Science

CORE CURRICULUM

twig SCIENCE

Elementary

Phenomena-Based, Digital-Forward, 3-D Learning

imagine learning

“Our district appreciates how unbelievably responsive the Twig Science team has been! We feel we have a true partner in getting the highest quality instructional materials into our young scientists’ hands.”

• • •

Ryan R., Pre-K–5 Instructional Coach, Los Angeles, CA

Let's Make More Aha! Moments

twig SCIENCE Elementary

Find What Truly Inspires Them

Twig Science Elementary was designed from the ground up for the NGSS/3-D science by award-winning STEM education specialists. Students investigate and make sense of phenomena through multiple modalities — from hands-on activities and digital and video investigations to collaborative projects — empowering each and every student to connect with learning tailored for them.

Stop Finding Time, Start Saving Time

Getting started with Twig Science is easy — and with Twig Science Fast Track, comprehensive yet simple assessment tools, and countless opportunities to integrate with ELA lessons, the time you have for science will be richer than you ever imagined.

Adventures Designed Around Your Students

Alongside some of the world's leading STEM educators, we developed a program that connects everything students do to anchor phenomena and supporting investigative phenomena, providing tangible, real-world examples of science that extend far beyond the classroom.

English/Spanish

Twig Science has more Spanish resources than any other NGSS/3-D science program. All student-facing materials are available in Spanish and with read-aloud technology.

K–5/K–6

Twig Science Elementary is available as a complete K–6 program with the same lesson structure and instructional design. Alternatively, the K–5 program integrates seamlessly with Twig Science Middle School, following the adventure through 6–8.

Program Structure

Twig Science Elementary contains everything you need to teach Next Generation Science Standards and 3-D learning. You can choose between the **Full Course** and **Fast Track**, and teach either in-class, remotely, or in hybrid. Assessment is built in throughout. **Twig Coach** video lessons and **Leveled reader** lessons are also available to support student learning.

Full Course

The Full Course includes every hands-on, digital, and video investigation created for Twig Science Elementary over approximately 90 to 160 hours of instruction per year:

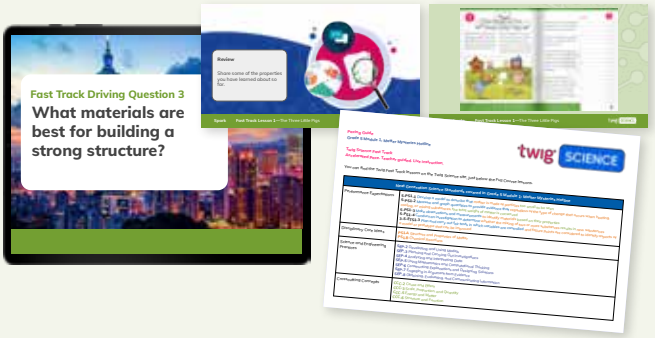
- 4 or 5 modules in each grade
- 3–7 Driving Questions per module
- 2–16 lessons per Driving Question

Lessons are 40 minutes at grades K–1, 45 minutes at grades 2–4, and 50 minutes at grades 5–6. Altogether there are 858 lessons in the Full Course.

Fast Track

Fast Track covers every NGSS/3-D standard and includes the same phenomena and STEM-role narratives as the Full Course … just at an accelerated pace, taking 25% less time compared to the Full Course.

- Pacing Guide PDFs
- Customized Google Slides
- Assessment Overviews
- Lab Kit and Teacher Provided Materials lists
- Revised Word Walls and Science Tools posters



Twig Coach

On-demand, bite-sized Twig Coach video lessons bring highly engaging phenomena through high-quality, in-class or remote STEM investigations — fully aligned to the NGSS.

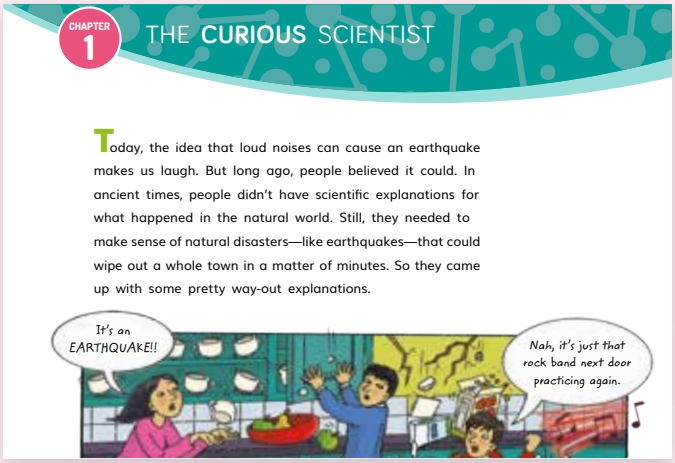
- Studio-quality lesson videos presented by experienced teachers
- Self-guided or assigned pace
- Students interact with lessons through rich media and text

Leveled Readers

Magazine-style leveled readers let students explore ideas in depth at their own pace while meeting real-world scientists and engineers. Leveled reader lessons include reading activities and multiple writing opportunities. Readers are available in print and digital at four levels — On-, Above-, and Below-Level, and English Learner — and are ideal for use in differentiated small-group reading time.

1. Exploring Phenomena

Build curiosity about a phenomenon — students will discover what we know and how we know it.

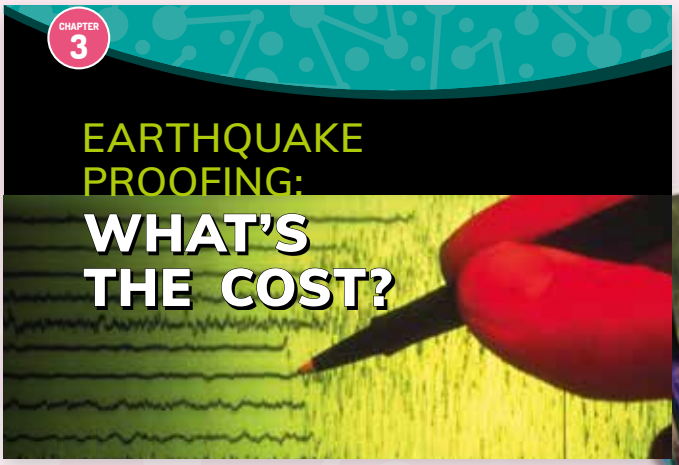


2. STEM Career

Introduce students to real professionals working in STEM careers in fascinating interviews.

3. Real-World Connection

Showing why students should care about a phenomenon and how it affects them.



Program Components:
Student Experience

Twig Books

Colorful, all-in-one text and investigation student books in digital and print, for modeling, annotation, and sketching, with text-to-speech functionality.

Multimedia Investigations

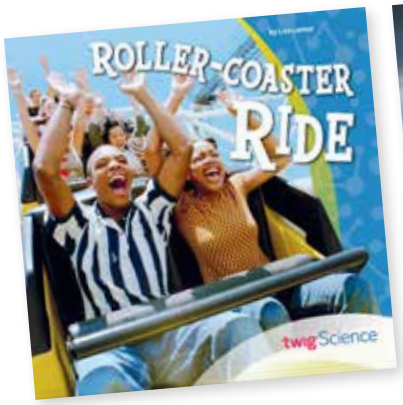
Theater-quality video content gives students access to high-impact phenomena, while digital interactives based on authentic data let them manipulate real-world phenomena.

Exploring Phenomena

Students use their Twig Books and tools to make sense of phenomena through investigations they carry out in their STEM Roles.

Leveled Readers

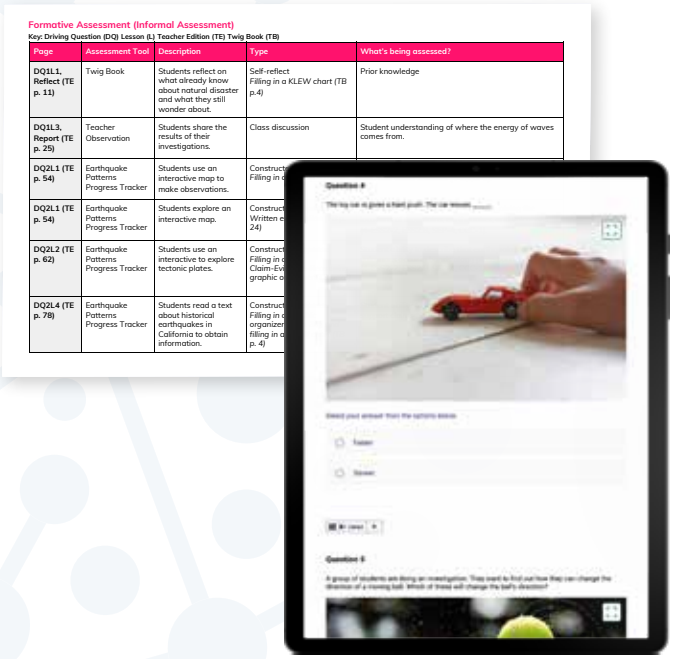
High-interest, magazine-style leveled readers give students the opportunity to explore ideas in greater depth at their own pace while meeting realworld scientists and engineers. They're available in print and digital at four levels — On-Level, Above-Level, Below-Level, and English Learner — and are ideal for use in differentiated small-group reading time.



Program Components:
Teacher Experience

Teacher Editions

Modular Teacher Editions with flexible pacing include Fast Track and/or comprehensive lesson planning, with differentiated instruction scaffolds and language routines.



Formative Assessment (Informal Assessment)

Key: Driving Question (DQ) Lesson (L) Teacher Edition (TE) Twig Book (TB)

Page	Assessment Tool	Description	Type	What's being assessed?
DQ1L1, Reflect (TE p. 11)	Twig Book	Students reflect on what already know about natural disaster and what they still wonder about.	Self-reflect Filling in a KLEW chart (TB p.4)	Prior knowledge
DQ1L3, Report (TE p. 25)	Teacher Observation	Students share the results of their investigations.	Class discussion	Student understanding of where the energy of waves comes from.
DQ2L1 (TE p. 54)	Earthquake Patterns Progress Tracker	Students use an interactive map to make observations.	Construct Filling in	
DQ2L1 (TE p. 54)	Earthquake Patterns Progress Tracker	Students explore an interactive map.	Construct Written e 24)	
DQ2L2 (TE p. 62)	Earthquake Patterns Progress Tracker	Students use an interactive to explore tectonic plates.	Construct Filling in Claim-Evi graphic o	
DQ2L4 (TE p. 78)	Earthquake Patterns Progress Tracker	Students read a text about historical earthquakes in California to obtain information.	Construct Filling in organizer filling in p. 4)	

3-D Performance Assessment Suite

Formative and summative assessments measure students' abilities to meet all aspects of Performance Expectations. Rubrics provide clear guidance on how to assess students of all skill levels. Flexible options to monitor student progress are included.

Digital Platform

The innovative, easy-to-use Twig Science digital platform can be used as a stand-alone environment or with print, and it includes presenter tools, automatic rostering, single sign-on, and accessibility tools along with thousands of videos providing access to real-world phenomena for every student.

Module Lab Kits and Essentials Kits

There are two kinds of hands-on kits available for Twig Science Elementary. Module Lab Kits are clearly labeled, simply organized, and available for each module, ensuring efficient use of materials for small or larger groups during hands-on investigations. We offer module replenishment kits for consumable items. At Grades 3–5, optional Science Essentials kits provide high-value, multipurpose equipment.

Video Labs

Students can investigate phenomena anywhere, anytime, and educators can decide whether hands-on or video labs meet their needs.

Assignable Lessons

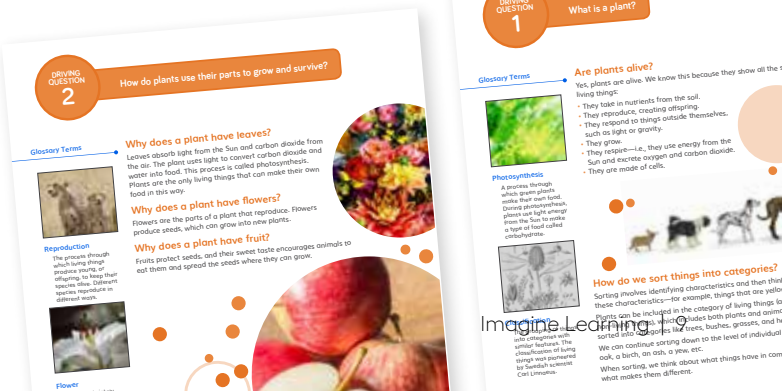
Assign lessons to students using the digital, interactive version of the Twig Books. Students can upload pictures, drawings, visual observations, and snapshots to build up a digital portfolio. Teachers can provide feedback directly in each student's digital Twig Book.

Model Lessons and Background Knowledge

Every module kicks off with a short teacher introduction film, giving an overview of the Anchor Phenomenon or Investigative Problem, the sequence of learning, and how the Performance Expectations are addressed. Our professional learning materials include teacher background information for every module, unpacking the science in bite-sized chunks, and a digital guide to the Science and Engineering Practices and Crosscutting Concepts.

In-Person and Webinar Training

Our specialist team is there to provide support in-person and/or online for technical, implementation, and science-topic training.



Why Twig Science Elementary?

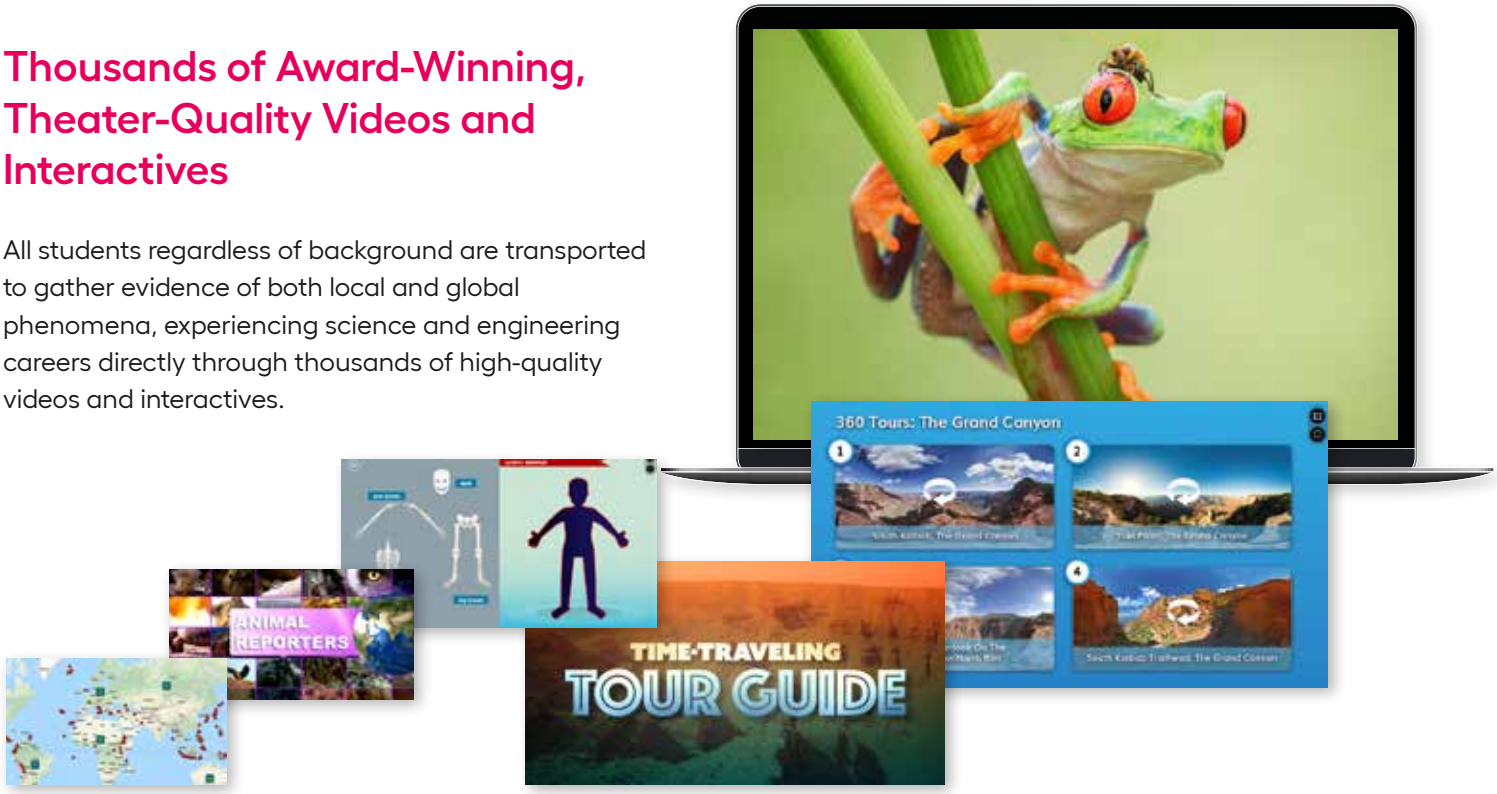
Drive learning by engaging and exciting students with a series of investigations that use multimedia tools to bring science and engineering to life.

STEM-Role Investigations

Hands-on, digital, and video investigations provide captivating real-world experiences in dozens of STEM roles — from park rangers and earthquake engineers to deep-space explorers and time-traveling tour guides.

Thousands of Award-Winning, Theater-Quality Videos and Interactives

All students regardless of background are transported to gather evidence of both local and global phenomena, experiencing science and engineering careers directly through thousands of high-quality videos and interactives.

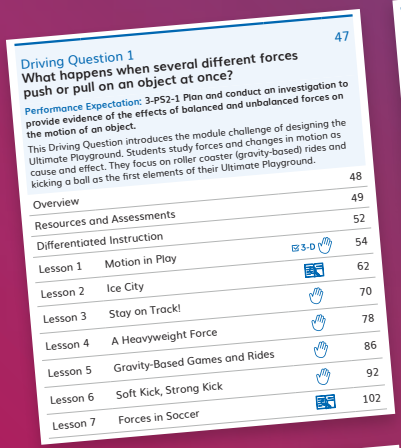


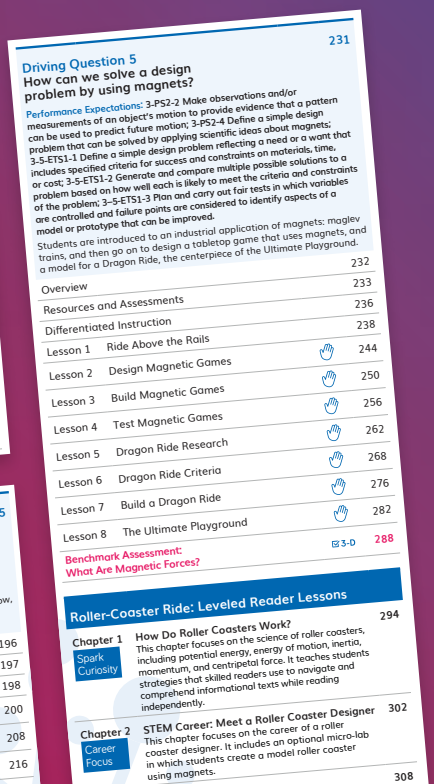
Engaging with Phenomena

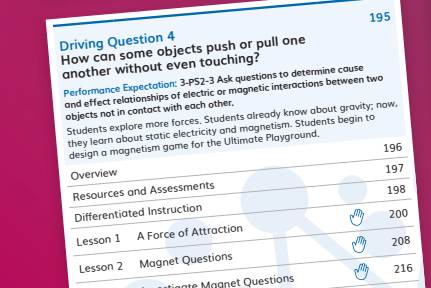
Phenomena are observable events or features in a natural or designed system. When students experience phenomena, they wonder and ask scientific questions. The process of making sense of, explaining, and predicting phenomena leads to deeper and more transferable knowledge.

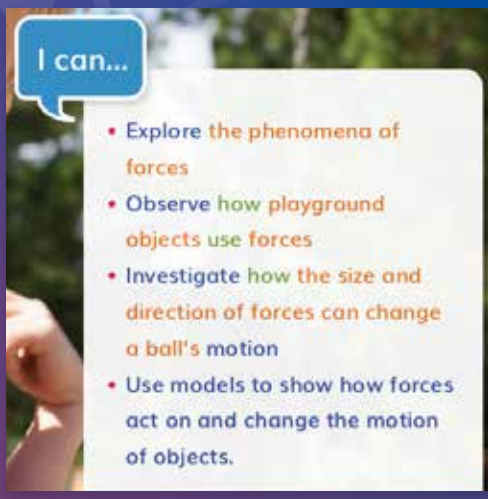
Students define, investigate, and explain real-world phenomena.

Driving Questions build in complexity, scaffolding students' acquisition of the three dimensions required to master each Module Anchor Phenomenon.









Students use their experiences of figuring out phenomena to build up science skills, knowledge, and understanding.

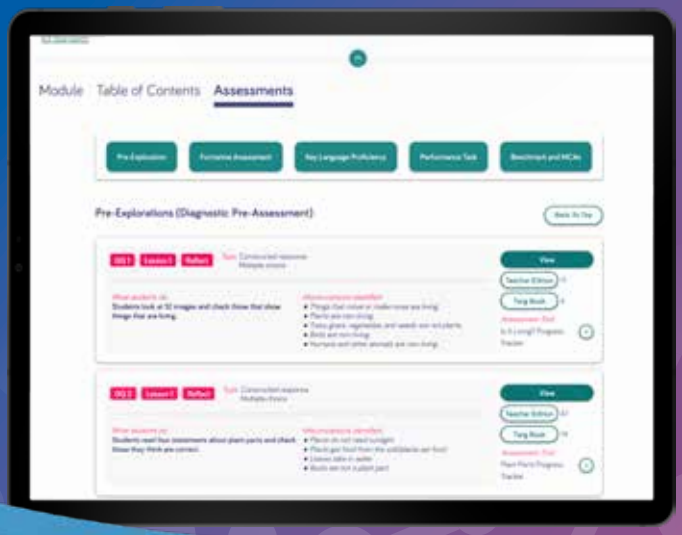
Assessment Platform

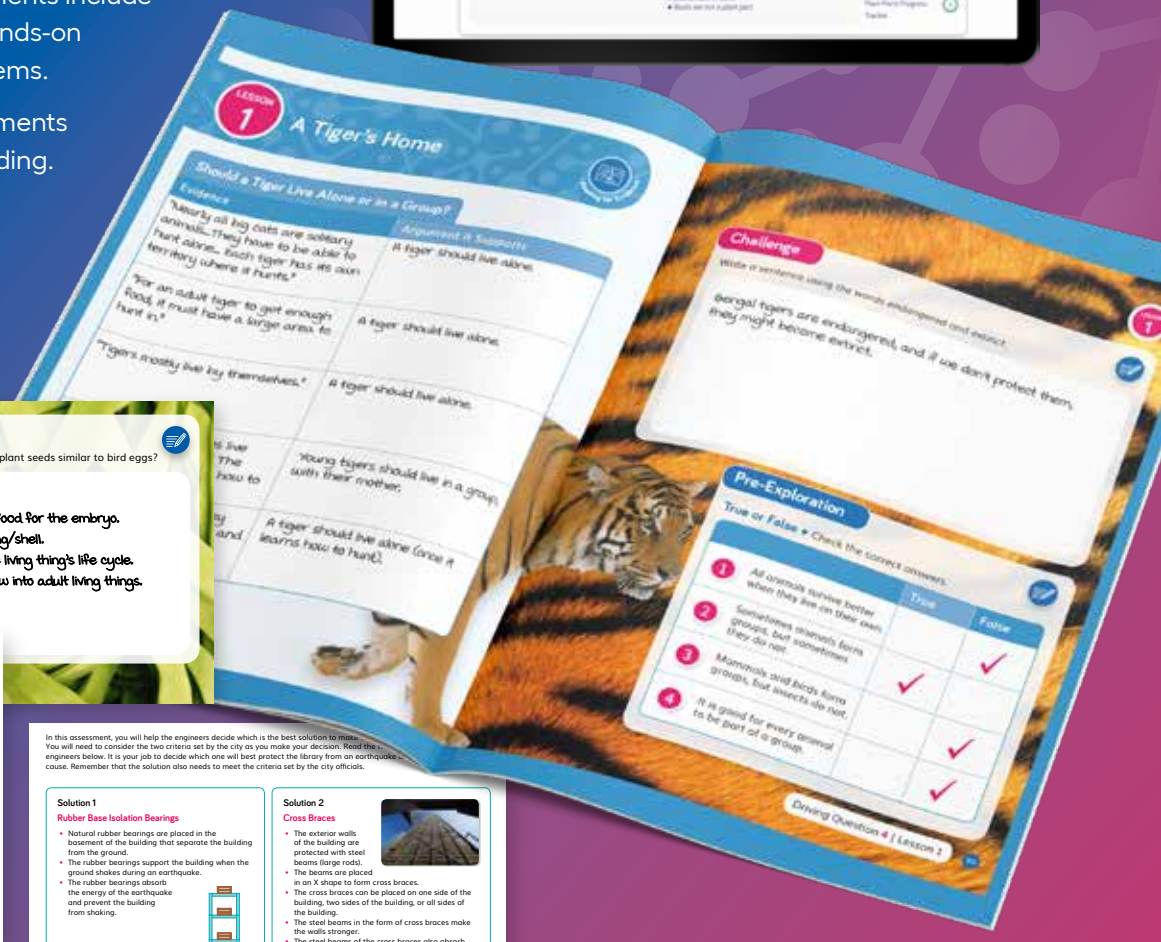
Developed in Partnership with Stanford University's SCALE Team

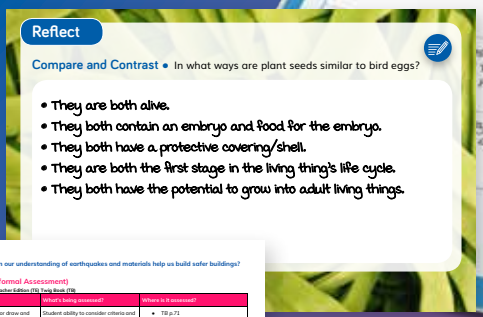
The Twig Science assessment platform enables students to demonstrate thinking, knowledge, and practices to unpack phenomena and solve design challenges.

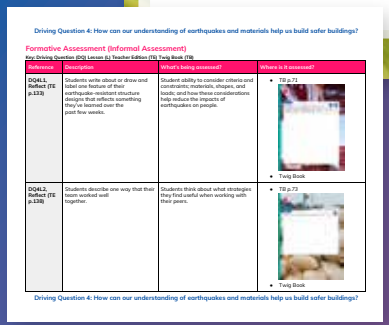
Assessment Types

- Pre-Explorations identify students' prior-knowledge and misconceptions.
- Formative Assessment includes written responses, discussions, teacher observations, and self and peer assessment.
- Summative Performance Tasks allow students to demonstrate growing mastery of Performance Expectations.
- SCALE Benchmark Assessments include video and data analysis, hands-on activities, and design problems.
- 3-D Multiple Choice Assessments quickly measure understanding.









Progress Trackers

Progress Trackers help teachers monitor progression within a module, while data from summative assessments track the direction of travel toward required grade level proficiency for each Performance Expectation.

Progress Tracker: Earthquake Patterns

Misconception	Tally	Total	Notes
Earthquakes are rare events.			
All earthquakes are caused by erupting volcanoes.			
Earthquakes are most deadly when they cause the ground to open up as people, animals, plants, and buildings can fall into openings and disappear.			
Earthquakes are equally likely to happen anywhere on Earth.			
NGSS	**Tally**	**Total**	**Notes**
Describes that maps can help locate land and water features. (4-ESS2-2)			
Identifies a pattern involving the locations of mountains, earthquakes, and volcanoes. (4-ESS2-2, ESS2.B, SEP-4, CCC-1)			
Describes that earthquakes and volcanoes occur in bands along plate boundaries. (4-ESS2-2, ESS2.B, SEP-4, CCC-1)			
Uses patterns as evidence to support claims. (SEP-6, CCC-1)			

Assessments Center

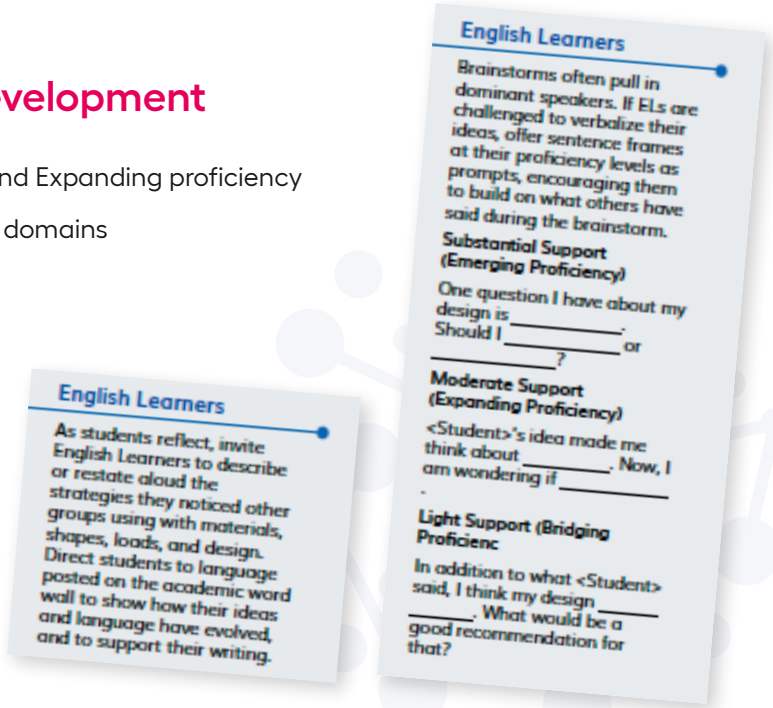
Quickly check how many students have completed an assignment, then click on a specific assignment for more granular detail. Reports provide real-time insights into student performance.

Supporting Every Learner

Twig Science Elementary promotes equitable, inclusive, and accessible learning environments for all students.

English Learner and Language Development

- English Learner scaffolds for Emerging, Bridging, and Expanding proficiency
- Speaking, listening, reading, and writing language domains
- Linguistic frames, tiered vocabulary support, and Stanford UL-SCALE language routines



Family Outreach

Editable family letters in multiple languages and school-to-home connections to extend STEM beyond the classroom.

Special Needs

Strategies to assist in accommodating the learning of students with light to moderate disabilities.

Cross-Curricular Connections

Helpful links to ELA, math, history, social science, and arts, increasing the impact and understanding of science in different contexts.

Accessibility

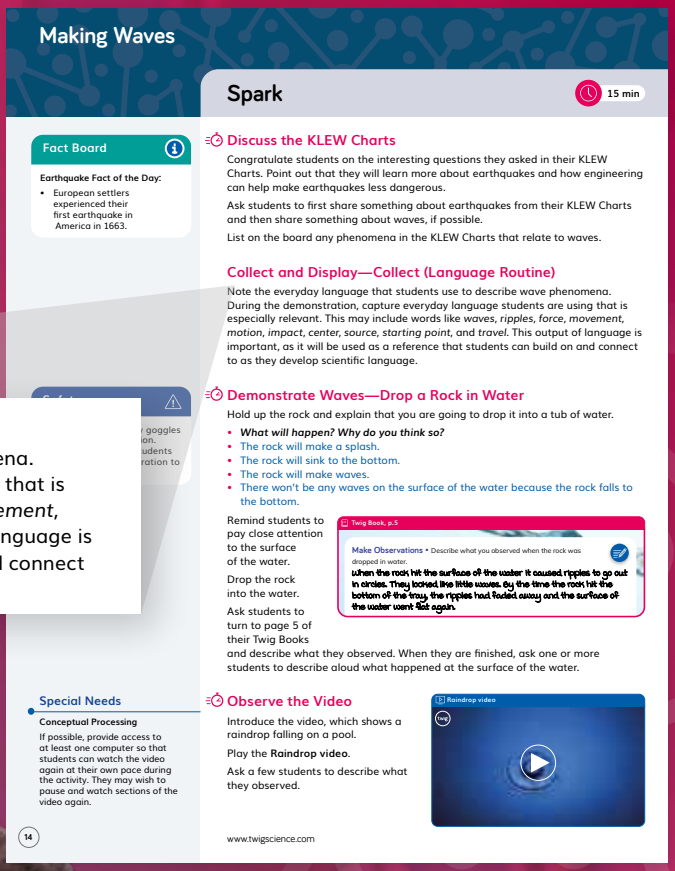
Text-to-speech functionality plus full customization of platform display, with built-in epilepsy-safe, visually impaired, cognitive disability, and ADHD-friendly profiles.

Language Routines

Science language routines, developed by Stanford University's UL-SCALE team, capture everyday language in Tiers 1 and 2 that students use as a bridge to developing Tier 3 language for scientific discourse.

Collect and Display—Collect (Language Routine)

Note the everyday language that students use to describe wave phenomena. During the demonstration, capture everyday language students are using that is especially relevant. This may include words like *waves*, *ripples*, *force*, *movement*, *motion*, *impact*, *center*, *source*, *starting point*, and *travel*. This output of language is important, as it will be used as a reference that students can build on and connect to as they develop scientific language.



Making Waves

Spark

15 min

Fact Board

Earthquake Fact of the Day:

- European settlers experienced their first earthquake in America in 1663.

Discuss the KLEW Charts

Congratulate students on the interesting questions they asked in their KLEW Charts. Point out that they will learn more about earthquakes and how engineering can help make earthquakes less dangerous.

Ask students to first share something about earthquakes from their KLEW Charts and then share something about waves, if possible.

List on the board any phenomena in the KLEW Charts that relate to waves.

Collect and Display—Collect (Language Routine)

Note the everyday language that students use to describe wave phenomena. During the demonstration, capture everyday language students are using that is especially relevant. This may include words like *waves*, *ripples*, *force*, *movement*, *motion*, *impact*, *center*, *source*, *starting point*, and *travel*. This output of language is important, as it will be used as a reference that students can build on and connect to as they develop scientific language.

Demonstrate Waves—Drop a Rock in Water

Hold up the rock and explain that you are going to drop it into a tub of water.

- ***What will happen? Why do you think so?***
- The rock will make a splash.
- The rock will sink to the bottom.
- The rock will make waves.
- There won't be any waves on the surface of the water because the rock falls to the bottom.

Remind students to pay close attention to the surface of the water.

Drop the rock into the water.

Ask students to turn to page 5 of their Twig Books and describe what they observed. When they are finished, ask one or more students to describe aloud what happened at the surface of the water.

Twig Book, p. 5

Make Observations • Describe what you observed when the rock was dropped in water.

When the rock hit the surface of the water it caused ripples to go out in circles. They looked like little waves. By the time the rock hit the bottom of the tray, the ripples had faded away and the surface of the water went flat again.

Special Needs

Conceptual Processing

If possible, provide access to at least one computer so that students can watch the video again at their own pace during the activity. They may wish to pause and watch sections of the video again.

Observe the Video

Introduce the video, which shows a raindrop falling on a pool.

Play the **Raindrop video**.

Ask a few students to describe what they observed.

Raindrop video

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