

# Program structure and components



# Year at a glance

## Units per year

K-2 **3** 3-5 **4**

## Unit types

Although every Amplify Science unit provides a three-dimensional learning experience, each unit emphasizes one of the following specific science and engineering practices.

### Investigation

Investigation units focus on the process of strategically developing investigations and gathering data to answer questions. Students are first asked to consider questions about what happens in the natural world and why, and are then involved in designing and conducting investigations that produce data to help answer those questions.

### Modeling

These Amplify Science units provide extra support to students engaging in the practice of modeling. Students use physical models, investigate with computer models, and create their own diagrams to help them visualize what might be happening on the nanoscale.

### Engineering design

Engineering design solves complex problems by applying science principles to the design of functional solutions, and iteratively testing those solutions to determine how well they meet pre-set criteria. All Amplify Science engineering design units are structured to make the development of such solutions the central focus.

### Argumentation (grades 3–5)

These Amplify Science units provide extra support to students engaging in the practice of argumentation. As students move up the K–5 grades, they focus on important aspects of argumentation in an intentional sequence.

## Course structure

### Key

- |                        |                             |
|------------------------|-----------------------------|
| <b>A</b> Argumentation | <b>E</b> Engineering design |
| <b>I</b> Investigation | <b>M</b> Modeling           |

### Kindergarten (66 lessons)

*Needs of Plants and Animals* 22 lessons **I**

*Pushes and Pulls* 22 lessons **E**

*Sunlight and Weather* 22 lessons **M**

### Grade 1 (66 lessons)

*Animal and Plant Defenses* 22 lessons **M**

*Light and Sound* 22 lessons **E**

*Spinning Earth* 22 lessons **I**

### Grade 2 (66 lessons)

*Plant and Animal Relationships* 22 lessons **I**

*Properties of Materials* 22 lessons **E**

*Changing Landforms* 22 lessons **M**

### Grade 3 (88 lessons)

*Balancing Forces* 22 lessons **M**

*Inheritance and Traits* 22 lessons **I**

*Environments and Survival* 22 lessons **E**

*Weather and Climate* 22 lessons **A**

### Grade 4 (88 lessons)

*Energy Conversions* 22 lessons **E**

*Vision and Light* 22 lessons **I**

*Earth's Features* 22 lessons **A**

*Waves, Energy, and Information* 22 lessons **M**

### Grade 5 (92 lessons)

*Patterns of Earth and Sky* 22 lessons **I**

*Modeling Matter* 22 lessons **M**

*The Earth System* 26 lessons **E**

*Ecosystem Restoration* 22 lessons **A**

# Unit at a glance

## Lessons per unit

**20** plus two assessment days

Lessons organized around 3–5 chapters per unit.

## Lesson length

K–1 **45** minutes

2–5 **60** minutes

## Our phenomena-based approach

In each Amplify Science unit, students are asked to inhabit the role of a scientist or engineer in order to investigate a real-world problem. These real-world problems provide relevant, 21st-century contexts through which students will investigate different scientific phenomena. Students work to define the problem and collect and make sense of evidence

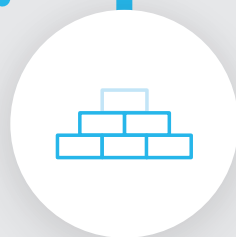
from multiple sources and through a variety of modalities. At the end of the unit, students are presented with a brand new problem, giving them an opportunity to apply what they've learned over the course of the unit to a new context. This represents a shift from asking students to *learn about* science to supporting students in *figuring out* the science.



**Engage** students with a real-world problem



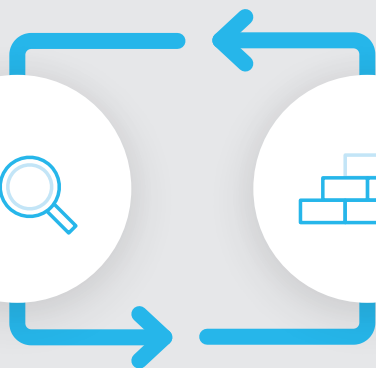
**Explore** evidence from multiple sources



**Construct** increasingly complex explanations



**Apply** knowledge to solve a different problem



# Lessons at a glance

Amplify Science is rooted in the research-based **Do, Talk, Read, Write, Visualize** model of learning. Students engage with science and engineering practices, figure out disciplinary core ideas, and utilize and apply crosscutting concepts in multiple modalities across thoughtful, structured lessons, all centered around engaging anchor phenomena. Each lesson features a unique mix of activities that provide students with multiple points of entry into the instruction.

## Do

First-hand investigations are an important part of any science classroom, and Amplify Science has students getting hands-on in every unit—from exploring collision forces to experimenting with electrical systems.

## Talk

Student-to-student discourse and full-class discussions are integral parts of the program. The program fosters a collaborative classroom environment by providing students with numerous opportunities to engage in meaningful oral scientific argumentation, both one-on-one and in full-class discussions.

## Read

Students learn how to read like scientists using student books developed by the Lawrence Hall of Science specifically for Amplify Science. These books engage students in close reading strategies, and in learning to read for a purpose—for example, finding evidence to support a claim.

## Write

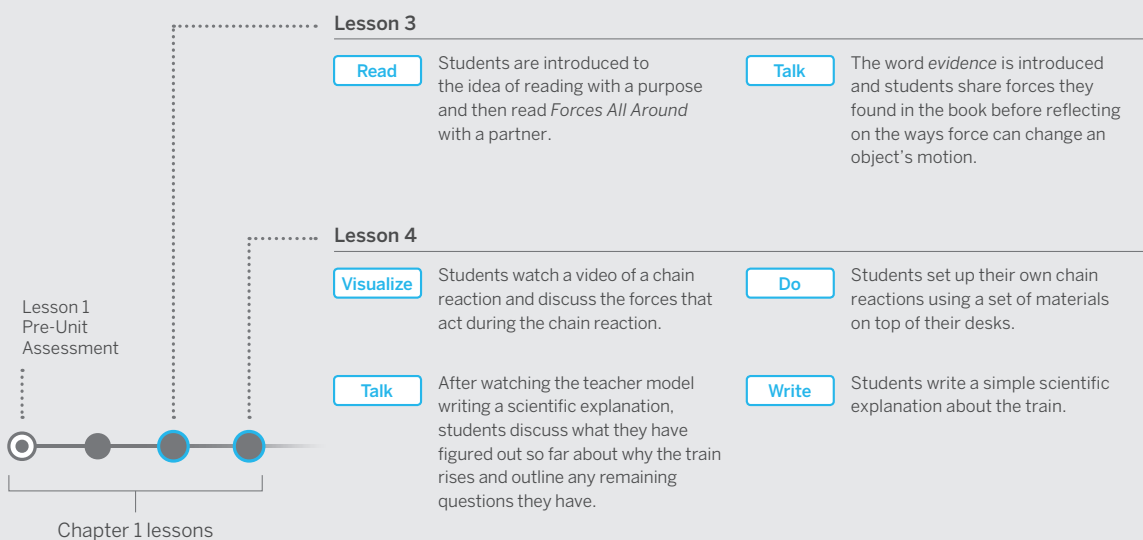
Students write like scientists, generating scientific explanations of the phenomena they investigate, and using evidence to construct scientific arguments. Students learn to articulate their reasoning in order to show how their evidence is connected to a claim.

## Visualize

By engaging with simulations, media, and modeling tools, students are empowered to visualize scientific phenomena in ways never possible before.

## Example from a unit: *Balancing Forces* (grade 3)

In *Balancing Forces*, the town of Faraday is getting a new train that floats above its tracks and students investigate how that might be possible. Over the course of two lessons, you can see that students engage in multiple modalities, though not in any fixed order.



# About the program

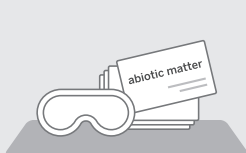
Amplify Science is a **new blended curriculum for grades K–8 that meets 100 percent of the Next Generation Science Standards**. A rich blend of physical materials and digital learning tools, the multimodal program includes: detailed lesson plans, hands-on activities, scientific texts, robust simulations, engaging media, physical and digital models, formative assessments, benchmark assessments, and a variety of embedded teacher supports and professional development options.

With Amplify Science, students learn to talk, read, write, think, and argue like scientists and engineers through investigations of real-world problems and scientific phenomena, gaining the skills needed to master the NGSS.

With Amplify Science, you'll find:

- **Lessons written to address 100 percent of the Next Generation Science Standards** as well as a significant portion of reading and math standards at each grade level.
- **Kits and manipulatives** that emphasize the importance of hands-on investigations in the 21st-century classroom.
- **Engaging media** in each unit that draw students into the authentic problem-solving context and narrative.
- **Literacy-rich activities** that support students in making claims, leveraging evidence, drawing conclusions from data, and sharing their ideas through oral and written explanations and arguments.

## Program components



### Classroom kits

#### K–5

- Hands-on materials
- Printed classroom display materials
- Hands-on materials



### Print materials

#### K–5

- Student Books
- Student Investigation Notebooks
- Print Teacher's Guides



### Digital tools

#### K–1

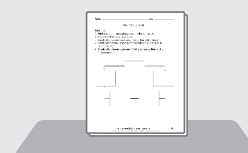
- Digital Teacher's Guide
- Classroom Slides
- Videos

#### 2–3

- Digital Teacher's Guide
- Classroom Slides
- Videos
- Student practice apps

#### 4–5

- Digital Teacher's Guide
- Classroom Slides
- Videos
- Student practice apps
- Simulation tools (sims)



### Assessments

#### K–5

- Pre-/End-of-Unit Assessments
- Critical Juncture Assessments
- On-the-Fly Assessments (formative)
- Benchmark Assessments\*

\*Grades 3–5, developed by Amplify outside of the Amplify Science program.

For more information on Amplify Science,  
visit [amplify.com/science](https://amplify.com/science).

Amplify.



THE LAWRENCE  
HALL OF SCIENCE  
UNIVERSITY OF CALIFORNIA, BERKELEY