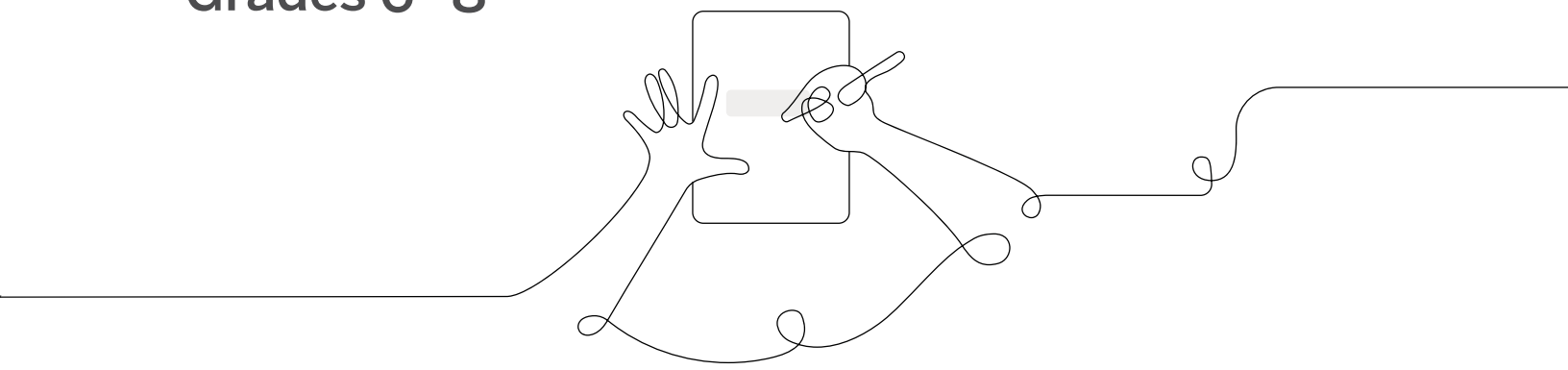
AmplifyScience

Participant Notebook

Navigating Program Essentials

Grades 6–8



Welcome to the workshop

This print Participant Notebook will guide and support the work we do together in this initial workshop to get you ready to teach Amplify Science.

Grades 6–8

Amplify Science

6-8 Navigating Program Essentials

Agenda

Framing the day

- What is Amplify Science?

Navigation essentials

- What is phenomenon-based instruction in Amplify Science?
- Navigating the curriculum

Program essentials

- Model lesson: Metabolism
- Reflecting on phenomenon-based instruction
- Progress Build and Assessment System

Closing and reflection

Demo Accounts for your workshop:

URL: **learning.amplify.com** (Log in with Amplify)

Temporary account (teacher): _____ **@pd.tryamplify.net**
Password: _____

Temporary account (students):

_____**@pd.tryamplify.net**

_____**@pd.tryamplify.net**

_____**@pd.tryamplify.net**

Password: _____

Year at a glance

Units per year

9

Unit types

Launch
Launch units are the first unit taught in each year of Amplify Science. The goal of the Launch unit is to introduce students to norms, routines, and practices that will be built on throughout the year, including the practices of argumentation, active reading, and using the Amplify Science technology. For example, rather than taking the time to explain the process of active reading in every unit in a given year, it is explained thoroughly in the Launch unit, thereby preparing students to do active reading in all subsequent units.

Core
The majority of units in a course are Core units, which guide students in constructing a deep understanding of important science concepts by using key science and engineering practices. A Core unit establishes the context of the unit by introducing students to the real-world problem they will be investigating. As students move through lessons in a Core unit, they will figure out the unit's anchoring phenomena, gain an understanding of the unit's disciplinary core ideas and science and engineering practices, and make linkages across topics through the crosscutting concepts. Each Core unit culminates with a Science Seminar and final writing activity. Students explore a new real-world problem, collect and analyze evidence, and then debate which claims are best supported by evidence, all while making clear their reasoning that connects the evidence to the claims.

Engineering Internship units
In Engineering Internship units, students take on the role of interns for the fictional Futura company as they design solutions for real-world problems. Students figure out how to help those in need, from tsunami victims in Sri Lanka to the needs of premature babies, through the application of engineering practices. In the process, they apply and deepen their learning from Core units.

Course structure*

Key

L Launch C Core E Engineering Internship

Grade 6 (145 lessons)

Microbiome **11 lessons** L
Metabolism **19 lessons** C
Metabolism Engineering Internship **10 lessons** E
Traits and Reproduction **19 lessons** C
Thermal Energy **19 lessons** C
Ocean, Atmosphere, and Climate **19 lessons** C
Weather Patterns **19 lessons** C
Earth's Changing Climate **19 lessons** C
Earth's Changing Climate Engineering Internship **10 lessons** E

Grade 7 (145 lessons)

Geology on Mars **11 lessons** L
Plate Motion **19 lessons** C
Plate Motion Engineering Internship **10 lessons** E
Rock Transformations **19 lessons** C
Phase Change **19 lessons** C
Phase Change Engineering Internship **10 lessons** E
Chemical Reactions **19 lessons** C
Populations and Resources **19 lessons** C
Matter and Energy in Ecosystems **19 lessons** C

Grade 8 (145 lessons)

Harnessing Human Energy **11 lessons** L
Force and Motion **19 lessons** C
Force and Motion Engineering Internship **10 lessons** E
Magnetic Fields **19 lessons** C
Light Waves **19 lessons** C
Earth, Moon, and Sun **19 lessons** C
Natural Selection **19 lessons** C
Natural Selection Engineering Internship **10 lessons** E
Evolutionary History **19 lessons** C

*Example integrated sequence shown here. Amplify will work with you to design an integrated or domain sequence that will fit your school or district's needs.

6-8 Program components

The 6-8 program contains both physical and digital instructional materials. The table below describes materials and, when applicable, includes links to find additional information.

Teacher materials	
Teacher's Guide bit.ly/amplify68navigation	The digital Teacher's Guide contains all of the unit's lesson plans, differentiation strategies, and an assortment of instructional supports and resources at the unit, lesson, and individual activity level. All unit Teacher's Guides are also available as PDFs, which can be generated automatically through the curriculum website by pressing the "Generate Printable Teacher's Guide" button. Print Teacher's Guides are available for purchase.
Classroom Slides bit.ly/amplifyslideshowto68	To make planning and delivering lessons faster and easier, each lesson has a downloadable and editable PowerPoint or Google Slides file to help guide teachers and their students through the lesson with clearly sequenced, engaging, and easy-to-follow images, videos, questions, and instructions.
Classroom Wall materials bit.ly/amplifyclassroomwall	The printed Classroom Wall materials can be found in the unit kit. PDFs are also provided in the digital Teacher's Guide to allow quick replacement if needed. Posting questions and vocabulary on the wall throughout the unit is a valuable way to focus students' attention on the most important content of the lessons.
Argumentation Wall materials bit.ly/amplifyargumentationwall	The printed Argumentation Wall materials can be found in the launch unit kits. PDFs are also provided in the digital Teacher's Guide to allow quick replacement if needed. This wall will feature components of, and concepts about, scientific argumentation, which student will learn throughout the unit. This is separate from the Classroom Wall and is described in detail in the launch units.
Embedded assessments bit.ly/amplify68assessment	Amplify Science assessments include formal and informal opportunities for students to demonstrate understanding and for teachers to gather information, while allowing teachers the flexibility to decide what to score and what simply to review.
Classwork bit.ly/amplifyclasswork	Accessible from the Global Navigation menu, Classwork is a tool for keeping track of and providing feedback on all student work submitted through the digital platform.
Reporting bit.ly/amplifyreporting	Accessible from the Global Navigation menu, when unit assessments are administered digitally, the Reporting tool enables teachers to analyze student performance on the unit assessments. It provides at-a-glance graphs of class and individual performance and allows you to analyze specific assessment items.
Program Guide	Accessible from the Global Navigation menu, the Program Guide details information about the program, including its authorship, development, themes, and more. It serves as a resource for finding out more about the program's structure, components, supports, how it meets standards, and flexibility.

6-8 Program components (cont.)

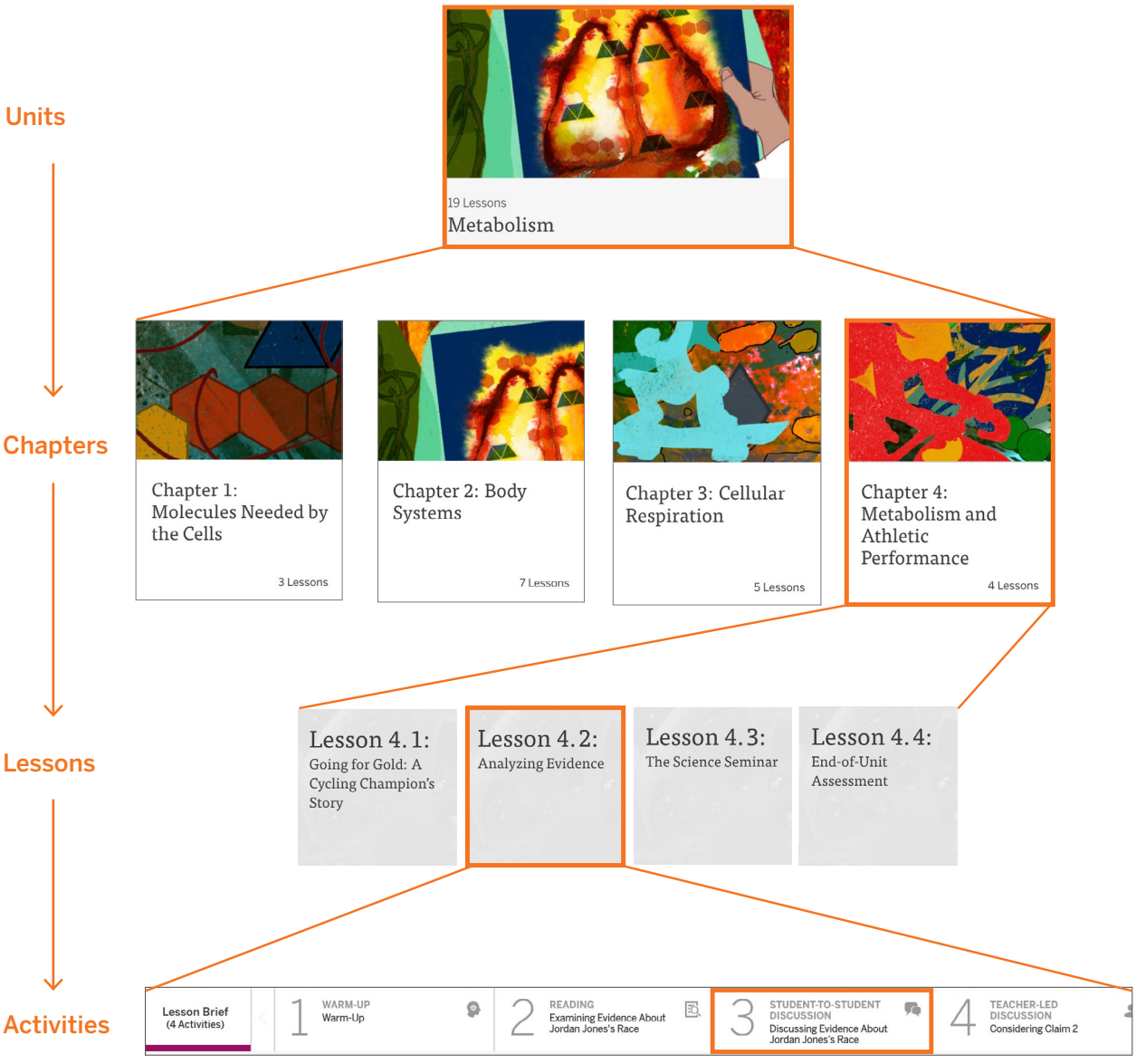
Program Hub bit.ly/amplifyprogramhub	Accessible from the Global Navigation menu, the Program Hub features remote learning resources, training videos, and hands-on investigation videos.
Assign bit.ly/amplifyassignin	The Assign feature makes it easy to distribute activities to students and set due dates for assignments. With Assign in Amplify, teachers can assign activities within the Amplify platform. The Assign in Google Classroom and Assign in Microsoft Teams buttons allow flexible integration between Amplify Science and other digital teaching platforms.
Student materials	
Hands-on materials bit.ly/amplifymaterials	The unit kit includes the physical materials used for the hands-on activities that are carried out at strategic points throughout the unit. There are two types of physical manipulatives: non-consumables and consumables. Non-consumables are durable and, if cared for properly, can be used over the course of several years (e.g. magnets, stopwatches). Consumables are used up with each use and must be replenished.
Digital student experience bit.ly/amplifystudentplatform	Students log into their student accounts to use the digital student platform to work through lessons, access resources like articles and digital tools, submit work, and see feedback. Print-based modifications, including student Investigation Notebooks, are available for classrooms that don't have 1:1 digital device access for students.
Articles (digital or print) bit.ly/amplify68articles	A set of articles written to accompany each unit can be accessed in print or through the Amplify Library. Articles in Amplify Science support students' understanding of science ideas, practices, and crosscutting concepts, and they showcase the work of diverse scientists.
Digital applications bit.ly/amplifydigitaltools	Each unit includes at least one digital application (app) that supports students as they explore scientific phenomena and engage in science practices. Digital simulations allow for interactive exploration, while other digital tools, like modeling and sorting tools, allow students to build visual explanations of unit content or provide other digital support for their learning.
My Work bit.ly/amplifymywork	My Work is a customizable digital space where students can easily review teacher feedback from Classwork, manage their incomplete work, and see scores and feedback across multiple assignments.
Curriculum add-ons	
Spanish-language materials bit.ly/amplifyspanish	Spanish licenses give teachers digital access to the following materials in Spanish: Classroom Slides, lesson projections, downloadable PDFs of print materials (including Classroom Wall materials, Investigation Notebooks, assessments), and recommended in-class "teacher talk" guidance. Available for purchase.
Benchmark assessments* bit.ly/amplifyngssbenchmarks	The Amplify NGSS Benchmark Assessments are designed to help teachers measure student progress toward the three dimensions and performance expectations of the Next Generation Science Standards.

*To ensure the assessments measure progress towards Performance expectations and not the progress within the program itself, the NGSS Benchmark Assessments were developed by Amplify outside of development efforts involving the Lawrence Hall of Science and Amplify Science.

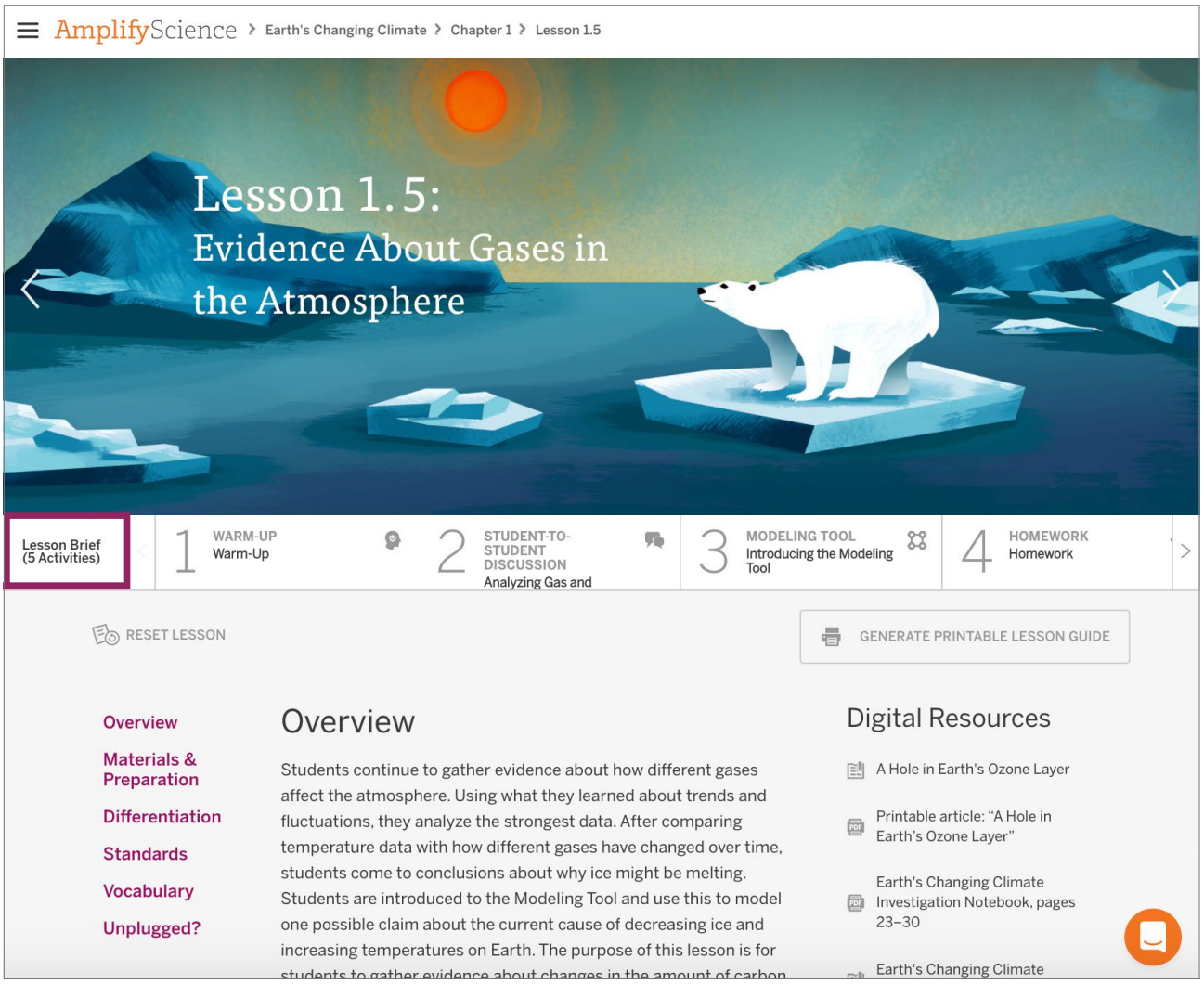
Notes

Amplify Science unit structure

Each unit in the Amplify Science middle school curriculum is structured as a series of chapters. Each chapter contains lessons, and each lesson contains activities.

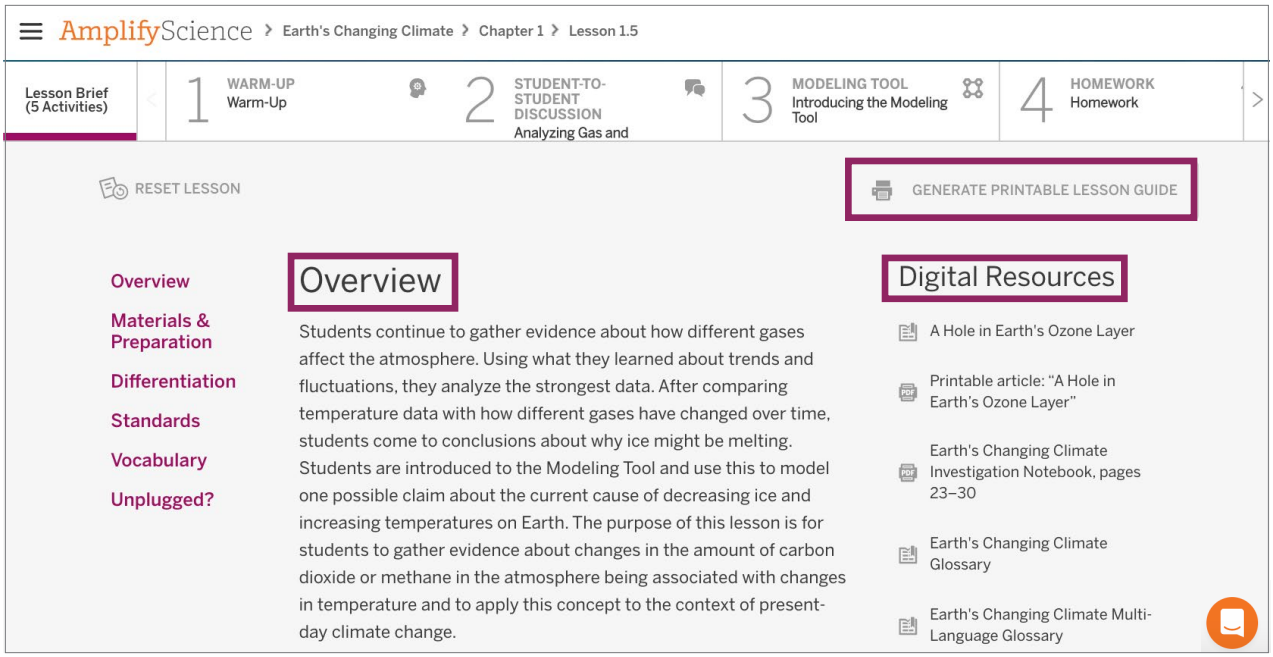


Navigation within a lesson



1. The lesson's landing page is referred to as the **Lesson Brief**. Above is an example from a lesson in the middle school unit Earth's Changing Climate. The Lesson Brief provides valuable information to support teachers, including an overview of the content that will be covered in the lesson.

Navigation within a lesson (cont.)

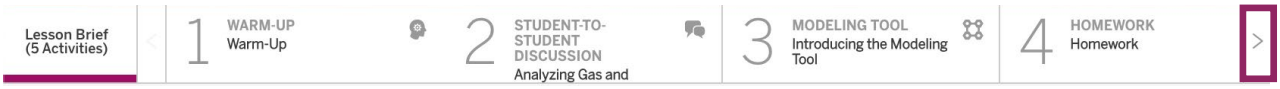


2. Navigate between each section on the page by either scrolling or clicking the index in the left column. You can always return to the top by clicking on the "Back to Top" button in the bottom left corner.

- The **Overview** includes a summary of the lesson, describes what students will learn, and provides activity summaries and timing.
- **Materials and Preparation** provides a list of materials for the lesson, and how to prepare for teaching.
- **Differentiation** describes supports and strategies for differentiation.
- **Standards** details which standards the lesson is aligned to.
- **Vocabulary** lists focal vocabulary emphasized in the lesson.
- **Unplugged** lists recommendations for working offline.

3. Select **GENERATE PRINTABLE LESSON GUIDE** to access a downloadable PDF that includes all of the content in digital format, including teacher supports, possible responses, and On-the-Fly Assessments.

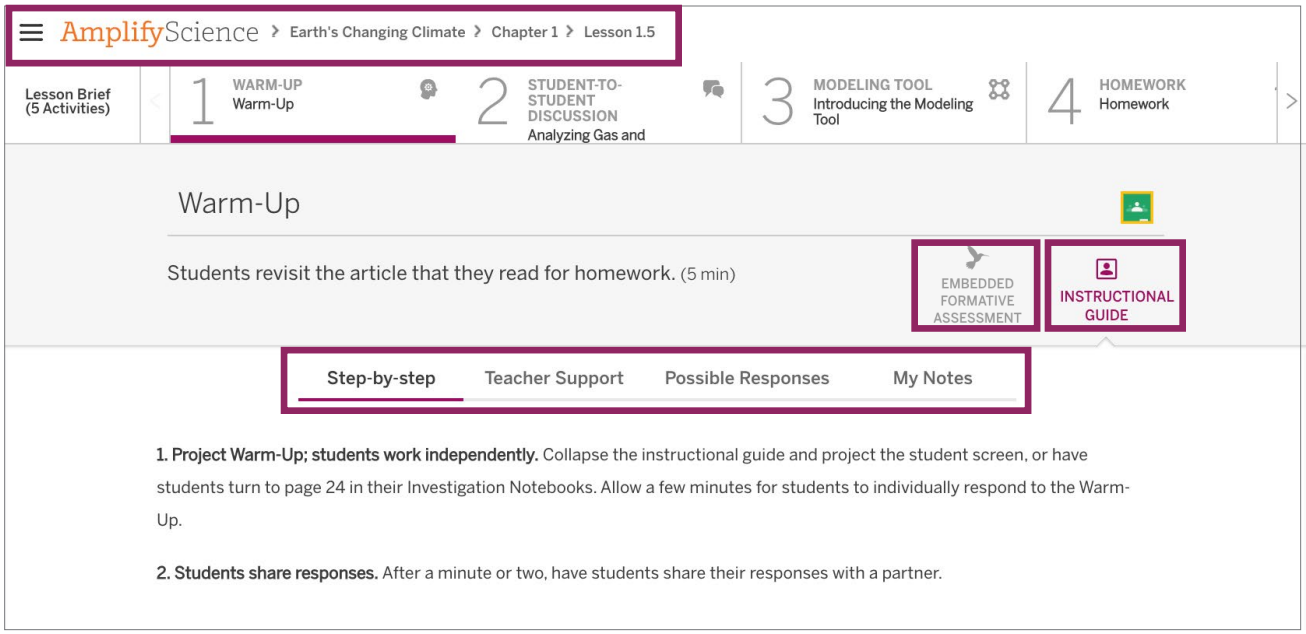
4. Digital Resources provide all of the resources for a lesson, which may include Classroom Slides, projections, copymasters, videos, and reference illustrations for teacher reference. Each resource can be downloaded before each lesson.



5. The **Lesson Map**, shown above, displays the sequence of the activity titles which, once selected, access each activity's instructional guide. An arrow > at the right end of the lesson map lets you know that there are more activities in a lesson than what's shown.

6. Activity titles in the Lesson Map are numbered to help teachers navigate through the lesson.

Navigation within a lesson (cont.)



7. Once in an activity, you will see the **INSTRUCTIONAL GUIDE**, within which are the following tabs:

   STEP-BY-STEP lists all of the steps for teaching the activity. This will be open by default when you first navigate to the activity.

   - **Bold lead-ins** summarize what happens in each instructional step.
   - Purple speech bubbles indicate **teacher talk**, suggestions for what you should say as you teach.
   - Text in brackets [ ] indicates an expected student response.

   TEACHER SUPPORT provides suggestions, rationale, and background information.

   POSSIBLE RESPONSES indicate what student answers for written or oral prompts may be.

   MY NOTES provides a space to record thoughts and observations about each activity.

   Note: If there are no Teacher Support notes for the activity, the Teacher Support tab will not appear. Likewise, if there are no possible responses for the activity, the Possible Responses tab will not appear.

8. The **grey hummingbird** indicates there is an **embedded formative assessment** in this activity. Click on the hummingbird to view the assessment (the icon turns orange to indicate selection).

9. The **breadcrumb trail** (Unit-Chapter-Lesson) (top left) can be used to navigate to different parts of the unit.

Classroom Slides reference

Classroom Slides are a resource designed to make planning and teaching with Amplify Science faster and easier. Each lesson has editable slides optimized for **Microsoft PowerPoint Version 16** and **Google** to help guide teachers and their students through the lesson with easy-to-follow images, videos, questions, and instructions.

This reference sheet has basic information to get you started. For a more in-depth how-to? Go to: bit.ly/amplifyslideshowto68

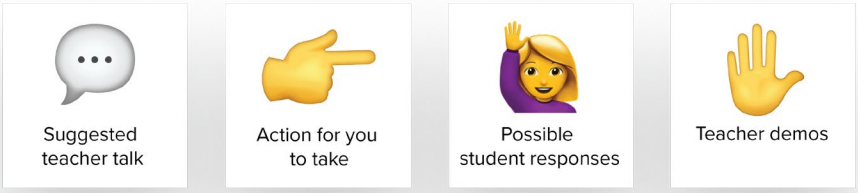
Helpful tips:

The text on the slides is color coded! Black text on the slides denotes suggested teacher talk. Blue text, icons, and/or stripes on the slides denote a student action to be performed.

Icons on the slide serve as cues that signal to your students what will be happening in that particular activity. Here's what the icons on the slides mean:

You may occasionally also come across the following icons when students are working independently:

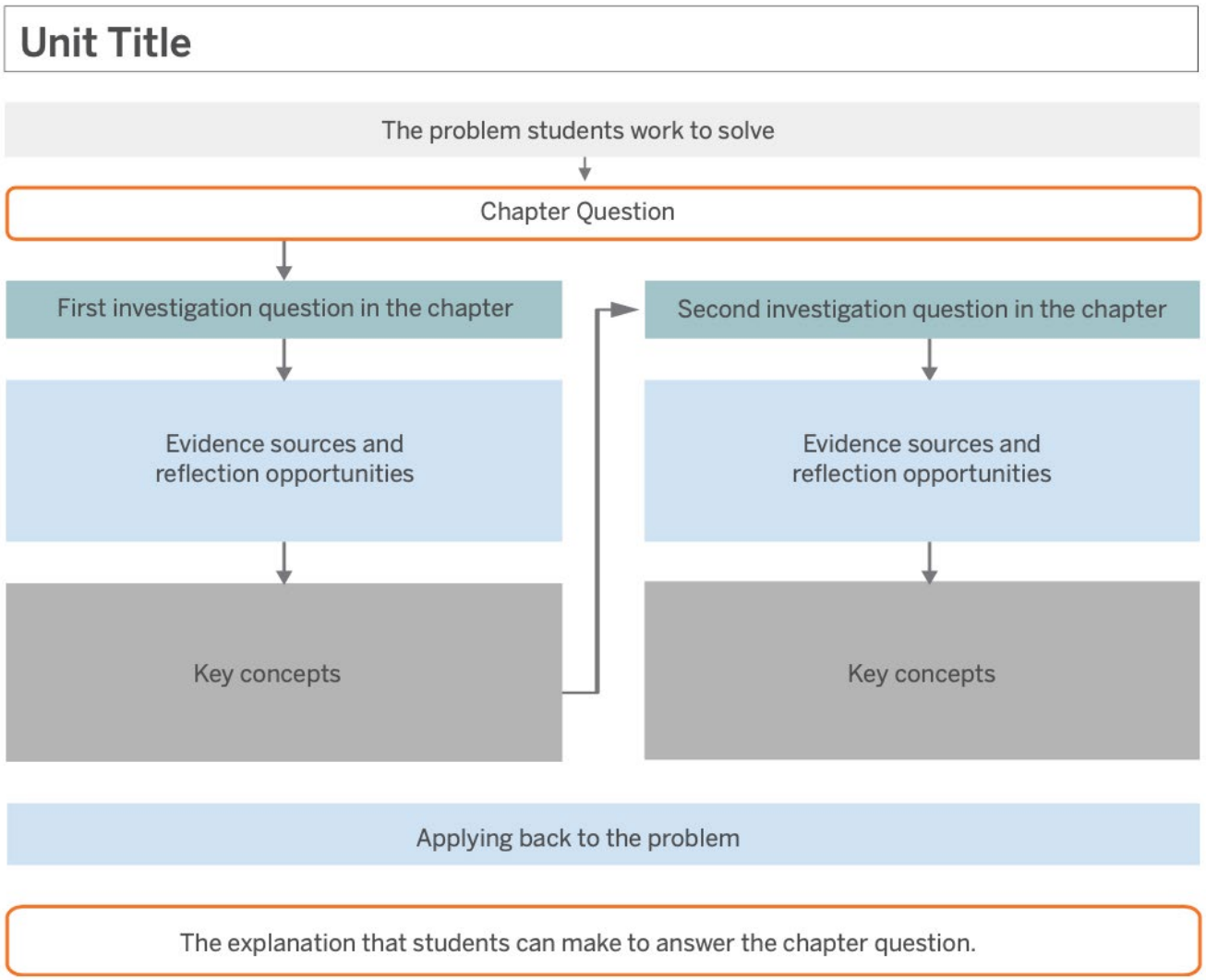
In addition to the text and visuals on the slide, each slide's notes field contains additional information, including possible student responses, follow-up prompts, and instructional steps. In most cases, the content on the slide is meant to come before the actions and suggested teacher talk written in the notes. Here's what the icons in the notes field mean:



You can find additional support notes related to teacher demos, formative assessment opportunities, charts/whiteboard activities and how to view slide notes while projecting by navigating to the bit.ly link at the top of this page.

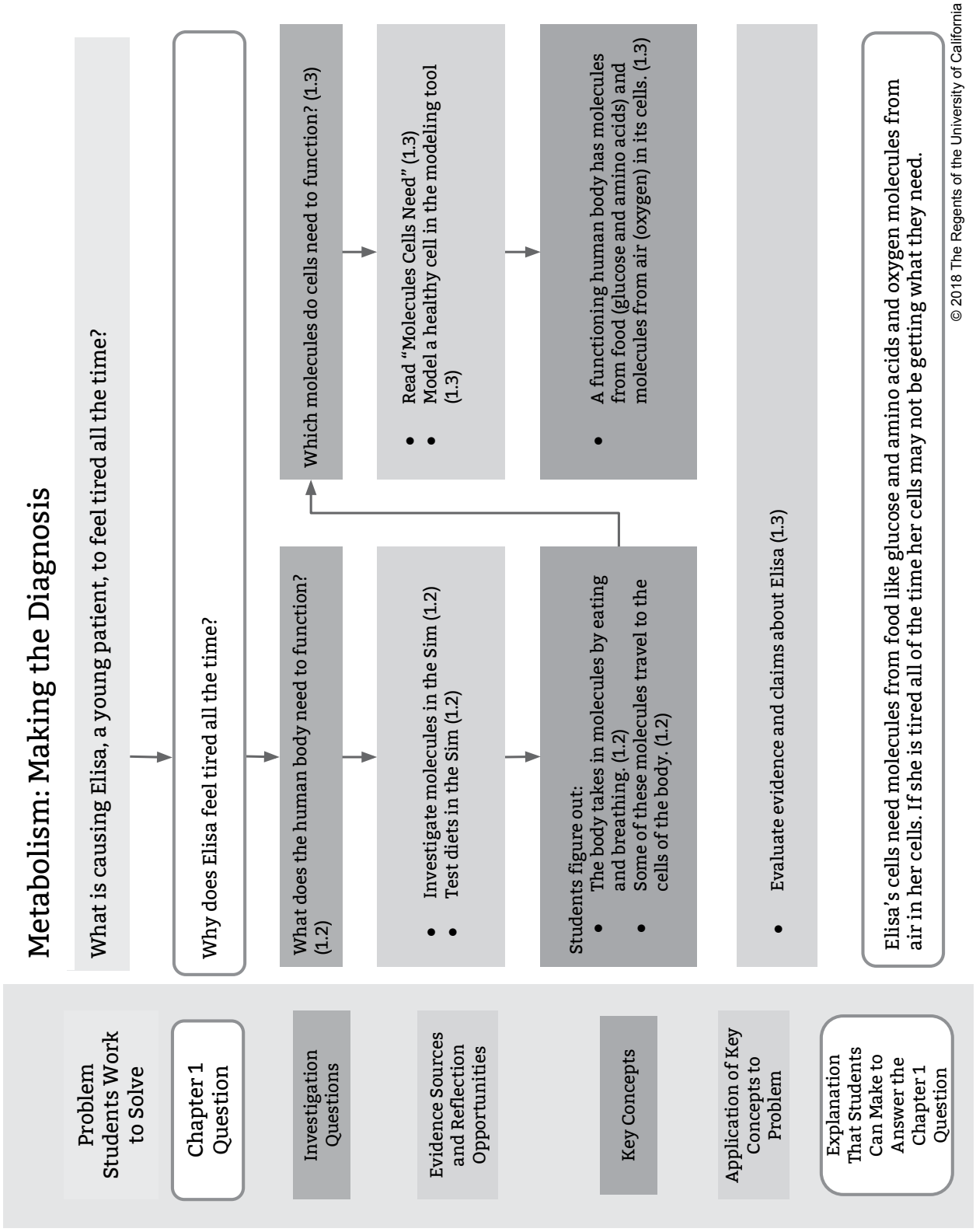
Coherence Flowchart structure

Typical structure of one chapter in a Coherence Flowchart



Instruction is framed by questions about the unit's anchor phenomenon and the related problem students are solving. Chapter Questions then guide students in figuring out the phenomenon, piece by piece. Within each chapter, Investigation Questions focus students on a manageable piece of content that will help them figure out the Chapter Question. Each question motivates activities, and each activity provides specific evidence related to the Investigation Question. Students synthesize the understanding constructed over multiple activities, and this understanding is formalized through key concepts. Often a key concept leads students to an additional Investigation Question students need to pursue to answer the Chapter Question. At the end of the chapter, students' new understanding is applied back to the unit's anchor phenomenon and leads students to a new Chapter Question or a final explanation.

Metabolism Coherence Flowchart



Unit Guide resources

Once a unit is selected, select **JUMP DOWN TO UNIT GUIDE** in order to access all unit-level resources in an Amplify Science unit.

Planning for the unit

Unit Overview	Describes what's in each unit, the rationale, and how students learn across chapters
Unit Map	Provides an overview of what students figure out in each chapter, and how they figure it out
Progress Build	Explains the learning progression of ideas students figure out in the unit
Getting Ready to Teach	Provides tips for effectively preparing to teach and teaching the unit in your classroom
Materials and Preparation	Lists materials included in the unit's kit, items to be provided by the teacher, and briefly outlines preparation requirements for each lesson
Science Background	Adult-level primer on the science content students figure out in the unit
Standards at a Glance	Lists NGSS (Performance Expectations, Science and Engineering Practices, Disciplinary Core Ideas, and Crosscutting Concepts) and CCSS (English Language Arts and Mathematics).

Teacher references

Lesson Overview Compilation	Lesson Overview of each lesson in the unit, including lesson summary, activity purposes, and timing
Standards and Goals	Lists NGSS (Performance Expectations, Science and Engineering Practices, Disciplinary Core Ideas, and Crosscutting Concepts) and CCSS (English Language Arts and Mathematics) in the unit, explains how the standards are reached
3-D Statements	Describes 3-D learning across the unit, chapters, and in individual lessons
Assessment System	Describes components of the Amplify Science assessment system, identifies each 3-D assessment opportunity in the unit
Embedded Formative Assessments	Includes full text of formative assessments in the unit
Books in This Unit	Summarizes each unit text and explains how the text supports instruction
Apps in This Unit	Outlines functionality of digital tools and how students use them (in grades 2-5)
Flextensions in This Unit	Summarizes information about the Hands-On Flextension lesson(s) in the unit

Unit Guide resources (cont.)

Printable resources

3-D Assessment Objectives	Identifies where each dimension of the target Performance Expectations are assessed in the unit, in the grade, or in the grade-band
Coherence Flowcharts	Visual representation of the storyline of the unit
Copymaster Compilation	Compilation of all copymasters for the teacher to print and copy throughout the unit
Flextension Compilation	Compilation of all copymasters for Hands-on Flextension lessons throughout the unit
Investigation Notebook	Digital version of the Investigation Notebook, for copying and projecting. The PDFs are fillable, so students can also complete their work digitally.
Multi-Language Glossary	Glossary of unit vocabulary in multiple languages
NGSS Information for Parents and Guardians	Information for parents about the NGSS and the shifts for teaching and learning
Print Materials (8.5" x 11")	Digital compilation of printed cards (i.e. vocabulary cards, student card sets) provided in the kit
Print Materials (11" x 17")	Digital compilation of printed Chapter Questions and Key Concepts provided in the kit

Unit Guide scavenger hunt

The purpose of this optional activity is to practice utilizing the Unit Guide resources to answer questions. Practicing now will help you determine which Unit Guide resources to use when questions arise as you're teaching.

Use the Unit Guide Resources document to help decide and record which resource you would use to answer each question. For additional practice, open the resource you've identified, and record your answer in the space provided.

What do students do in the first activity of Lesson 3.1?

Unit Guide document to reference:	Answer:

Which lesson will take the most time to prepare for Chapter 1?

Unit Guide document to reference:	Answer:

Describe one piece of evidence students can get using the Simulation.

Unit Guide document to reference:	Answer:

What is some background information pertaining to the science content of the unit?

Unit Guide document to reference:	Answer:

Unit Guide scavenger hunt (cont.)

List some of the NGSS crosscutting concepts emphasized in the unit.

Unit Guide document to reference:	Answer:

Describe one material you will print and make copies of during this unit.

Unit Guide document to reference:	Answer:

What is one article that students read in this unit?

Unit Guide document to reference:	Answer:

Which lessons in Chapter 2 include On-the-Fly Assessments?

Unit Guide document to reference:	Answer:

Preparing to teach the first day

Directions:

1. Navigate to Chapter 1 landing page in the Teacher's Guide and read the Chapter Overview.
2. Navigate to Lesson 1.1 of a Launch unit or Lesson 1.2 of a Core unit and use the table below to guide your planning.

Consider	Read
Lesson purpose • What is the purpose of the lesson? • How do the activities in this lesson fit together to support students in achieving this purpose? • How do students engage in the three dimensions throughout this lesson to figure out phenomena like scientists do?	**Lesson Brief:** • Overview • Standard
Preparing • What materials do you need to prepare? • What will you need to project? • Will you have students use digital devices? For the whole lesson or just for parts? • Will you need to plan for partner or group work? • Are there documents in Digital Resources that you need to review? (e.g., Assessment Guide)	**Lesson Brief:** • Materials and • Preparation • Unplugged • Digital Resources **Instructional Guide:** • Step-by-Step tab
Pacing • How will teaching this lesson fit into your class schedule? • If you need to break the lesson into activities over several days, which transitions will you add to support students in connecting the evidence collected to the Investigation Question? • Will you need to add time for any new procedures or routines that students will need to practice (distributing or collecting hands-on materials, logging-in, discussion routines, partner work)?	**Lesson Brief:** • Lesson at a Glance **Instructional Guide:** • Step-by-Step tab • Teacher Support tab
Teaching the lesson • Are there specific steps you have questions about? • What challenges might you encounter in teaching this lesson, and how might you address these challenges? • Are there activities you need to practice before showing students? • What might be challenging for your students? • What additional supports can you plan for individual students?	**Lesson Brief:** • Differentiation **Instructional Guide:** • Step-by-Step tab • Teacher Support tab

Assessment System reference

Assessment type	Description	Student experience	Teacher resources
Pre-Unit Assessment	Formative, 3-D assessment meant to gauge students' initial understanding and pre-conceptions about core ideas in the unit, including the unit's focal crosscutting concept	• Multiple choice questions • Two written response questions	• Pre-Unit Assessment Answer Key and Scoring Guide (available in Digital Resources), includes rubrics for both disciplinary core ideas and crosscutting concepts • Reporting Function provides analysis of results, places students along the Progress Build, and provides information to the teacher about specific preconceptions students may hold
End-of-Unit Assessment	Summative, 3-D assessment to evaluate students' growth in understanding about core ideas in the unit, including the unit's focal crosscutting concept	• Multiple choice questions • Two written response questions	• End-of-Unit Assessment Answer Key and Scoring Guide (available in Digital Resources), includes rubrics for both disciplinary core ideas and crosscutting concepts • Reporting Function provides analysis of results, places students along the Progress Build, and provides information to the teacher about specific preconceptions students may hold
Critical Juncture Assessment	Formative, 3-D assessment meant to gauge student's growing understanding and pre-conceptions about core ideas in the unit, including the unit's focal crosscutting concept, in order to inform a differentiated lesson to bring all students to a point where they can move on together	• Multiple choice questions • Two written response questions • Following lesson is differentiated based on the results to help students review and construct needed concepts	• Critical Juncture Assessment Answer Key and Scoring Guide (available in Digital Resources), includes rubrics for both disciplinary core ideas and crosscutting concepts • Reporting Function provides analysis of results, places students along the Progress Build, provides information to the teacher about specific preconceptions students may hold, and recommends grouping for following differentiated lesson
On-the-Fly Assessments	Embedded formative assessments for noting students' progress with one or more of the following: disciplinary core ideas, science and engineering practices, and crosscutting concepts	• Activities are embedded into existing instructional activities, leveraged for assessment opportunities. Artifacts can include discussion, use of a digital tool, notebook pages, etc.	• Full text of assessment includes"What to look for?" and "Now what?" instructional suggestions accessible in Instructional Guide by clicking the hummingbird icon • All On-the-Fly Assessments are included in: Embedded Formative Assessments (available in the Unit Guide)

Assessment System reference cont.

Assessment type	Description	Student experience	Teacher resources
Final Written Argument	Embedded summative assessment to gauge students' understanding of core ideas in the Progress Build, application of a crosscutting concept central to the unit, and their use of several science practices, including engaging in argument from evidence	• Written argument about the Chapter 4 science seminar question • Multiple embedded pedagogical supports	• Rubrics for Final Written Argument (available in Digital Resources)
Student Self-Assessments	Opportunity for students to reflect on whether they understand or don't yet understand about the core concepts from the unit and key nature of science ideas	• Reflection prompts • Provided at or near the end of each chapter	• Information about Student Self-Assessments in Assessment System (available in the Unit Guide) • Teacher Support notes accessible in Instructional Guide by clicking the Teacher Support tab
Investigation Assessments **(1 or 2 per year)**	Summative, 3-D performance assessment to evaluate students' performance of the science and engineering practices of Planning and Conducting Investigations and Analyzing and Interpreting Data, as well as their application of disciplinary core ideas and crosscutting concepts	• Prompts for planning investigation and recording results in the Investigation Notebook or copymaster (available in Digital Resources) • Materials (physical or digital) for conducting investigation	• Rubrics and Possible Responses • Possible Responses also accessible in Instructional Guide by clicking the Possible Responses tab
Portfolio Assessments	Opportunity for students to compile and reflect on key work products collected at the end of each unit. Final portfolio compilation occurs at the end of the school year and allows students to select and reflect on work products which they feel best demonstrate their growth in understanding throughout the year.	• Compilation of work products (written explanations and/or arguments, models) that show growth over the course of the year • Reflection on chosen work products • Rubrics for evaluating work products (available in Program Guide → *Assessments → Additional Assessment Resources*)	• Assessment rubrics (available in Program Guide → *Assessments → Additional Assessment Resources*) • Guidance for communicating to parents about student progress (available in Program Guide → *Assessments → Additional Assessment Resources*)

Lesson-level scavenger hunt

Goals:

- Practice navigating at the lesson level and deepen your understanding of the student role and anchor phenomenon in your unit.

PART 1: Lesson 1.1.

Task	Notes
Navigate to Lesson 1.1 in your Launch unit. Scroll down to the Lesson Brief and scroll/click to view the Overview. Skim the section then answer the following questions:	
What is the purpose of this lesson?	
How many activities are in the lesson?	
How long is the activity that introduces the students to the role they'll play in the unit? • Microbiome: Activity 1 • Harnessing Human Energy: Teacher-only activity between activities 1 and 2 • Geology on Mars: Teacher-only activity between activities 3 and 4.	

Task	Notes
Scroll/click to view Materials & Preparation.	
List the materials you'll need for this lesson.	
Describe one step of preparation you will need to do before this lesson, between classes, and at the end of the day.	

6-8 Lesson-level scavenger hunt cont.

Task	Notes
Scroll up to the Lesson Map. Select the activity in which the student role is introduced. [tip: use the arrow at the end of the lesson map to reveal all activities.] Read the steps for teaching the activity listed in the Step-by-Step to gain a better understanding of the activity.	
What is the student role and how is it introduced?	

Task	Notes
Try the following navigation features: • Click on the Instructional Guide icon to see the student view of the lesson, and click on it again to toggle back to the teacher instructions. • Click Next Activity or Next at the bottom to read the next activity in the lesson.	
What additional resources can you find on each page of the guide— what links, tabs, and other supports do you notice?	

PART 2: Introduction of the anchor phenomenon or design problem

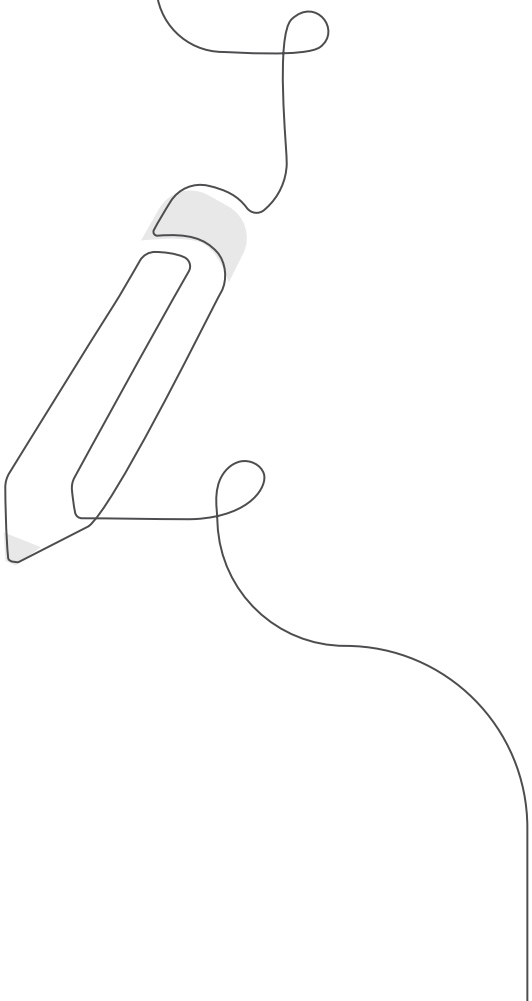
Task	Notes
Use the breadcrumb (Unit-Chapter-Lesson) trail (top left) to navigate to the lesson and activity in which the anchor phenomenon is introduced. • Microbiome: Lesson 2.2. • Teacher-only activity video message • Activity 3 message from the Microbiome Research Institute • Geology on Mars Lesson 1.2. Activity 3. (be sure to click NEXT at the bottom) For Harnessing Human Energy, the video in 1.1 introduces both the student role and the Design problem.	
How is the design problem or anchor phenomenon introduced to students? What ideas or questions do you think students will have about the problem they're asked to solve?	

Notes

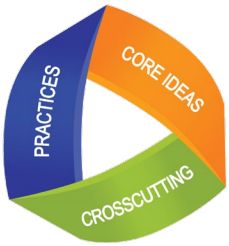
Notes

Appendix

1. Three dimensions of NGSS reference
2. Amplify Science @Home resources reference
3. Action planning reference: Amplify Science components and resources
4. Additional resources and support



Three dimensions of NGSS reference



3-D learning engages students in using scientific and engineering practices and applying crosscutting concepts as tools to develop understanding of and solve challenging problems related to disciplinary core ideas.

Science and Engineering Practices

1. **Asking Questions and Defining Problems**
2. **Developing and Using Models**
3. **Planning and Carrying Out Investigations**
4. **Analyzing and Interpreting Data**
5. **Using Mathematics and Computational Thinking**
6. **Constructing Explanations and Designing Solutions**
7. **Engaging in Argument from Evidence**
8. **Obtaining, Evaluating, and Communicating Information**

Disciplinary Core Ideas

Earth and Space Sciences:
ESS1: Earth's Place in the Universe
ESS2: Earth's Systems
ESS3: Earth and Human Activity

Life Sciences:
LS1: From Molecules to Organisms
LS2: Ecosystems
LS3: Heredity
LS4: Biological Evolution

Physical Sciences:
PS1: Matter and its Interactions
PS2: Motion and Stability
PS3: Energy
PS4: Waves and their Applications

Engineering, Technology and the Applications of Science:
ETS1: Engineering Design
ETS2: Links among Engineering Technology, Science and Society

Crosscutting Concepts

1. **Patterns**
2. **Cause and Effect**
3. **Scale, Proportion, and Quantity**
4. **Systems and System Models**
5. **Energy and Matter**
6. **Structure and Function**
7. **Stability and Change**

Amplify Science@Home resources reference

Use this guide to keep track of the different resources available for remote and hybrid learning.

Instructional materials: Click Remote and hybrid learning resources, then select your grade level from the dropdown menu. Select your unit.	
@Home Unit resources: These will appear when you select your unit.	
Teacher Overview	General information for teaching with @Home Units, planning information, chapter and lesson outlines
Lesson Index	Lists the original Amplify Science lessons associated with each @Home lesson, and the Investigation Notebook pages, copymasters, and print materials associated with the @Home Unit Student Sheets
Family Overview	Information to send home to families to help them support students with remote learning
Student lesson materials for @Home Units	Printable or digital lessons condensed to be about 30 minutes long. You can access compilations of all student materials for your unit, or select from individual lessons.
@Home Video resources: After selecting your grade level and unit, select the @Home Videos tab below your unit title.	
@Home Video links	Links to video lessons that include all activities from the original units. Lesson playlists are on YouTube, and they autoplay in a playlist form.
Additional remote and hybrid instructional materials: These can be accessed from the tabs below your unit title.	
Hands-on investigations support	Videos of every unit's hands-on activities (note, these videos also appear in the student lesson materials).
Read-aloud videos	Link to a YouTube playlist of read-aloud videos of all books in your unit.
Orientation and Tutorials: Click Remote and hybrid learning resources, then select your grade from the dropdown menu. Click Orientation and Tutorials. You'll not only find videos to help you use the resources, but also videos you can share with students and caregivers.	

Action planning reference: Amplify Science components and resources

How to access the resources:

1. **Unit Guide documents:** Navigate to the unit landing page in your unit and select jump down to Unit Guide.
2. **Amplify Science Help Page:** Go to my.amplify.com/help and type the title of the resource in the search bar
3. **Amplify Science Program Guide:** Go to my.amplify.com/programguide and use the search bar or navigation menu

Component of Amplify Science Description	**Resources to explore**	**More information for action planning: type of component, priority for implementation, and/or suggestions for how to explore.**
Unit Guide resources Documents for Planning for the unit, Teacher references, and Printable resources appear in each unit.	**Participant notebook** • Unit Guide Resources • Unit Guide Scavenger hunt	**Unit resources.** Get to know the content and location of these documents before you begin teaching.
Assessments (general) The Assessment System provides teachers with credible, actionable, and timely diagnostic information about student progress toward the unit's learning goals	**Unit Guide documents** • Assessment System **Amplify Science Program Guide** • Assessments	**Core part of the approach.** Read these docs for a general overview of Assessment System approach and resources. See additional rows below for specific assessments.
Embedded Formative Assessments Three-dimensional formative assessment opportunities integrated throughout the lessons. Each assessment has a 'Look-for' section and a 'Now-what?' section. Also called On-the-Fly Assessments	**Unit Guide documents** • Embedded Formative Assessments • Assessment System → Monitoring Progress → On-the-Fly Assessments **Amplify Science Help Page** • Video: Embedded formative assessments **Amplify Science Program Guide** • Assessments → How assessment opportunities work together → Illuminating student thinking: unobtrusive embedded assessments	**Core part of the approach and unit resources.** Explore when ready to use Embedded Formative Assessments, eg before or during the first Core Unit.

Action planning reference: Amplify Science components and resources (cont.)

Component of Amplify Science Description	Resources to explore	More information for action planning: type of component, priority for implementation, and/or suggestions for how to explore.
Pre-unit, Critical Juncture, and End-of-Unit Assessments Assessment opportunities at key moments in a unit designed to provide individualized information about student progress.	**Unit Guide documents** • Assessment System → Entry-Level and Summative Assessments → Pre-Unit Assessment/End-of-Unit Assessment • Assessment System → Monitoring Progress → Critical Juncture Assessment **Amplify Science Help Page** • Video: How to lock/unlock Assessments **Amplify Science Program Guide** • Assessments → How assessment opportunities work together	**Core part of the approach and unit resources.** Explore resources before the start of the first Core Unit. Note that besides these three assessments, students also complete a Final Written Argument** after the Chapter 4 science seminar. You can explore this now, or when you get to know your Science Seminar.
Differentiated lesson Lesson following the Critical Juncture Assessment with instruction tailored to each student's current level of understanding, based on assessment results.	**Unit Guide documents** • Assessment System → Monitoring Progress → Critical Juncture Assessment **Teacher's Guide** • Navigate to the lesson following Critical Juncture, typically at the end of Chapter 2 • In the lesson brief read Materials & Preparation	**Core instructional approach, unit resources, and digital tool.** Explore resources before teaching the Critical Juncture in the first Core Unit.
Reporting Digital tool that allows teachers to analyze student performance on the unit assessments	**Amplify Science Help Page** • Video: Using Reporting in Amplify Science grades 6-8	**Digital tool** Explore resources before Pre-unit Assessment in the first Core Unit.

Action planning reference: Amplify Science components and resources (cont.)

Component of Amplify Science Description	Resources to explore	More information for action planning: type of component, priority for implementation, and/or suggestions for how to explore.
Science Seminar In Chapter 4 of all Core Units, students participate in a culminating argumentation experience called the Science Seminar. This is part of a 3-4 day experience in which students apply content knowledge gained throughout the first three chapters of a unit to a novel and engaging scientific problem.	**Lesson Overview compilation:** • Chapter 4 of all Core Units **Teacher's Guide** • 4.1 Digital resources → Video: Activity: Science Seminar • Chapter 4 lessons • 4.3 Digital resources → Rubrics for Final Written Arguments • Additional videos embedded in digital resources in Chapter 4 lessons	**Core instructional approach.** Become familiar with the instructional approach through the video resources. Suggested key activities to become familiar with the context of your first Science Seminar sequence include (1) read how the new problem is introduced to students, (2) find the evidence and claims cards students use and (3) read the possible responses in the activity in which students write their argument. **Note that the writing at the end of this sequence also is an opportunity to formatively assess students' practice of argumentation and summatively assess DCIs and CCCs. Refer to the Rubrics for Final Written Arguments for details.
Active Reading Active Reading is a student-centered process that supports students in their understanding of scientific text. The routine is introduced in the launch unit and built upon and scaffolded in all subsequent units. Teacher modeling is a key part of the instruction. Students engage in careful reading, annotating, rereading, and discussion with peers while making connections to what they are investigating.	**Program Guide** Science and literacy → Reading in Amplify Science. Scroll to 6-8. • Instructional approach • Active Reading components • Text design for accessibility **Teacher's Guide** • First lesson where an article is introduced in both the Launch Unit and Core Unit (Tip: find the first lesson named with the title of an article in quotes.) • Teacher support notes in these same lessons	**Core instructional approach.** To get to know the approach, read the Program Guide and teacher support notes. To prepare to teach, it is recommended to read the recommended teacher-talk in the lesson and to pre-read the article. You may want to consider practice teaching the introduction to Active Reading in the Launch Unit, and the first use of Active Reading in your Core Unit.

Action planning reference: Amplify Science components and resources (cont.)

Component of Amplify Science Description	Resources to explore	More information for action planning: type of component, priority for implementation, and/or suggestions for how to explore.
Engineering Internships Each Engineering Internship unit of Amplify Science follows a Core Unit and asks students to design solutions for a real-world problem. The Engineering Internship units are immersive, student-centered, 10-day units where students take on the role of engineering interns in a fictional company called "Futura Engineering." They work in a digital space called the Futura Workspace and design and test their solutions with a digital tool.	**Amplify Science Help Page** • Video: Intro to Engineering Internship units in Amplify Science grades 6-8 • Video: Amplify Science grades 6-8: Engineering Internships, part 2 **Unit Guide documents** • Unit overview • Immersive Engineering Intern-ship • Apps in this unit **Teacher's Guide** • Lesson 1.1 where the role, design problem, and Futura Workspace are introduced.	**Unit type.** Before teaching your first Engineering Internship, watch the video tutorials. To prepare to use Futura Workspace with students, it is recommended that you also reference the unit overview docs in your first Engineering Internship. You may want to practice using the teacher view and student view of Futura workspace as you practice with the new tools. To prepare to teach, use the Unit Guide documents as well as the Teacher's Guide to orient yourself to the new context, goals, and activities students will be engaging in.
Sims Simulations are digital models of a natural phenomenon. These digital tools are interactive: students can manipulate variables that lead to observable outcomes. Each Amplify Science unit contains a simulation.	**Unit Guide documents** • Apps in this unit • Coherence Flowchart	**Core instructional approach and digital tool.** Get to know the sim in each new Core Unit before you teach. Explore the sim by playing with it yourself, read the Unit Guide document, and see how it is used as a source of evidence in the Coherence Flowchart.
Classwork Platform for viewing, scoring, and providing feedback on student work **MyWork** Platform for students to organize their portfolio of work and iterate on teacher feedback	**Amplify Science Help Page** • Video: How to use Classwork • Video: Improved My Work experience for Amplify Science • Student Flyer: How to access the new My Work	**Digital tool** Explore Classwork before students submit work digitally; explore MyWork using a student demo account.

Action planning reference: Amplify Science components and resources (cont.)

Component of Amplify Science Description	Resources to explore	More information for action planning: type of component, priority for implementation, and/or suggestions for how to explore.
Modeling tools A Modeling tool is an interactive digital tool or paper template for drawing. It is designed with unit-specific elements that enable students to create a visual model of their ideas about science content throughout a unit. These are different from simulations because the digital functionality does not allow manipulation of variables.	**Teacher's Guide** • Lessons where modeling tools are used; typically the last or second-to-last lesson in each chapter of a Core Unit. Look for the modeling tool activity icon. **Unit Guide documents** • Apps in this unit (if it is a digital modeling tool)	**Core instructional approach.** Before having students complete a modeling tool in your first Core Unit, try it out yourself, and read the possible responses tab and teacher support notes in the activity in which it's found.
Classroom Slides Each lesson will have a downloadable and editable PowerPoint or Google Slides file to help guide teachers and their students through the lesson with clearly sequenced, engaging, and easy-to-follow images, videos, questions, and instructions.	**Amplify Science Help Page**	**Core instructional approach and digital tool.**

Action planning reference: Amplify Science components and resources (cont.)

Component of Amplify Science Description	Resources to explore	More information for action planning: type of component, priority for implementation, and/or suggestions for how to explore.
Argumentation: Reasoning tool and evidence gradient Students are introduced to argumentation tools in Launch Units and have 2-3 opportunities to use them in Core Units. In some Core Units they use the **evidence gradient** along with a specific evidence criterion to evaluate the quality of evidence. In other Core Units, students use a graphic organizer called the **Reasoning Tool** as a prewriting tool to support argumentation in their writing.	**Teacher's Guide** • Launch Unit **Argumentation Toolkit videos** The Argumentation Toolkit is a collection of resources designed by the Amplify Science development team at the Lawrence Hall of Science to help teachers understand and teach scientific argumentation. • argumentationtoolkit.org → Argument Elements → Evidence → Activity: Using the evidence gradient • Argumentationtoolkit.org → Argument Elements → Reasoning → Activity: Using the reasoning tool	**Core instructional approach.** Use the Unit essentials doc to identify whether a unit focuses on reasoning or argumentation. As you get ready to teach the lesson in which the argumentation tool is used, watch the video support and/or refer to teacher support notes Argumentation tool used in first Launch and Core Units: • Microbiome (evidence gradient) • Metabolism (evidence gradient) • Geology on Mars (evidence gradient) • Plate Motion (reasoning tool) • Harnessing Human Energy (evidence gradient) • Force and Motion (reasoning tool)
Amplify Library This is the Digital Library where Amplify Science articles appear. The e-reader functionality allows students to annotate, highlight, and digitally submit their annotations.	**Amplify Science Help Page** • Video: Amplify Library • Video: Annotating in the Digital Library • Video: Reading Amplify Science articles	**Digital tool.** Become familiar with the digital features and functionality of the Amplify Library prior to an Active Reading lesson. Determine if you want to use paper articles and/or digital articles for students and for your own modeling.

Additional Amplify resources

Program Guide

Additional insight into the program's structure, intent, philosophies, supports, and flexibility.

https://my.amplify.com/programguide

California Edition:
http://amplify.com/science/california/review

Amplify Help

Frequently updated compilation of articles with advice and answers from the Amplify team.

my.amplify.com/help

Caregivers Site

https://amplify.com/amplify-science-family-resource-intro/

Amplify Support

Contact the Amplify support team for information specific to enrollment and rosters, technical support, materials and kits, and teaching support, weekdays 7AM-10PM EST and weekends 10AM-6PM EST.

Email: help@amplify.com

Email: edsupport@amplify.com (pedagogical questions)

Phone: 800-823-1969

Or, reach Amplify Chat by clicking the  icon at the bottom right of the digital Teacher's Guide.

When contacting the support team:

- Identify yourself as an Amplify Science user.
- Note the unit you are teaching.
- Note the type of device you are using (Chromebook, iPad, Windows, laptop).
- Note the web browser you are using (Chrome or Safari).
- Include a screenshot of the problem, if possible. Copy your district or site IT contact on emails.

Amplify Science