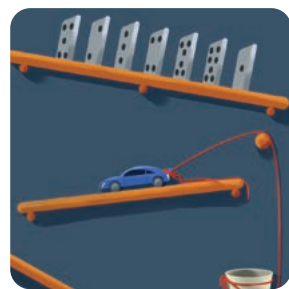


Planning guide



authored by



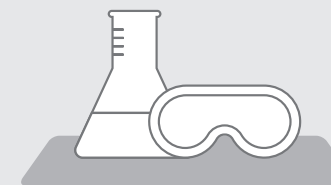
THE LAWRENCE
HALL OF SCIENCE
UNIVERSITY OF CALIFORNIA, BERKELEY



Program components

Student

Hands-on



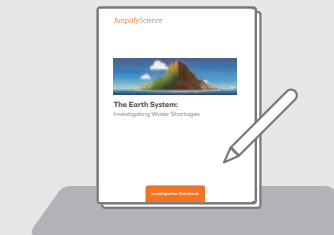
Kit materials

Reading



Student Books for read-alouds, shared reading, and partner reading

Writing



Student Investigation Notebooks

Apps



Student practice apps and digital simulations

Teacher

Instruction



Print Teacher's Guide



Digital Teacher's Guide



Display and hands-on materials (vocabulary cards, unit questions, key concepts, sorting cards, and more)



Planning for a year

Grade 5 scope and sequence
(88 days of instruction)



Patterns of Earth and Sky

20 60-minute lessons
2 dedicated assessment days

Focal NGSS Performance Expectations:

- 5-ESS1-1
- 5-ESS1-2
- 5-PS2-1

Focal Disciplinary Core Ideas:

- ESS1.A
- ESS1.B
- PS2.B

Modeling Matter

20 60-minute lessons
2 dedicated assessment days

Focal NGSS Performance Expectations:

- 5-PS1-1
- 5-PS1-2
- 5-PS1-3

Focal Disciplinary Core Ideas:

- PS1.A

The Earth System

20 60-minute lessons
2 dedicated assessment days

Focal NGSS Performance Expectations:

- 5-ESS2-1
- 5-ESS2-2
- 5-ESS3-1
- 5-PS1-1
- 5-PS1-2
- 5-PS1-4
- 3-5-ETS1-1
- 3-5-ETS1-2
- 3-5-ETS1-3

Focal Disciplinary Core Ideas:

- ESS2.A
- ESS2.C
- ESS3.C
- PS1.A
- PS1.B
- ETS1.A
- ETS1.B
- ETS1.C

Ecosystem Restoration

20 60-minute lessons
2 dedicated assessment days

Focal NGSS Performance Expectations:

- 5-LS1-1
- 5-LS2-1
- 5-PS1-1
- 5-PS3-1
- 5-ESS3-1

Focal Disciplinary Core Ideas:

- LS1.C
- LS2.A
- LS2.B
- ESS3.C
- PS1.A
- PS3.D

Scheduling options

No matter what your scheduling preference, Amplify Science will work in your classroom.



"I teach science twice each week."

Each Amplify Science unit at grade 5 is made up of 22 60-minute lessons, which includes 2 lessons for pre- and post-assessment. With 2 scheduled 60-minute sessions each week, each Amplify Science unit will take between 2 and 2.5 months to complete.



"I teach science three times each week"

The easiest option is to plan for 3 60-minute sessions each week. This way, each Amplify Science unit will take approximately 1.5 months. This plan will provide you the freedom to slow down the pace of instruction if your students need more time, or if you'd like to weave in additional experiences.

45-minute option

If you plan for sessions of less than 60 minutes, Amplify Science lessons can be spread out over more than one session. For instance, if you allocate 3 45-minute lessons per week, each Amplify Science unit will take approximately 2.25 months. This option will still provide time for you to address all four grade 5 units across the year.



"I teach science every day."

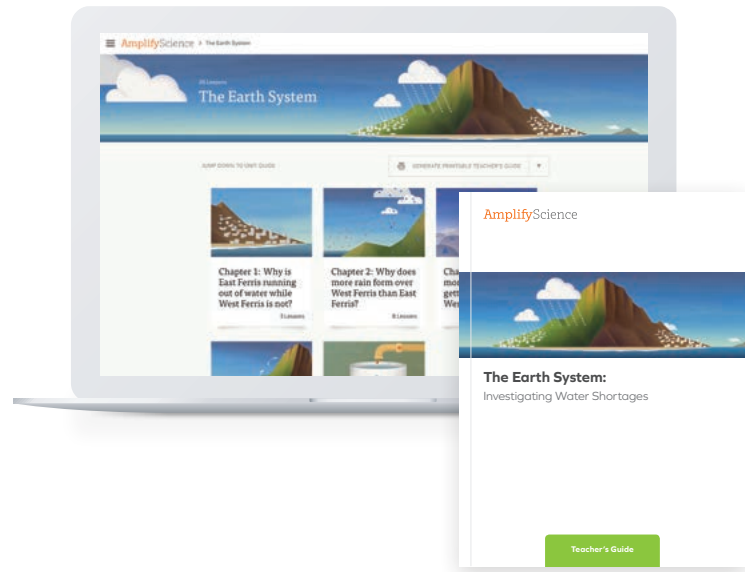
It will take you approximately 5 weeks (22 school days) to complete each unit. If you plan for sessions shorter than 60 minutes, the units will take slightly longer to complete.

Amplify Science was built from the ground up for 3-dimensional learning. Access the Teacher's Guide to see the complete list of Disciplinary Core Ideas, Crosscutting Concepts, and Science and Engineering Practices addressed in each unit.



Planning for a unit

Each unit's Teacher's Guide has all the information you need to learn about that unit's content and structure, materials, storyline, and student learning objectives.



Planning options



1 hour per unit

If you want to thoroughly prepare for a unit, the most important resources to locate and read are:

Foundational:

- **Unit Overview:** A few paragraphs outlining the unit, including what the unit is about, why it was written this particular way, and how students experience the unit.
- **Unit Map:** A 1-page summary showing how the chapters build upon each other, what questions students will investigate, and what evidence sources they will use to figure those questions out.
- **Lesson Overview Compilation:** 1–2 pages on each lesson provide insight into each lesson's sequence of activities, intent, materials used, and how the lessons connect with and build upon each other.

Supporting:

- **Progress Build:** A thorough explanation of the unit's learning progression (called the "Progress Build"). Understanding and internalizing the Progress Build is key to understanding the embedded unit assessments.
- **Science Background:** A teacher-facing document that gives valuable science content information and calls out common student misconceptions and preconceptions. The Science Background resource provides all the context and subject matter knowledge needed to teach the unit.

NOTE

There's much more information available in the Teacher's Guide, including overviews of the unit's assessments, readings, student-facing technology, and standards.



30 minutes per unit

If you're a bit strapped for time but still want to get the essentials, try to focus on:

- **Unit Overview,** 1 page
- **Unit Map,** 1 page
- **Lesson Overview Compilation**



5 minutes per unit

If you have only 5 minutes to familiarize yourself with the most essential aspects of the unit, skip right to the **Unit Overview** and **Unit Map**. At the very least, you'll understand the unit narrative and structure, and get a sense of the materials used.



Unit Overview
1 page



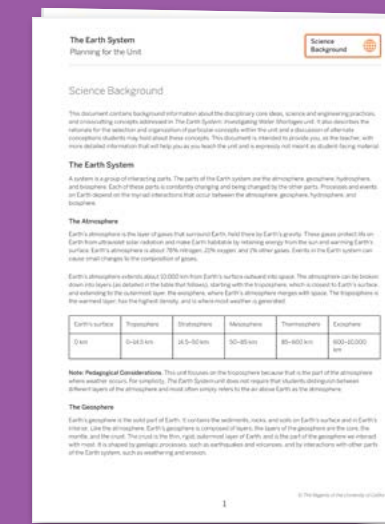
Unit Map
1 page



Lesson Overview Compilation
Read through the lesson overviews in Chapter 1 - 1 page each



Progress Build
1 page



Science Background
Between 8 and 14 pages



Planning for a unit

Patterns of Earth and Sky

22 Lessons

Investigation focus

In *Patterns of Earth and Sky: Analyzing Stars on Ancient Artifacts*, students learn that stars are all around us in space, develop an understanding of scale and distance in the universe, and discover how the spin and orbit of our planet causes us to observe daily and yearly patterns of stars.

Student role and phenomena

In this unit, students take on the role of astronomers, helping a team of archaeologists at the fictional Museum of Archaeology figure out and explain the significance of the illustrations on a recently discovered thousand-year-old artifact with a missing piece.

Insights

Students observe and investigate patterns in the sky by day and by night with kinesthetic models, as well as using a digital simulation, and informational text. Students apply their understanding of why we see different stars at different times to explain what is shown on the artifact, and what might be on the missing piece.

Modeling Matter

22 Lessons

Modeling focus

In the *Modeling Matter: The Chemistry of Food* unit, students have the opportunity to delve deeply into understanding the particulate nature of matter and to apply it to explain phenomena at the macroscale (the observable scale).

Student role and phenomena

Students assume the role of food scientists working in the research lab at Good Food Production, Inc. to make observations of food mixtures.

Insights

By the end of the unit, students will understand that there is a connection between the observable properties of materials and the properties of the molecules of which those materials are composed.

The Earth System

22 Lessons

Engineering design focus

In *The Earth System: Investigating Water Shortages*, students learn about the Earth system so they can help figure out what is causing a water shortage. They also design ways to alleviate the effects of water shortages, including freshwater collection systems and proposals for using chemical reactions to treat wastewater.

Student role and phenomena

In the role of water resource engineers, students investigate what makes East Ferris, a city on one side of the fictional Ferris Island, prone to water shortages while a city on the other side is not.

Insights

Students use books, hands-on investigations, and *The Earth System Simulation* and Modeling Tool to figure out how water is distributed within the hydrosphere, how water moves between the hydrosphere and the atmosphere to cause rain, how the geosphere can interact with the hydrosphere and atmosphere to create patterns of rain, and how life forms in the biosphere depend on the hydrosphere.

Ecosystem Restoration

22 Lessons

Argumentation focus

In the *Ecosystem Restoration: Matter and Energy in a Rain Forest* unit, students explore what it means to grow and how living things get the matter and energy they need to grow.

Student role and phenomena

As ecologists working with Natural Resources Rescue, an organization dedicated to protecting Earth's fragile ecosystems, students work to explain why jaguars, sloths, and cecropia trees in a reforested section of a Costa Rican rain forest are not growing and thriving.

Insights

Throughout the unit, students engage in oral and written scientific argumentation about the source of the problem in the failing ecosystem. By the end of the unit, students present their final restoration plans, including a recommended course of action to restore the failing rainforest ecosystem to its original condition.



Planning for a lesson

Amplify Science makes lesson prep as easy as 1, 2, 3. You can use either the printed or digital Teacher's Guide.

1

Read the 1-page **Lesson Overview**, which contains:

- A **1-paragraph summary of the lesson**, including insights into the lesson's activities and any materials used.
- Clearly labeled **phenomena**.
- **Student learning objectives**
- **Lesson at a Glance**, which provides an outline of the lesson along with pacing suggestions.

Have some extra time? Read through the full step-by-step instructions for the lesson to see exactly where different materials are used, where projections are shown, and where to insert recommended teacher talk moments.

2

Every lesson includes a **Materials and Preparation** section, which clearly identifies all of the hands-on manipulatives, Student Books, printed classroom wall materials, and digital tools needed for the lesson. Remember: every lesson is different! Some lessons might call for Student Books; other lessons might call for setting up stations for hands-on investigations. Be sure to glance at the Materials and Preparation section to see what you need for your specific lesson.

You'll want to bookmark apps.learning.amplify.com/elementary before the first day of class.

3

Download any **Digital Resources** needed for the lesson. For example, most lessons have projections that you can show to your students at specific parts in the lesson. Be sure to download the PDF of projections before class.

TIP

Did you know that you can download all digital resources you'll need in the unit with just a few clicks? Look for the **Offline Guide** in your digital Teacher's Guide to download all projections, assessments, videos, and more.

Offline Preparation

Teaching without reliable classroom internet? Prepare unit and lesson materials for offline access.

OFFLINE GUIDE

The Earth System
Lesson Guides

Lesson 1.3
Activity 1



East Ferris's Water Shortage



Students review information about East Ferris and discuss what is causing a water shortage.

The Earth System
Lesson Guides

Lesson 1.3



Lesson at a Glance

- | | | |
|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| 1 | East Ferris's Water Shortage (10 min)
Students receive additional information about East Ferris and West Ferris, then discuss why East Ferris is experiencing a water shortage while West Ferris is not. | |
| T | Human Impact on Water (10 min)
Students watch two videos that demonstrate how different amounts of water flowing into and out of a reservoir affect the level of water in the reservoir. Students apply ideas from the videos to figure out how an increasing population, and therefore increasing water demand, could explain East Ferris's water shortage. Students are introduced to two parts of the Earth system. | |
| 2 | Diagramming Ferris Island (15 min)
To help them reflect on their ideas and prepare to write a scientific explanation, students work with partners to create a diagram that illustrates why East Ferris is running out of water while West Ferris is not. | |
| 3 | Writing a Scientific Explanation (25 min)
Students are introduced to the scientific practice of writing explanations and then write an explanation of why East Ferris is running out of water. They also write about why West Ferris is not running out of water. This scaffolded writing opportunity provides a foundation from which to build throughout the unit. This activity provides an On-the-Fly Assessment to assess students' understanding of water availability. | |

For more information on
Amplify Science, visit
amplify.com/science.



Amplify.



THE LAWRENCE
HALL OF SCIENCE
UNIVERSITY OF CALIFORNIA, BERKELEY

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