could occur in their community.	What information and suggestions can we give the community to help reduce the impact of high-risk weather in the area?	<b>3-ESS2-1</b> <b>3-ESS2-2</b> <b>3-ESS3-1</b>	<b>4 weeks</b>
<b>BUNDLE 5</b>	<b>USING MAGNETIC FORCE</b> Objects and Motion Electric and Magnetic Forces	The students will design a contraption for a new exhibit that will feature a series of balanced, unbalanced, and magnetic forces in order to move an object.	What happens when different objects interact?	<b>3-PS2-1</b> <b>3-PS2-2</b> <b>3-PS2-3</b> <b>3-PS2-4</b>	<b>4 weeks</b>

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# 4TH GRADE STORYLINES

	<b>BUNDLES &amp; SCOPES (UNITS AND CHAPTERS)</b>	<b>BUNDLE PERFORMANCE TASK</b>	<b>ANCHORING PHENOMENA DRIVING QUESTION</b>	<b>PEs</b>	<b>TIME</b>
<b>BUNDLE 1</b>	<b>ORGANISM STRUCTURES AND BEHAVIOR</b> Plant and Animal Parts Sense Receptors	The student's mission is to design a zoo that is organized by animals with the best sense receptors and to describe how having those sense receptors helps animals survive. In addition, students will design a scavenger hunt for students who go on field trips to the zoo.	How can we group organisms by their best sense receptors and describe how those sense receptors help the animals survive?	<b>4-LS1-1</b> <b>4-LS1-2</b>	<b>4 weeks</b>
<b>BUNDLE 2</b>	<b>CHANGES OVER TIME TO EARTH'S SURFACE AND RESOURCES</b> Rock Patterns Changing Land Plate Tectonics Renewable and Nonrenewable Resources Natural Processes	The student's mission is to create an ad to attract new workers to a coal-mining project.	What types of changes to Earth's surface have occurred over time, and why?	<b>4-ESS1-1</b> <b>4-ESS2-1</b> <b>4-ESS2-2</b> <b>4-ESS3-1</b> <b>4-ESS3-2</b>	<b>7 weeks</b>
<b>BUNDLE 3</b>	<b>USING ENERGY TRANSFORMATIONS</b> Energy Transfer and Electric Currents Transfer of Energy in Collision Energy and Speed Using Stored Energy	The student's mission is to develop an electrical warning system to alert astronauts on a spaceship of potential asteroid collisions.	Why is a collision dangerous to our ship, and how can we warn the crew?	<b>4-PS3-1</b> <b>4-PS3-2</b> <b>4-PS3-3</b> <b>4-PS3-4</b>	<b>9 weeks</b>
<b>BUNDLE 4</b>	<b>COMMUNICATING USING WAVE ENERGY</b> Motion of Waves Wavelength and Amplitude Light Reflection Information Technologies	The student's mission will be to create an emergency signaling system and show how it interacts with the eye or ear.	What system using light or sound to communicate could reach people over a distance?	<b>4-PS4-1</b> <b>4-PS4-2</b> <b>4-PS4-3</b>	<b>7 weeks</b>

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# 5TH GRADE STORYLINES

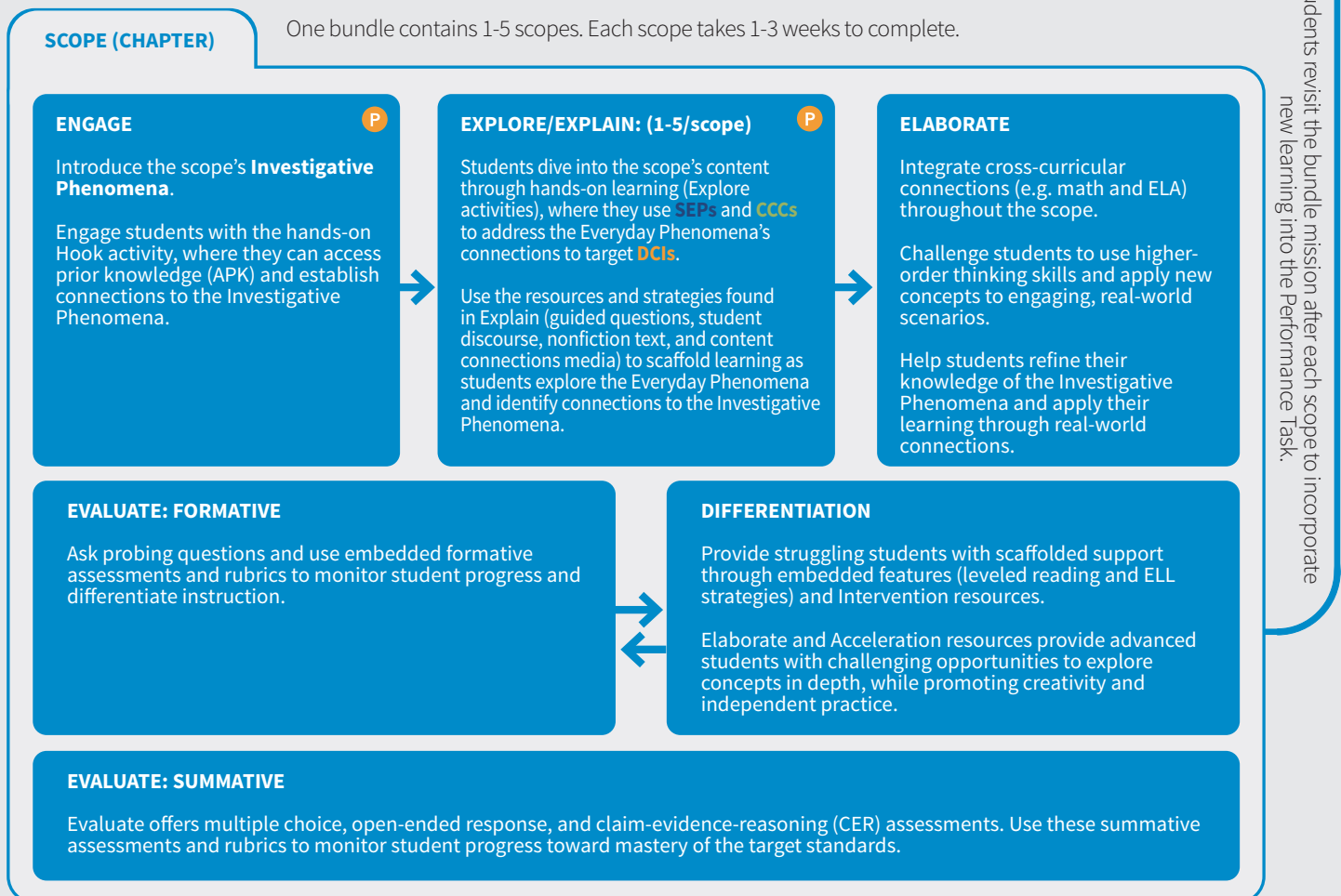
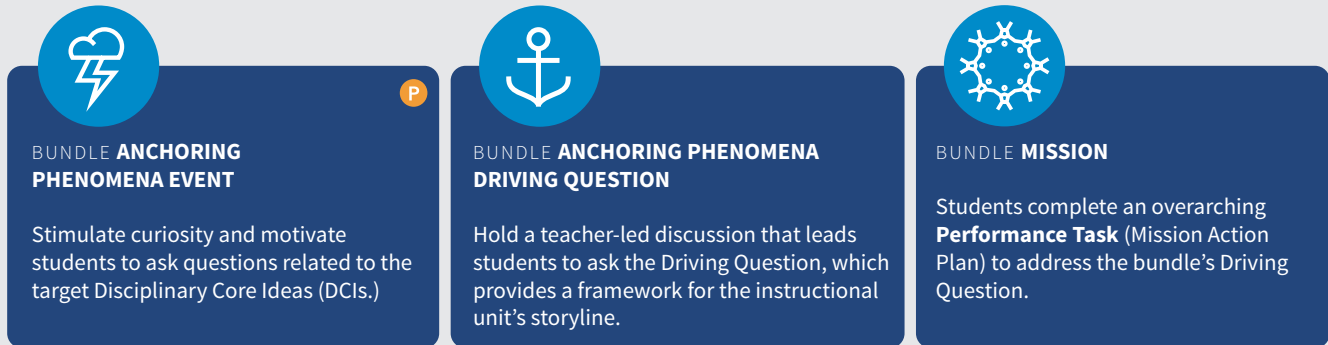
	<b>BUNDLES &amp; SCOPES</b> (UNITS AND CHAPTERS)	<b>BUNDLE</b> <b>PERFORMANCE TASK</b>	<b>ANCHORING</b> <b>PHENOMENA DRIVING</b> <b>QUESTION</b>	<b>PEs</b>	<b>TIME</b>
<b>BUNDLE 1</b>	<b>MATTER AND ENERGY FLOW IN AN ECOSYSTEM</b> Energy Transfer Matter and Energy in Plants Food Webs Matter Cycles Ecosystems	The student's mission is to design a self-sustaining garden that provides food for the community.	How can a self-sustaining garden be designed to provide enough food for the community?	<b>5-LS1-1</b> <b>5-LS2-1</b> <b>5-PS3-1</b>	<b>10 weeks</b>
<b>BUNDLE 2</b>	<b>OBSERVING OUR SKY</b> Earth's Rotation Observing the Stars Objects in the Sky Gravity	The students' mission is to design a planetarium combined with a thrill ride that lets people experience and learn about the Sun, the Moon, Earth, and the stars as well as the motions of Earth and the Moon.	How can a planetarium be designed in which people learn about space and the effects of gravity, rotation, and orbiting?	<b>5-ESS1-1</b> <b>5-ESS1-2</b> <b>5-PS2-1</b>	<b>6 weeks</b>
<b>BUNDLE 3</b>	<b>HUMAN IMPACT ON THE EARTH'S SYSTEMS</b> Earth's Systems Interactions Water Sources Reducing the Human Footprint	The students' mission is to create a special TV news report that addresses the importance of fresh water on our Earth.	What role does water play on our Earth, and what steps can be taken to conserve it?	<b>5-ESS2-1</b> <b>5-ESS2-2</b> <b>5-ESS3-1</b>	<b>8 weeks</b>
<b>BUNDLE 4</b>	<b>INTERACTIONS IN MATTER</b> Matter Is Everywhere Properties of Matter Changes to Matter Mixtures	Students will use their knowledge of the properties of matter to design a plan for cleaning up the water supply after a tsunami.	How can we use the properties of matter to clean up water after a natural disaster?	<b>5-PS1-1</b> <b>5-PS1-2</b> <b>5-PS1-3</b> <b>5-PS1-4</b>	<b>7 weeks</b>

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# Instructional Bundle (Unit) Overview

Each bundle addresses a bundle of **Performance Expectations** and takes approximately **6-8 weeks** to complete.



**P** = 3 layers of Phenomena

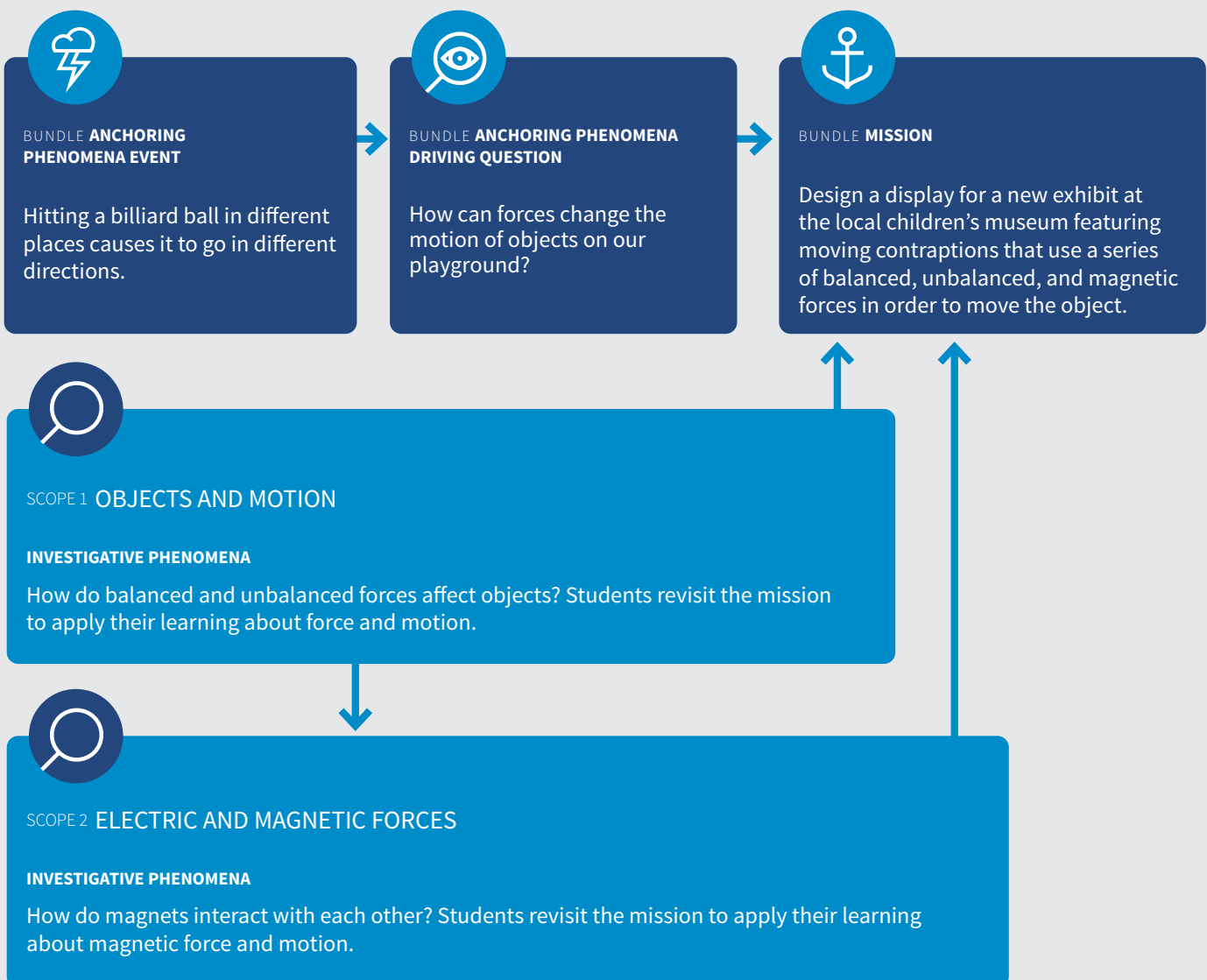


# Sample 3rd Grade Bundle 5 USING MAGNETIC FORCE

## BUNDLE STORYLINE

Students begin by viewing a video of someone playing billiards. The teacher facilitates a discussion about how hitting a billiard ball in different places affects its direction of motion, leading students toward the bundle Anchoring Phenomena Driving Question, “How can forces change the motion of objects on our playground?”

Students are then introduced to the bundle’s mission, which challenges them to design a new piece of playground equipment for their school. The new piece of playground equipment should move by pushing or pulling on a part, while using magnetic forces to hold a part in place or keep parts from touching. These are concepts students explore and build upon throughout the scope, revisiting the mission after each 5E lesson sequence in order to apply their learning to their mission project.



## HANDS-ON EXPLORATION

Each scope embodies a 5E lesson sequence in which students build an understanding of the Investigative Phenomena by exploring relevant Everyday Phenomena during the scope's Explore activities. Students are referred back to the Investigative Phenomena after each Explore activity to apply their learning and revise and record their thinking.



**SCOPE 1 OBJECTS AND MOTION** How do balanced and unbalanced forces affect objects?

**PERFORMANCE EXPECTATIONS**

**3-PS2-1** Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object.

**3-PS2-2** Make observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predict future motion.

**HOOK ACTIVITY** Students are introduced to balanced and unbalanced forces by playing tug-of-war. Students explore the effects of the strength and direction of a force on the rope and discuss what causes the rope to move, what determines the direction in which the rope moves, and why the rope does not move at times.

**EXPLORE LESSON 1** Activity–Motion Stations

**EVERYDAY PHENOMENA** How does changing the height, mass, or distance of an object affect its motion?

Students explore and test force and motion through a variety of motion learning stations, and identify patterns that can be used to predict future motion.

**EXPLORE LESSON 2** Inquiry Investigation–My Motion Investigation

**EVERYDAY PHENOMENA** How can we test the effects of forces on objects?

Students design and conduct an investigation about the motion of objects caused by balanced and unbalanced forces.



**SCOPE 2 ELECTRIC AND MAGNETIC FORCES** How do magnets interact with each other?

**PERFORMANCE EXPECTATIONS**

**3-PS2-3** Ask questions to determine cause and effect relationships of electric or magnetic interactions between two objects not in contact with each other.

**3-PS2-4** Define a simple design problem that can be solved by applying scientific ideas about magnets.

**3-5-ETS1-1** Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.

**3-5-ETS1-2** Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.

**3-5-ETS1-3** Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

**HOOK ACTIVITY** Students explore how they can use a magnet to make a paperclip move without touching it.

**EXPLORE LESSON 1** Activity–Forces in Action

**EVERYDAY PHENOMENA** How do magnetic forces and static electricity affect objects?

Students rotate through six stations where they explore magnetic forces and the force of static electricity. Thinking like a scientist and using evidence observed, students complete a Claim-Evidence-Reasoning (CER) to describe how magnets and static electricity affect objects.

**EXPLORE LESSON 2** Inquiry Investigation–Magnetic Racetrack

**EVERYDAY PHENOMENA** How can we use magnets to move a toy car through a racetrack?

Students will utilize the engineering design process and scientific knowledge gained, and the 21st-century skill of collaboration to design and construct a toy car racetrack. The racetrack must use magnetism to move a toy car around the racetrack in 30 seconds or less.

# Digital Teacher Resources

The desktop monitor displays the Accelerate Learning website's 'Scopes' page. The navigation bar includes Home, Planner, Bundles, Scopes, Streaming, Coding, Standards, Students, and More. The page features a filter sidebar on the left with options for None, Save filter, Search..., Grades, Domains, and Bundles. Below the filter is a section for 'STEMscopes Streaming' with a link to browse science videos. The main content area shows three resource cards, each with a download icon: 'Third Grade - 3D' (STEMscopes K-12 Science Teacher Resources and Planning Guide), 'Grade 3: Bundle 1: Animal Development and Survival NGSS 3D Bundles', and 'Life Cycles Life Science'. The tablet displays the 'Planner' page, showing a calendar for September 2023 with lesson components like 'Lesson Plan', 'Explore', 'Concept', 'Science', 'Career', 'Reading', and 'Linking' being added to the calendar grid. A sidebar on the left lists various grade levels and subjects for selection.

## → Teacher Resources & Planning Guide

Access year-long pacing guides and bundle lesson planning guides that provide standard alignment, scope resource overviews, and an estimated timeline to complete each unit. Also find access to 3D supports for parent communication and SEP and CCC student progress monitoring, all over the course of the school year.

## → Bundle

Access unit-level resources, including 3D interactive assessments and project-based performance tasks that connect learning across each bundle and form a coherent storyline. You can even build your unit's storyline around a self-selected anchoring phenomena and customize unit-level performance tasks.

## → Scope

Access resources to implement a 5E lesson for each bundle of Performance Expectations, with comprehensive differentiation to meet the needs of every student.

Use the Planner tool to drag and drop lesson components directly onto your instructional calendar. You can easily organize your plans, make notes, and share them with your colleagues.

### **How to access the Teacher Planner and calendar feature:**

- Create your classroom by selecting the Students tab on the blue navigation bar.
- Click "Add Selection" on the right and name your classroom.
- Click "Create this teacher section."
- Click the Planner tab on the blue bar and choose from the list of grades and scopes on the right-hand side of the page.
- Expand each section to drag and drop your selected scope onto the calendar, then save your changes.

# 5E Instructional Resources

STEMscopes NGSS 3D scopes (lessons) contain over 25 instructional resources per scope that you can use based on your students' needs and interests. These resources provide opportunities for differentiation, student choice, and content deep-dives, and encourage students to express understanding while making learning interesting, relevant, and fun.

## ENGAGE

Engage students through relevant phenomena, prior knowledge, and a hook activity.

***Investigative Phenomena, APK, Hook***

## EXPLORE

Students gain foundational experience that drives discussion and promotes discovery.

***Hands-on Activities, Scientific Investigations, Engineering Design Challenges, Research Projects, Tuva Sets (Analysis of Real-Life Data Sets)***

Scopes have varying numbers of Explore activities. Explores are scaffolded and doing all Explores is recommended.

## EXPLAIN

Focus on key terms and concepts that connect to experiences in the Explore activities.

***Picture Vocabulary, Linking Literacy, STEMscopedia***

Linking Literacy provides ELA support for reading science nonfiction text.

## ELABORATE

Incorporate optional enrichment activities for differentiated learning (teacher's choice).

***Leveled Math, Leveled Reading, Science Today, Scientist Spotlight, Career Connections, Simulations***

## EVALUATE

Students express their understanding of the essential question and provide evidence that supports their thinking.

***Open-Ended, Multiple Choice, Claim-Evidence-Reasoning (CER)***

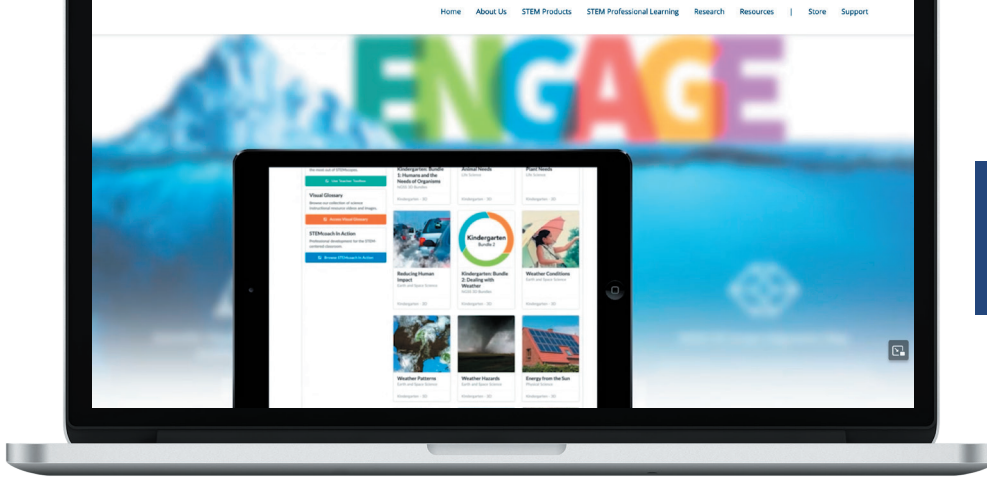
## Leading The Way For A New Learning Experience

Not only do we keep our curricula up to date, but we also ensure a seamless user experience with continuous improvements to the digital platform. Here are just a few helpful features you can utilize within STEMscopes:

- Online/offline mode
- Save-as-you-go processing
- Google Classroom integration
- Responsive design on all devices
- Simplified student interface available for K-4
- Grade passback with widely used LMSs and SISs
- WCAG A-AA-compliant platforms







Walk through our curriculum with this instructional video.

# Navigating the Digital Curriculum

## Main Navigation Bar

### HOME

View upcoming lessons and customized bookmarks on your dashboard.

### PLANNER

Create lesson plans and collaborate with fellow STEMscopes teachers.

### SCOPES (START HERE!)

Access all lesson content and teacher supports.

### STANDARDS

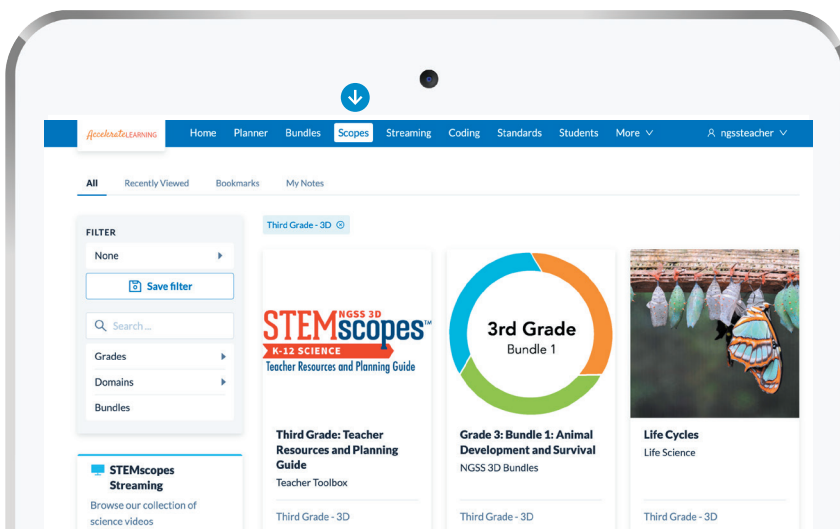
View a breakdown of the NGSS & Skills.

### STUDENTS

Manage student accounts, create class groups, and monitor assignment progress and grades.

### MORE

Select from a wide variety of assessments, access eBooks, or get help.

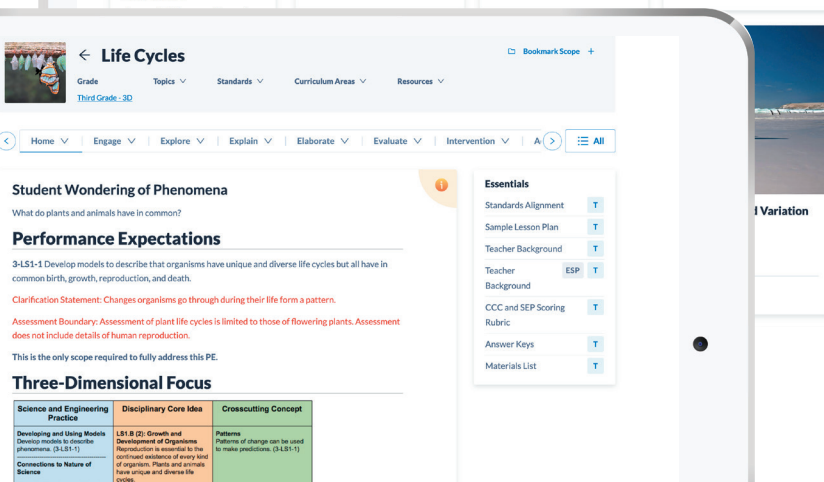


## Scopes

STEMscopes NGSS 3D is organized into units (bundles), chapters (scopes), and lessons (hands-on Explores) that build upon each other. Filter by grade, domain, or keyword to find a specific Scope.

### A LOOK INSIDE A SCOPE →

After selecting a Scope (chapter), review the planning and instructional resources. The white toolbar at the top can help you access all the features and benefits of STEMscopes NGSS 3D.



**Life Cycles** | Grade | Topics | Standards | Curriculum Areas | Resources

Home | Engage | Explore | Explain | Elaborate | Evaluate | Intervention | A | All

**Student Wondering of Phenomena**  
What do plants and animals have in common?

**Performance Expectations**  
3-LS1-1 Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death.

**Clarification Statement:** Changes organisms go through during their life form a pattern.

**Assessment Boundary:** Assessment of plant life cycles is limited to those of flowering plants. Assessment does not include details of human reproduction.

This is the only scope required to fully address this PE.

**Three-Dimensional Focus**

Science and Engineering Practice	Disciplinary Core Idea	Crosscutting Concept
<b>Developing and Using Models</b> Develop models to describe phenomena. (3-LS1-1) <b>Connections to Nature of Science</b> Scientific Knowledge is Based on Empirical Evidence Science Findings are based on recognizing patterns. (3-LS1-1)	<b>LS1.B (2): Growth and Development of Organisms</b> Reproduction is essential to the continued existence of every kind of organism. Plants and animals have unique and diverse life cycles.	<b>Patterns</b> Patterns of change can be used to make predictions. (3-LS1-1)

**Essentials**

- Standards Alignment T
- Sample Lesson Plan T
- Teacher Background T
- Teacher Background ESP T
- CCC and SEP Scoring Rubric T
- Answer Keys T
- Materials List T

**HOME**

Click the **Home** button to access key materials that will help you prepare for the scope activities. These include standards and materials lists, a background explanation for new science teachers or teachers in need of a refresher, and CCC and SEP rubrics that track student progress.

**ENGAGE**

**Engage** marks the start of 5E learning. First, introduce your students to the Investigative Phenomena, which guides student learning and gives students the opportunity to question what they don't yet understand. Your students revisit the Investigative Phenomena throughout the scope to record ideas and revise their thinking. Next, allow your students to reflect on what they already know using the Accessing Prior Knowledge activity. This will help you identify students' background knowledge. Finally, "hook" student interest with relevant everyday phenomena and a fun, hands-on activity.

**Life Cycles** | Grade | Topics | Standards | Curriculum Areas | Resources

Home | Engage | Explore | Explain | Elaborate | Evaluate | Intervention | A | All

**Engage**

- Investigative Phenomena** T  
Introductory activity that facilitates a connection between the content and real world phenomena and encourages students to ask why or how something happens.
- Investigative Phenomena** S  
Introductory activity that facilitates a connection between the content and real world phenomena and encourages students to ask why or how something happens.
- Investigative Phenomena** ESP S  
Introductory activity that facilitates a connection between the content and real world phenomena and encourages students to ask why or how something happens.
- Accessing Prior Knowledge** T  
A brief probing activity to gauge students' prior knowledge before engaging in the inquiry process
- Accessing Prior Knowledge** S  
A brief probing activity to gauge students' prior knowledge before engaging in the inquiry process
- Accessing Prior Knowledge** ESP S  
A brief probing activity to gauge students' prior knowledge before engaging in the inquiry process

**EXPLORE**

**Explore** is where you continue hands-on learning with exciting activities. Your students unpack a problem and determine the solution themselves. Whether they're designing a model, conducting an investigation, or gathering data, your students are now in control of their own learning, and that's where real science takes place.

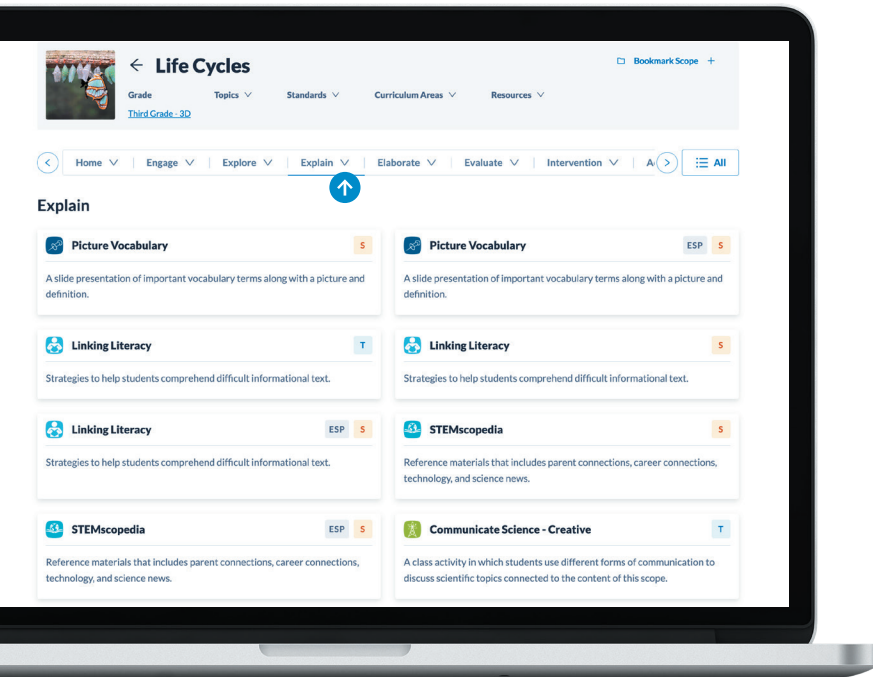
*Typically, a teacher will begin with an Explore activity and use Explain's resources to support students in making sense of their hands-on investigation. It is ideal to repeat this cycle, alternating between Explore and Explain.*

**Life Cycles** | Grade | Topics | Standards | Curriculum Areas | Resources

Home | Engage | Explore | Explain | Elaborate | Evaluate | Intervention | A | All

**Explore**

- Explore 1: Activity - Wonders of Plants** T  
First task in which students complete a rigorous, hands-on activity. Teachers will highlight how students interact with everyday phenomena that relate the investigative or anchoring phenomena to personally experienced situations.
- Explore 1: Activity - Wonders of Plants** S  
First task in which students complete a rigorous, hands-on activity. Teachers will highlight how students interact with everyday phenomena that relate the investigative or anchoring phenomena to personally experienced situations.
- Explore 1: Activity - Las maravillas de las plantas** ESP S  
First task in which students complete a rigorous, hands-on activity. Teachers will highlight how students interact with everyday phenomena that relate the investigative or anchoring phenomena to personally experienced situations.
- Explore 2: Activity - Mealworm Life Cycle** T  
Second task in which students complete a rigorous, hands-on activity. Teachers will highlight how students interact with everyday phenomena that relate the investigative or anchoring phenomena to personally experienced situations.
- Explore 2: Activity - Mealworm Life Cycle** S  
Second task in which students complete a rigorous, hands-on activity. Teachers will highlight how students interact with everyday phenomena that relate the investigative or anchoring phenomena to personally experienced situations.
- Explore 2: Activity - Ciclo de vida del gusano de la harina** ESP S  
Second task in which students complete a rigorous, hands-on activity.

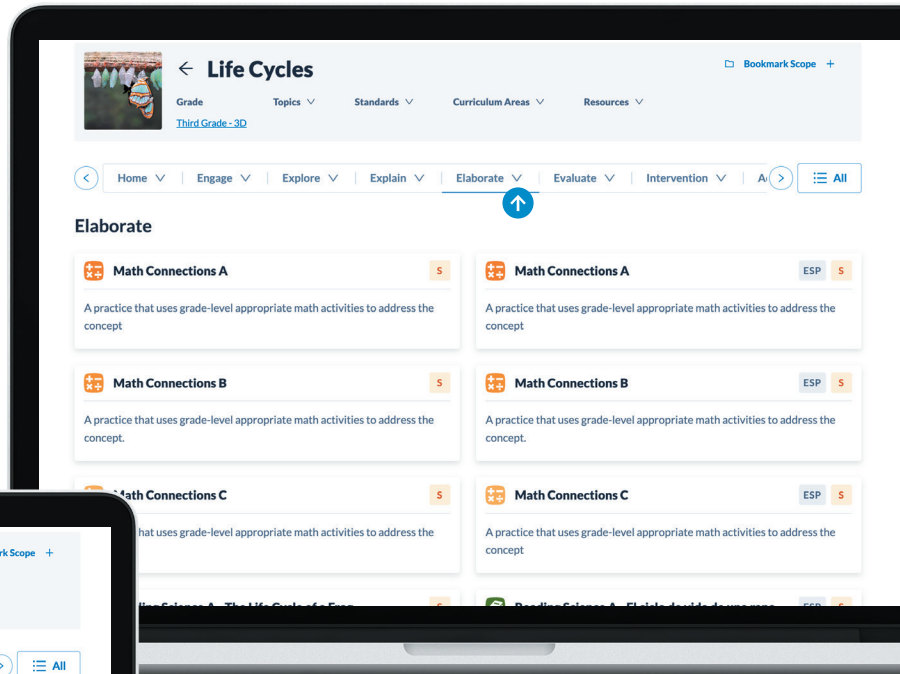


**→ EXPLAIN**

With **Explain**, your students dive even deeper into the scope’s scientific concepts and phenomena, reinforcing what they’ve learned and discovered during their hands-on Explore activities. Students discover additional, detailed answers to their questions and expand their learning through differentiation based on their individual needs. Also during **Explain**, your students can connect their experiences with literacy through the STEMscopedia informational text and Picture Vocabulary.

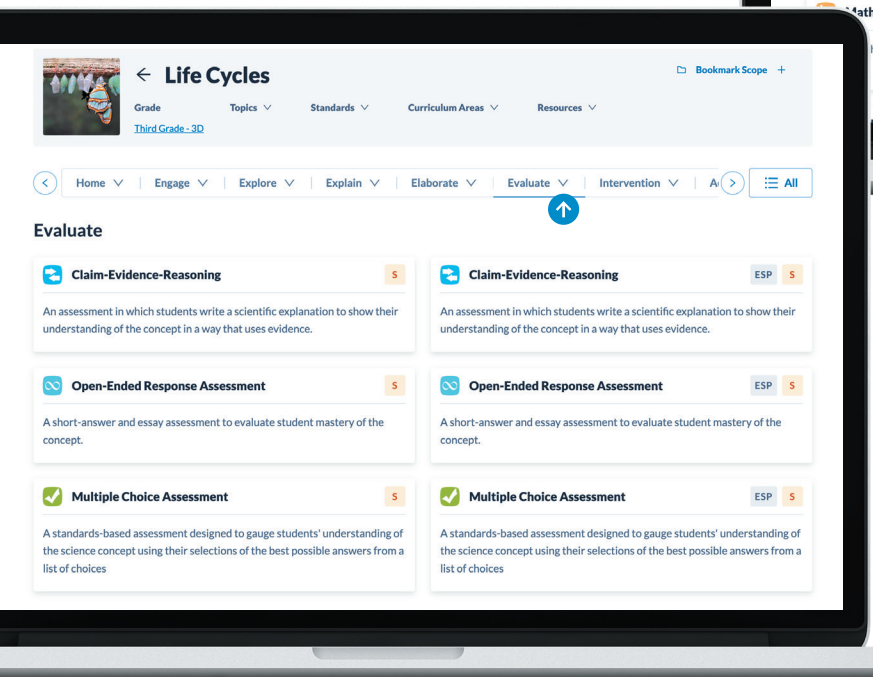
**→ ELABORATE**

**Elaborate** is designed for enrichment, application, and cross-curricular connection. This is where students further build upon their previous learning, connecting learned concepts to themselves and the world around them through math, reading, simulations, scientific careers, and other valuable activities. These resources help students tie both the investigative and everyday phenomena together with real-world scenarios and events.



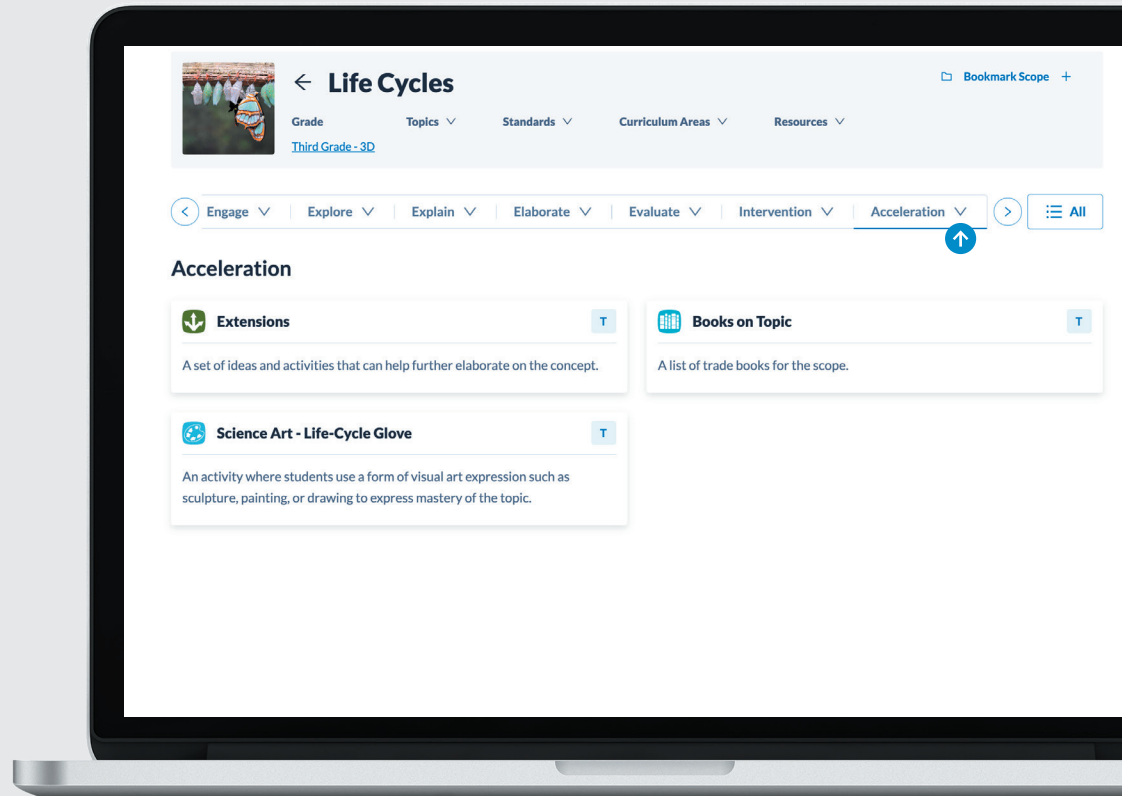
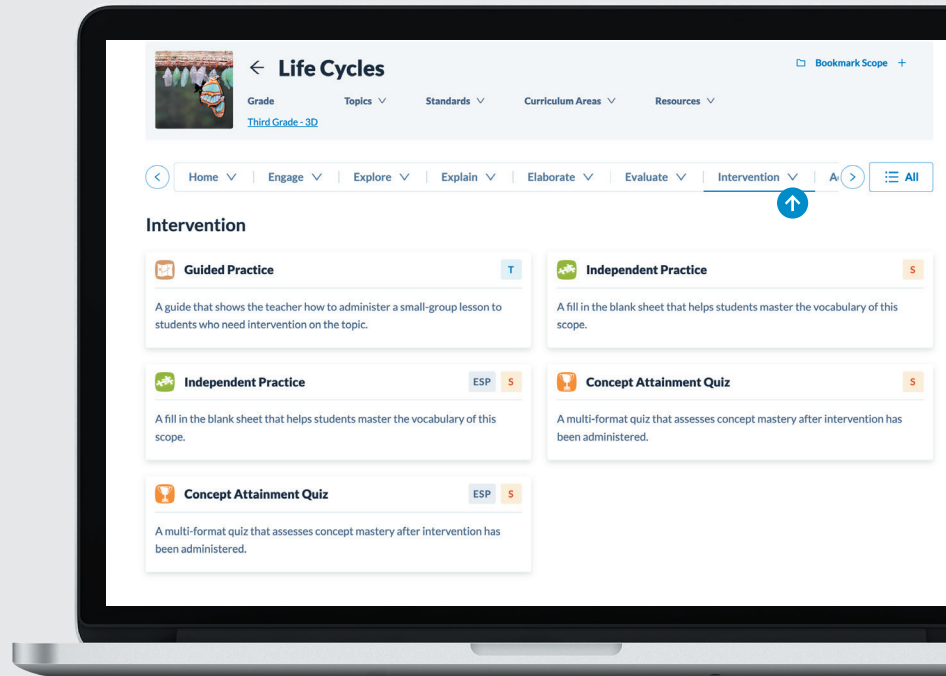
**→ EVALUATE**

**Evaluate** allows you to summatively assess student learning. We provide several tools for you to assess learning as students critically reflect on the scope’s phenomena, including Claim-Evidence-Reasoning, open-ended response, and auto-graded multiple choice assessments.



## ➔ INTERVENTION & ACCELERATION

We believe **Intervention** and **Acceleration** are critical to the modern classroom. In addition to providing everything you need to complete a 5E lesson sequence, STEMscopes provides even more options for differentiated instruction. Whether a student requires guided instruction or is ready to take learning to the next level, we make sure every student has the supports they need.





# Hands-on Kits and Prints

STEMscopes NGSS 3D digital curriculum includes everything educators need to plan and deliver comprehensive science instruction. Students can access all of the curriculum features digitally, or teachers can print the resources and modify them to meet specific student needs. Optional full-color consumable Student Notebooks and reusable STEMscopedias are available for purchase in order to save on the cost of printing and distributing large numbers of colored handouts. Whether teachers prefer a fully digital curriculum, a paper-based curriculum, or a blended approach, STEMscopes NGSS 3D meets their needs.

## Hands-On Materials

Kit images are for example purposes only, and items shown may or may not be included in each specific edition of the kits. For more details on what is included in your edition, please contact your STEMscopes account manager.

### HANDS-ON KITS\*

- Reusable and consumable items for hands-on activities
- Packaged for each scope
- Serves 24 students (grades K-4) or 32 students (grades 5-8)

\*Does not contain common school supplies (e.g., paper, glue, scissors) or basic equipment.

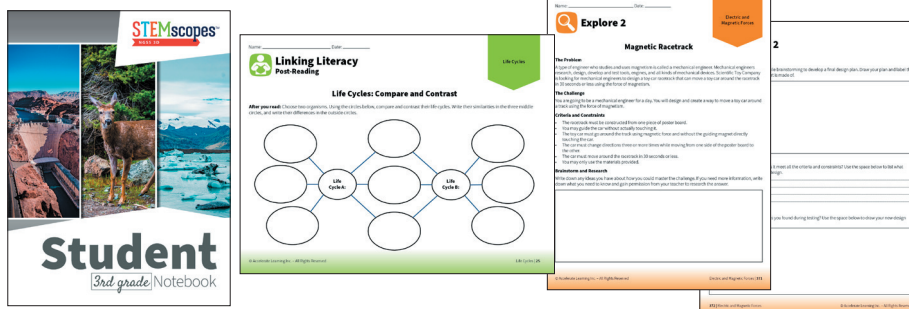
### CONSUMABLE KITS

- Consumable items
- Refillable for extended use across multiple classroom sections
- Serves 24 students (grades K-4) or 32 students (grades 5-8)
- Recommended: one consumable kit per each additional section

## Print

**STUDENT NOTEBOOK** A consumable lab notebook containing full-color versions of the Explore labs and other student activities, such as the Graphic Organizer, Reading Science, and Claim-Evidence-Reasoning assessment. The Student Journal pages use a 45-lb paper weight and are perforated for ease of use. Each includes a table of contents and activity handouts. (One per student is recommended).

3RD GRADE PRINT SAMPLE, STUDENT NOTEBOOK



**STUDENT STEMSCOPEDIA** A hardback version of the curriculum's digital textbook to help students figure out the everyday and investigative phenomena within each scope. Each section includes probing questions for formative assessment, as well as parent connection resources. (Recommended as a shared classroom set.)

3RD GRADE PRINT SAMPLE, STEMSCOPEDIA



**TEACHER GUIDE** An overview of the curriculum for each segment (unit) of instruction, including suggested pacing guides, teacher facilitation points, and a summary of science content background knowledge.





# Step Up Your STEM Instruction



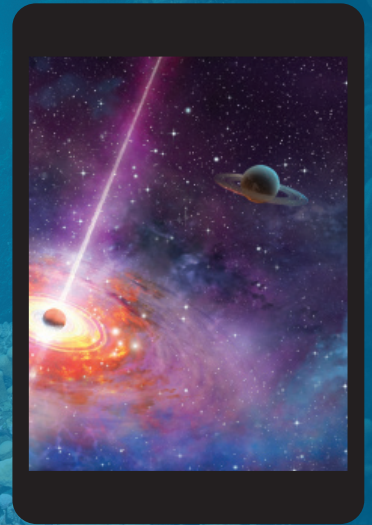
**STEMscopes™**  
K-12 SCIENCE

## Stream media that reveals the wonder of STEM

Explore the world of phenomena in a whole new way! STEMscopes and BBC Learning have partnered to offer you a full library of world-class, dynamic videos, current events, behind-the-scenes photography, and integrated activities for the classroom.

### Igniting Inquiry with World-Class STEM Content

- + An exciting new way to explore phenomena
- + Integrated discussion questions, writing prompts, and hands-on extensions
- + Supported communication, literacy, and lab investigations



**STEMscopes™**  
ASSESSMENT PACKAGE  
K-12 SCIENCE

## Identify and address student learning gaps

The Assessment Package expands the assessment tools and resources available in STEMscopes. Save time designing equitable test questions while accessing data analytics to quickly determine how to reteach, accelerate, and flexibly group your students.

### What's included:

- + Beginning-of-Year and End-of-Year benchmark assessments that address all three dimensions of the NGSS
- + Expanded bank of assessment questions for use in building custom assessments
- + Integrated data analytics that indicate student mastery of each domain within each dimension of the NGSS, including all eight science and engineering practices and all seven crosscutting concepts

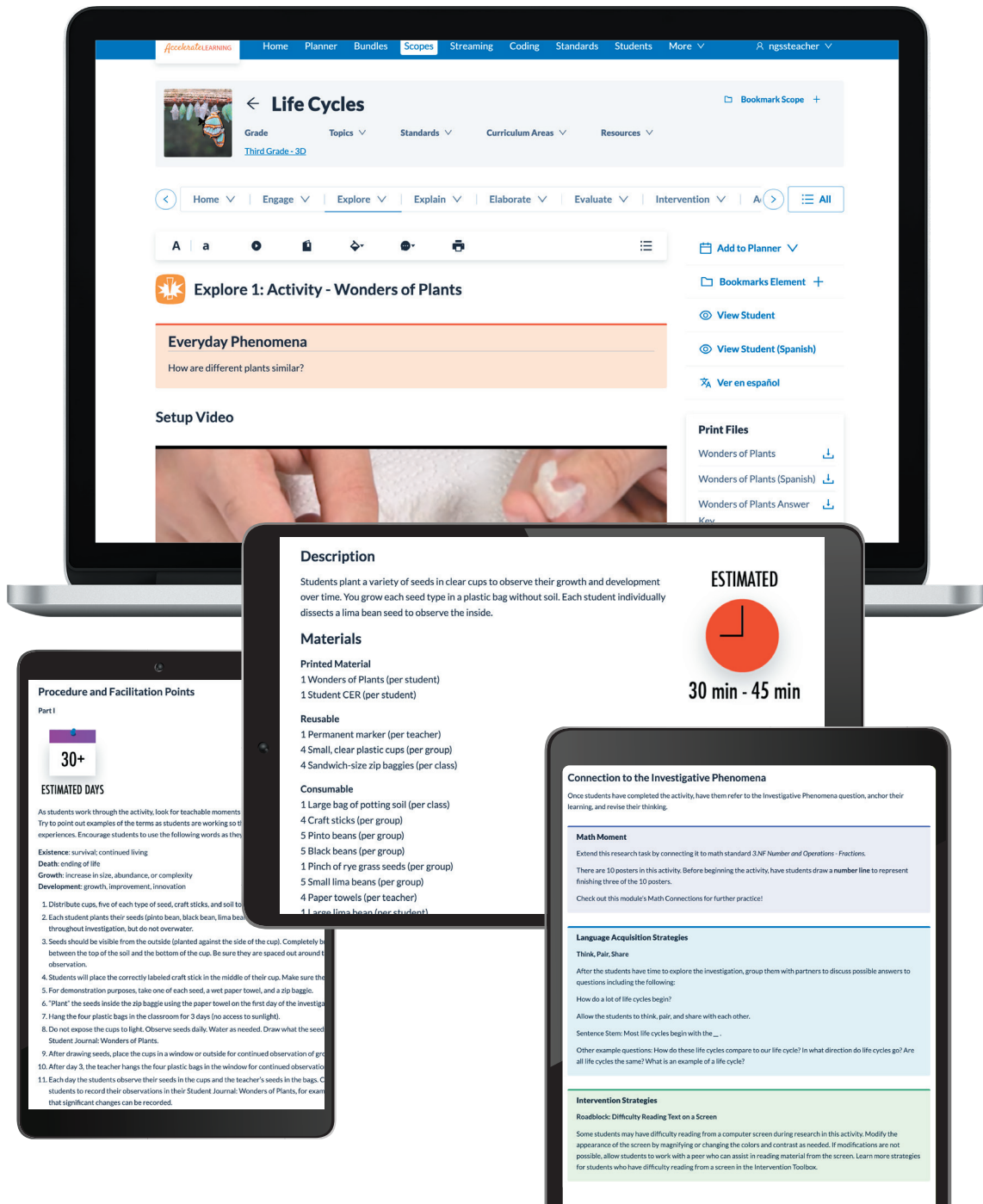
Student Name	8th Grade Integrated Beginning-of-Year Assessment 03/12/20	8th Grade Integrated End-of-Year Assessment 03/12/20
Student 1	24	98 +74
Student 2	24	22 -2
Student 3	24	78 +54
Student 4	24	76 +52
Student 5	73	98 +25

8th Grade Integrated Beginning-of-Year Assessment 03/12/20  
 8th Grade Integrated End-of-Year Assessment 03/12/20

# Professional Learning

Bite-sized morsels of professional learning are embedded and free throughout the STEMscopes curriculum. These teacher-friendly learning opportunities are within every Explore (lesson) and reinforce helpful strategies to promote the instructional fidelity of the NGSS and student achievement.

## In-Lesson Facilitation Points, 3D Callouts, Instructional Strategies, Math Moments, and STEM Best Practices



[Home](#) [Planner](#) [Bundles](#) [Scopes](#) [Streaming](#) [Coding](#) [Standards](#) [Students](#) [More](#) [ngsteacher](#)

### Life Cycles

Grade: [Third Grade - 3D](#)

[Home](#) [Engage](#) [Explore](#) [Explain](#) [Elaborate](#) [Evaluate](#) [Intervention](#) [All](#)

[Add to Planner](#) [Bookmarks Element](#) [View Student](#) [View Student \(Spanish\)](#) [Ver en español](#) [Print Files](#)

[Wonders of Plants](#) [Wonders of Plants \(Spanish\)](#) [Wonders of Plants Answer Key](#)

#### Explore 1: Activity - Wonders of Plants

**Everyday Phenomena**  
How are different plants similar?

**Setup Video**

**Description**

Students plant a variety of seeds in clear cups to observe their growth and development over time. You grow each seed type in a plastic bag without soil. Each student individually dissects a lima bean seed to observe the inside.

**Materials**

**Printed Material**

- 1 Wonders of Plants (per student)
- 1 Student CER (per student)

**Reusable**

- 1 Permanent marker (per teacher)
- 4 Small, clear plastic cups (per group)
- 4 Sandwich-size zip baggies (per class)

**Consumable**

- 1 Large bag of potting soil (per class)
- 4 Craft sticks (per group)
- 5 Pinto beans (per group)
- 5 Black beans (per group)
- 1 Pinch of rye grass seeds (per group)
- 5 Small lima beans (per group)
- 4 Paper towels (per teacher)
- 1 Large lima bean (per student)

**ESTIMATED**

**30 min - 45 min**

**Procedure and Facilitation Points**

Part I

**30+**

**ESTIMATED DAYS**

As students work through the activity, look for teachable moments. Try to point out examples of the terms as students are working so they can use them in their own work. Encourage students to use the following words as they work.

**Existence:** survival; continued living  
**Death:** ending of life  
**Growth:** increase in size, abundance, or complexity  
**Development:** growth; improvement; innovation

- Distribute cups, five of each type of seed, craft sticks, and soil to each student.
- Each student plants their seeds (pinto bean, black bean, lima bean) in a clear cup, through investigation, but do not overwater.
- Seeds should be visible from the outside (planted against the side of the cup). Completely bury the seeds between the top of the soil and the bottom of the cup. Be sure they are spaced out around the cup.
- Students will place the correctly labeled craft stick in the middle of their cup. Make sure the stick is standing upright.
- For demonstration purposes, take one of each seed, a wet paper towel, and a zip baggie.
- "Plant" the seeds inside the zip baggie using the paper towel on the first day of the investigation.
- Hang the four plastic bags in the classroom for 3 days (no access to sunlight).
- Do not expose the cups to light. Observe seeds daily. Water as needed. Draw what the seed looks like in their Student Journal: Wonders of Plants.
- After drawing seeds, place the cups in a window or outside for continued observation of growth.
- After day 3, the teacher hangs the four plastic bags in the window for continued observation.
- Each day the students observe their seeds in the cups and the teacher's seeds in the bags. Students record their observations in their Student Journal: Wonders of Plants, for examples of significant changes can be recorded.

**Connection to the Investigative Phenomena**

Once students have completed the activity, have them refer to the Investigative Phenomena question, anchor their learning, and revise their thinking.

**Math Moment**

Extend this research task by connecting it to math standard 3.NF Number and Operations - Fractions. There are 10 posters in this activity. Before beginning the activity, have students draw a number line to represent finishing three of the 10 posters.

Check out this module's Math Connections for further practice!

**Language Acquisition Strategies**

**Think, Pair, Share**

After the students have time to explore the investigation, group them with partners to discuss possible answers to questions including the following:

How do a lot of life cycles begin?

Allow the students to think, pair, and share with each other.

Sentence Stem: Most life cycles begin with the...

Other example questions: How do these life cycles compare to our life cycle? In what direction do life cycles go? Are all life cycles the same? What is an example of a life cycle?

**Intervention Strategies**

**Roadblock: Difficulty Reading Text on a Screen**

Some students may have difficulty reading from a computer screen during research in this activity. Modify the appearance of the screen by magnifying or changing the colors and contrast as needed. If modifications are not possible, allow students to work with a peer who can assist in reading material from the screen. Learn more strategies for students who have difficulty reading from a screen in the Intervention Toolbox.



# Quality Instruction Matters

STEMscopes believes the most important strategy schools can use to significantly increase student learning is the quality of instruction. Students flourish when teachers deeply understand the content and make use of all available instructional resources.

We provide professional learning services that focus on evidence-based instructional strategies that strengthen student learning while simultaneously nurturing the attitudes and skills fundamental to implementing a successful STEM program.

## Training Methods to Suit Every Teacher



On-site



Online Portfolios



Virtual



Individual and  
Small Group  
Coaching



Blended

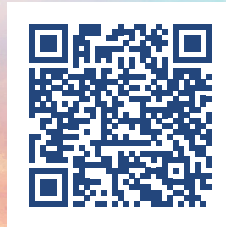


Group Workshops



Online Courses

Click or scan the QR code to create your own custom-tailored plan for STEM excellence  
or visit [acceleratelearning.com/professional-learning/](https://acceleratelearning.com/professional-learning/)







STEM<sup>NGSS 3D</sup>scopes™  
K-12 SCIENCE  
POWERED BY ACCELERATE LEARNING