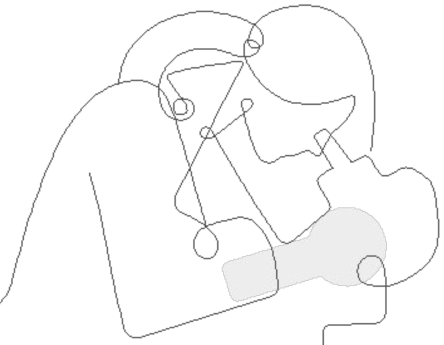
Amplify Science

Grade Level Orientation and Refresher Workshop

Gr 7: Launch Unit, Geology on Mars



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Amplify's Purpose Statement

Dear teachers,

You do a job that is nearly impossible and **utterly essential**.

We are in your corner – extending your reach, saving you time, and enhancing your understanding of each student.

Thank you for working with us to craft rigorous and riveting learning experiences for your classroom.

We share your goal of **inspiring all students to think deeply, creatively, and for themselves.**

Sincerely,
Amplify

Plan for the day

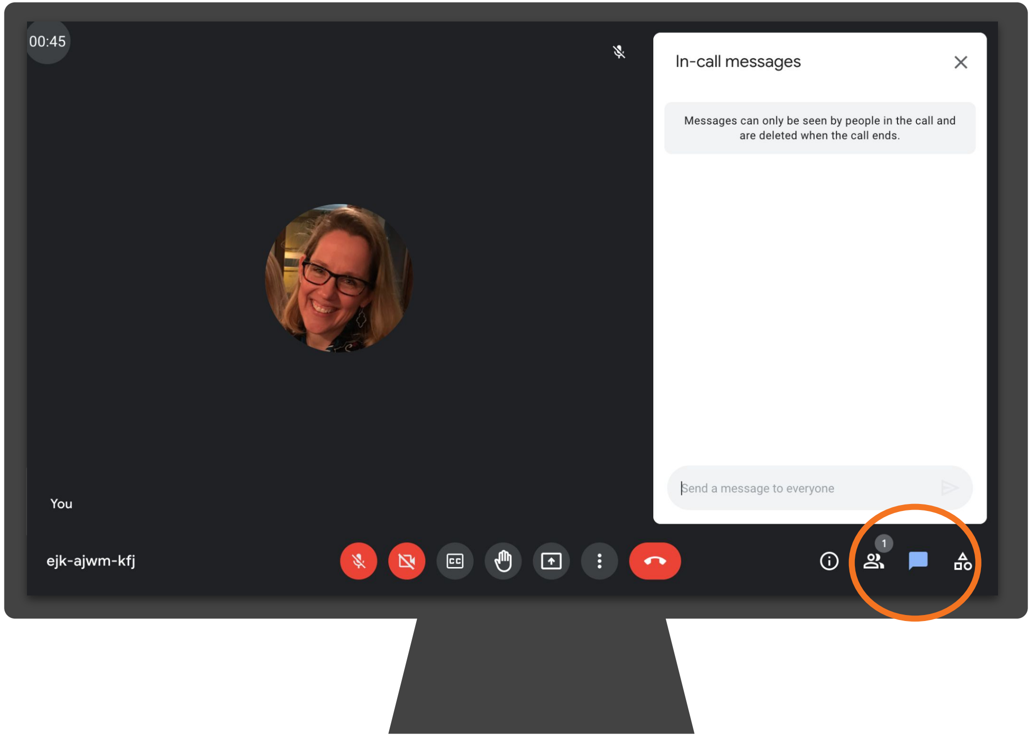
- Framing the day
- Introduction to the Launch Unit
- Unit Internalization
- Experiencing the Launch Unit
- Planning with the Classroom Slides
- Closing

Ice Breaker!

Reflecting

- **Round 1:** Share a key takeaway from the 2020-21 school year.

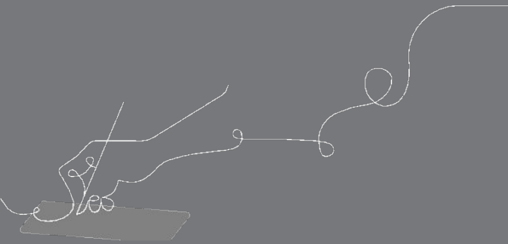
- **Round 2:** Share something you're looking forward to as you start a new school year.



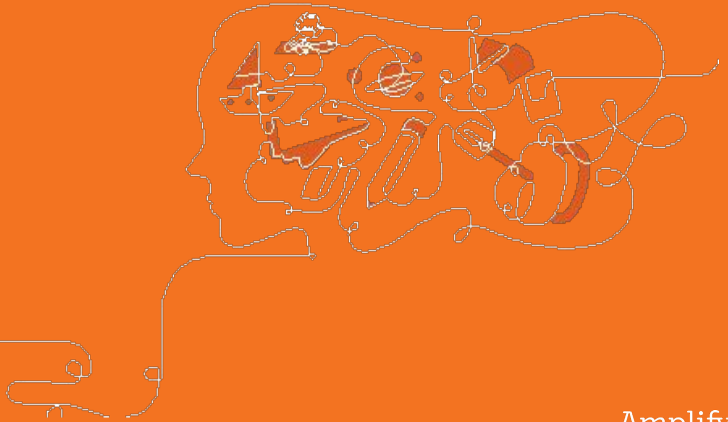
Overarching goals

By the end of this series, you will be able to:

- ❑ Leverage successes and learnings from remote and hybrid teaching in your transition back to school for the 2021-22 school year.
- ❑ Experience what teaching and learning look like in Amplify Science.
- ❑ Understand the benefits of teaching the standard Amplify Science curriculum.
- ❑ Apply program essentials to prepare to teach.



Introducing Amplify Science



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Course curriculum structure

Integrated model*

Grade 6

- Launch: **Microbiome**
- **Metabolism**
- Engineering Internship: **Metabolism**
- **Traits and Reproduction**
- **Thermal Energy**
- **Ocean, Atmosphere, and Climate**
- **Weather Patterns**
- **Earth's Changing Climate**
- Engineering Internship: **Earth's Changing Climate**

Grade 7

- Launch: **Geology on Mars**
- **Plate Motion**
- Engineering Internship: **Plate Motion**
- **Rock Transformations**
- **Phase Change**
- Engineering Internship: **Phase Change**
- **Chemical Reactions**
- **Populations and Resources**
- **Matter and Energy in Ecosystems**

Grade 8

- Launch: **Harnessing Human Energy**
- **Force and Motion**
- Engineering Internship: **Force and Motion**
- **Magnetic Fields**
- **Light Waves**
- **Earth, Moon, and Sun**
- **Natural Selection**
- Engineering Internship: **Natural Selection**
- **Evolutionary History**

Key takeaways:

- 9 units per grade level
- 145 lessons total per year
- Lessons are 45 minutes long

Middle school course curriculum structure

Integrated model*

Grade 6	Grade 7	Grade 8
Launch: Microbiome	Launch: Geology on Mars	Launch: Harnessing Human Energy
Metabolism	Plate Motion	Force and Motion
Engineering Internship: Metabolism	Engineering Internship: Plate Motion	Engineering Internship: Force and Motion
Traits and Reproduction	Rock Transformations	Magnetic Fields
Thermal Energy	Phase Change	Light Waves
Ocean, Atmosphere, and Climate	Engineering Internship: Phase Change	Earth, Moon, and Sun
Weather Patterns	Chemical Reactions	Natural Selection
Earth's Changing Climate	Populations and Resources	Engineering Internship: Natural Selection
Engineering Internship: Earth's Changing Climate	Matter and Energy in Ecosystems	Evolutionary History

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**These are the prioritized units for 7th grade.*

Launch units

- First unit
- 11 lessons

Core units

- Majority of units
- 19 lessons

6-8 Curriculum: Unit types

Launch units

Each year starts with an 11-day Launch unit.

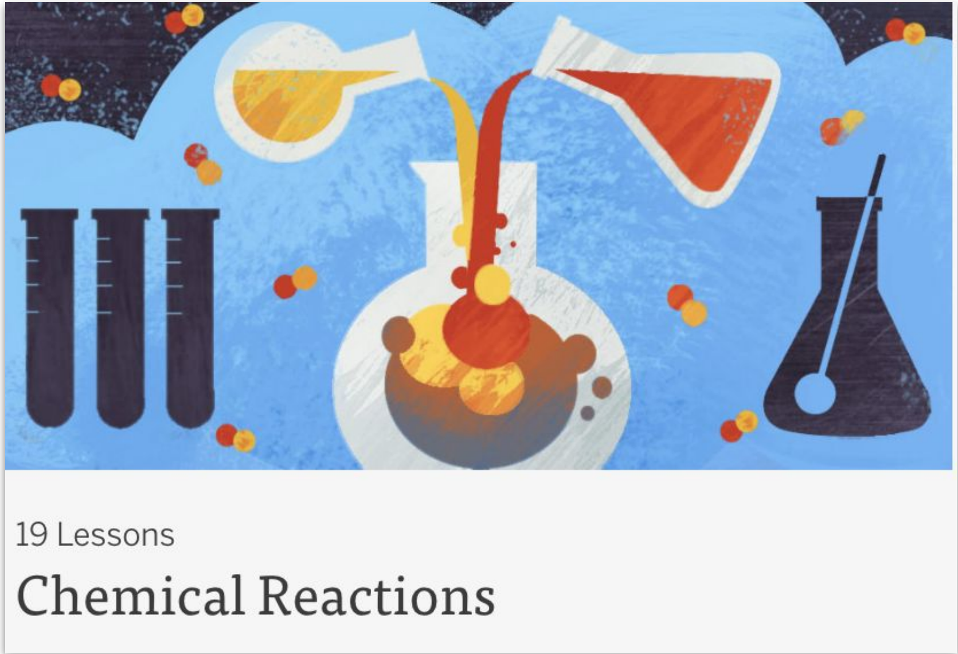
Launch units introduce instructional routines and norms as well as key science practices students will leverage in every Amplify Science unit.

6-8 Curriculum: Unit types

Core units

Each year has six Core units. Core units are 19 days long.

In each Core unit, students take on the role of a scientist or engineer and work to solve a real-world problem.



6-8 Curriculum: Unit types

Engineering Internships

Each year has two Engineering Internships. Engineering Internships are 10 days long.

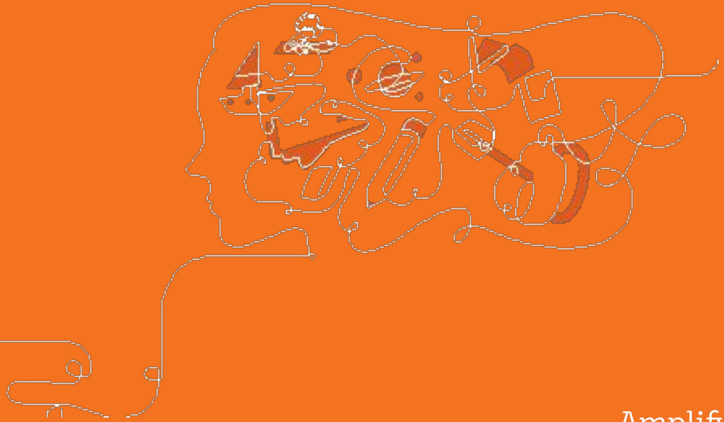
In these units, students work as interns for a fictional company, Futura Engineering. They focus on designing solutions to real-world problems.

Today's focal unit

Today's workshop will focus on your Launch unit: Geology on Mars.

You should have watched the Navigating Program Essentials asynchronous session before attending this workshop.

Capitalizing on Amplify Science in a responsive relaunch



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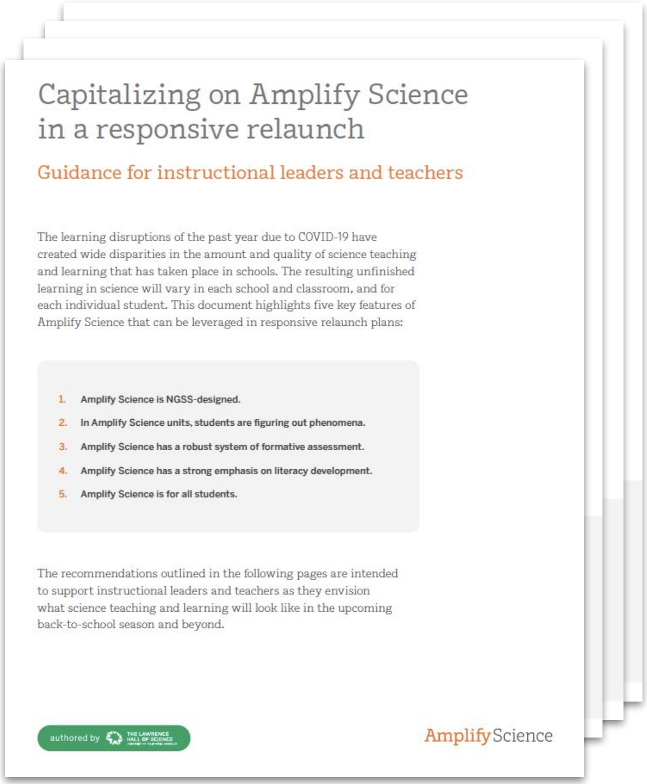
Capitalizing on Amplify Science in a responsive relaunch

Amplify Science...

- Is **NGSS-designed**
- Engages students in figuring out **phenomena**
- Has a robust system of **formative assessment**
- Has a strong emphasis on **literacy** development
- Is for **all** students



Capitalizing on Amplify Science in a responsive relaunch

Guidance for instructional leaders and teachers

The learning disruptions of the past year due to COVID-19 have created wide disparities in the amount and quality of science teaching and learning that has taken place in schools. The resulting unfinished learning in science will vary in each school and classroom, and for each individual student. This document highlights five key features of Amplify Science that can be leveraged in responsive relaunch plans:

1. Amplify Science is NGSS-designed.
2. In Amplify Science units, students are figuring out phenomena.
3. Amplify Science has a robust system of formative assessment.
4. Amplify Science has a strong emphasis on literacy development.
5. Amplify Science is for all students.

The recommendations outlined in the following pages are intended to support instructional leaders and teachers as they envision what science teaching and learning will look like in the upcoming back-to-school season and beyond.

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Amplify Science

"As you transition back to in-person learning, it's time to shift back to the standard Amplify Science curriculum to fully meet the NGSS."

-Capitalizing on Amplify Science in a responsive relaunch

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Capitalizing on Amplify Science in a responsive relaunch

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1. Amplify Science is NGSS-designed.

The Next Generation Science Standards (NGSS) are not a list of discrete pieces of knowledge for students to acquire; rather, the **three dimensional structure of the NGSS** supports students in deepening their understanding of disciplinary core ideas across grade bands, by engaging in science and engineering practices and using Crosscutting Concepts. Thus, our systems of relaunch should emphasize helping students continue to progress in their ability to figure out, like a scientist, using all three dimensions.

How can this feature of Amplify Science support our responsive relaunch plans?

- Amplify Science learning experiences are three dimensional.
- The Science and Engineering Practices (SEP) and Crosscutting Concepts (CCC) are not specified at each grade level but rather defined with increasing sophistication in each grade band (K–2, 3–5, 6–8). Therefore there is no "loss" of these dimensions, only opportunities to strengthen them in the upcoming year.
- The content in the Disciplinary Core Ideas (DCI) spirals and is not taught in each grade level, but rather in each grade band (K–2, 3–5, 6–8). This means there are no direct dependencies in teaching one grade level's content from the grade level prior.
- Each Amplify Science unit can be taught independently and includes supports to make sure all students can succeed regardless of their prior instruction. For unit-specific information, see the Standards and Goals Unit Guide document in the section called, "How This Unit Fits into the Amplify Science Curriculum." This section provides useful information about where a unit's ideas fit in the trajectory of core ideas, as well as guidance around prerequisite knowledge for accessing the unit.

What are recommendations for capitalizing on this feature of Amplify Science?

- Move forward with this year. Focus on the current grade level standards and units rather than working to identify "missing" content or trying to backfill discreet science ideas from the previous year.
- Continue strengthening the use of the Science and Engineering Practices and Crosscutting Concepts. Authentic engagement and development of these scientific critical thinking skills is what allows students to apply their knowledge to real-world situations in and out of the classroom.
- Use a system of formative assessment to monitor student understanding (see more details in the next feature).

Can I continue to use the Amplify Science @Home Units in my responsive relaunch plans?

As you transition back to in-person learning, it's time to shift back to the standard Amplify Science curriculum to fully meet the NGSS. The @Home Units were designed only for use in remote and hybrid teaching settings. During the year of disrupted schooling, they provided a way for all students, regardless of time constraints or materials access, to be exposed to activities related to figuring out phenomena. To create these instructional materials, about 50% of activities were cut, resulting in learning experiences that do not fully engage students using all three dimensions. Examples include: less explicit instruction in disciplinary literacy practices, modifications to hands-on investigations, limited opportunities for student-to-student discourse, and a reduction of opportunities to apply and reflect. Because these are core components of students' engagement in deep learning towards figuring out phenomena, we do not recommend using the @Home Units for in-person instruction. As needed, the materials can be used in instances where a student is absent, as they can be completed asynchronously.

Amplify Science...

is NGSS-designed

Key points:

- Students progress in their ability to figure out using three dimensions across multiple years.
- Disciplinary Core Ideas spiral across grade bands (K-2, 3-5, 6-8).
- Amplify Science units are not dependent on specific science concepts from previous grades.

Key recommendations:

- Focus on standards and **units at your grade level** instead of revisiting “missing” content.

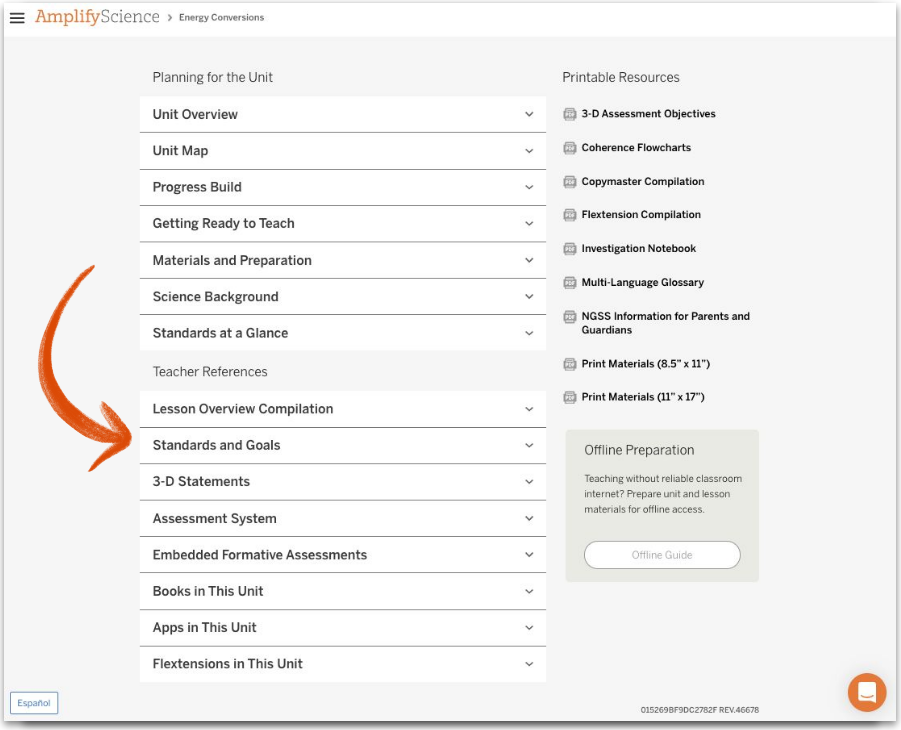
Amplify Science

is NGSS-designed

Navigate to the **Standards and Goals** document in your unit's Unit Guide.

Skim the following subsections:

- Trajectory of Core Ideas
- Prerequisite Knowledge



Amplify Science

engages students in figuring out phenomena

Key points:

- Figuring out phenomena increases student motivation and makes learning relevant.
- Students construct increasingly complete explanations of anchor phenomena throughout Amplify Science units.

Key recommendations:

- Prioritize **teaching units fully** so students can come to a complex explanation of the unit phenomenon.

Key takeaway

Teaching **complete units at your grade level** is the best way to ensure your students progress along the Next Generation Science Standards as you return to onsite teaching.

Amplify Science

has a robust system of formative assessment

Key points:

- Formative assessments in Amplify Science allow frequent insight into student learning in all three dimensions.
- Formative assessments include "Now what" suggestions for providing more support when needed.

Key recommendations:

- Use unit resources to get familiar with the Assessment System. Formatively assess your students and adjust instruction as needed.

Amplify Science

has a strong emphasis on literacy development

Key points:

- Amplify Science supports students with scientific reading, writing, speaking, and listening
- Literacy and discourse are key aspects of the work professional scientists do

Key recommendations:

- Use the standard curriculum as written to develop students' disciplinary literacy
- Attend to the CCSS-ELA standards addressed in Amplify Science lessons

Amplify Science
is for all students

Key points:

- Multimodal instruction provides multiple entry points into complex science ideas, and allows for multiple means of expression.
- Amplify Science prioritizes representation of diverse scientists.

Key recommendations:

- Leverage lesson-specific **differentiation resources** to support all learners in your class.

Key takeaway

Formative assessments, explicit literacy instruction, and lesson-specific differentiation suggestions are **built-in tools** for ensuring your students have equitable access to rigorous science learning.

Amplify Science

is for all students

Empower student scientists by establishing a **culture of figuring out** in your classroom.

Tips for establishing a culture of figuring out

To promote equity, relevance, and engagement

- Elicit and leverage **students' prior knowledge, personal experiences, and cultural backgrounds**
  - Find space and time where students can share their experiences and ideas related to the unit phenomenon or problem that they will be seeking to explain or solve.
  - Have students return to their funds of knowledge at key moments of the figuring out process for the purpose of building on their ideas, using their connections as a source of evidence, or to notice if their ideas have changed over time.
  - Think about how to attribute ideas from students who might not see themselves as contributors to the conversation.
- Value **student questions**
  - Utilize the embedded question-asking opportunities in the unit to elicit questions from students.
  - Document, return to, and sort student questions at key moments, such as the beginning of the unit when the unit phenomenon is introduced and at the beginning and end of each chapter.
- Connect to **local and relevant phenomena**
  - Welcome in students' interest in and experience with local and everyday phenomena, and help draw connections to what they're figuring out throughout the year about the unit phenomena.
  - Compare and contrast the unit phenomenon to local phenomena.
  - Encourage students' explorations and observations of everyday phenomena at home or in their communities.
  - Identify community resources that can help students explore phenomena in their community.
- Allow for a **variety of sensemaking** types and paces
  - Attend to how different students thrive with different modalities, or need less or more time with them.
  - Use the storyline in the unit to teach sequentially but allow for flexibility based on student need.
- Take on the role of an **interested skeptic**[1]
  - Students might not be intrigued by a phenomenon right away because they believe they already know how or why it happens. Help students become dissatisfied with what they can explain.[2]
  - Ask questions such as: "Is that how a scientist would do it?", "Is that consistent with what we read about?", or "Do you agree with your partner's idea?"

[1] Sara Goodman, knowatom.com
[2] Using Phenomena in NGSS-Designed Lessons and Units

Questions?

Plan for the day

- Framing the day
- **Introduction to the Launch Unit**
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Middle school curriculum course structure

Integrated model*

Launch Unit

11 lessons

Grade 6

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Grade 7

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Grade 8

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What is a launch unit?

- First unit of the year
- Interesting, immersive, and often surprising problem-context
- Introduces **practices** that are integral to science, such as:
  - **Argumentation**
  - **Reading**
  - **Writing**
  - **Talking about science ideas**
  - **Using models**
- Introduces **routines** such as:
  - **Active reading**
  - **Discourse routines**

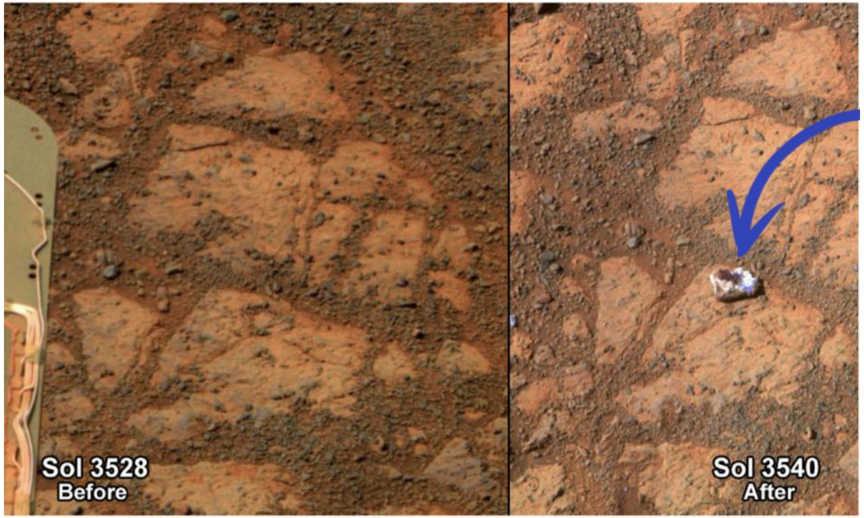
Launch unit: Grade 7
Geology on Mars

Opportunities for students to extend their scientific thinking and practices outside the traditional realms of the science classroom.

Launch Units Introduce:

- **Scientific Argumentation**
- **Active Reading**
- **Writing**
- **Talking about science ideas**
- **Using Amplify Science Tools**

Launch Unit: Geology on Mars



Problem: Evidence that water was once present on a planet is evidence that the planet may once have had living organisms. Students investigate whether a particular channel on Mars was caused by flowing water or flowing lava.

Role: Student planetary geologists

Students engage in the practices and ways of thinking particular to planetary geologists, and learn to consider a planet as a system of interacting sub-systems..

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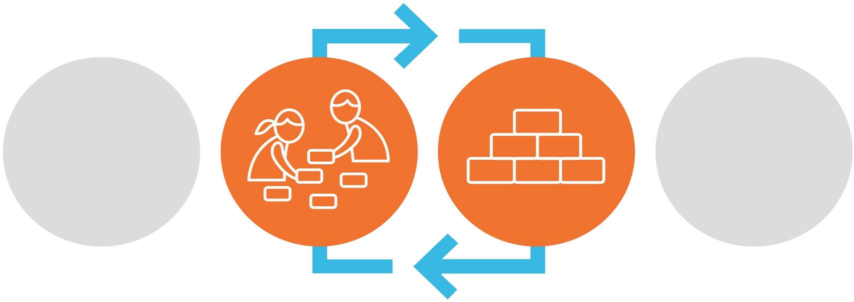
Unit Question

How can we search for evidence that other planets were once habitable?

Goals for argumentation in Amplify Science

- To provide students an authentic opportunity to engage in the practice of argumentation
- To make clear to students the purpose of argumentation and the role it plays in building and communicating scientific knowledge
- To help students build their own knowledge through argumentation



Specific goals for argumentation in launch units

- Introduce the **practice of argumentation** in science
- Introduce **tools** that will be used throughout the year to support students in getting better at specific aspects of oral and written argumentation:
  - **Card sorts**
  - **Evidence gradient**
  - **Reasoning tool**

Argumentation Wall

The Argumentation Wall is built in the launch unit, used throughout the year.

Completed Scientific Argumentation Wall Diagram

Scientific Argumentation
1.2

The purpose of a scientific argument is to convince others, using evidence and reasoning.
1.2

Evaluating Evidence
3.3

Evidence is higher quality if it comes from a reliable source.
3.3

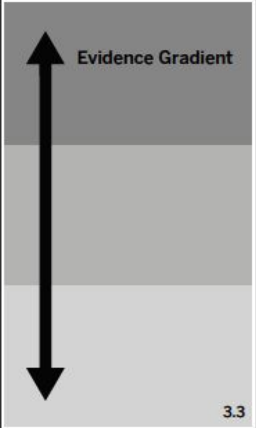
Scientific Argument

1.2

Reasoning Tool

Evidence	This matters because . . . (How does the evidence support the claim?)	Therefore, . . . (claim)

1.2



3.3

Example Student Arguments
3.3

A scientific argument . . .

- begins with a question.
- has a claim that proposes an answer to the question.
- has evidence that supports the claim.
- clearly explains how the evidence supports the claim (reasoning).

1.2

Argumentation Sentence Starters

- I think this evidence supports this claim because . . .
- I don't think this evidence supports this claim because . . .
- I agree because . . .
- I disagree because . . .
- Why do you think that?

1.2

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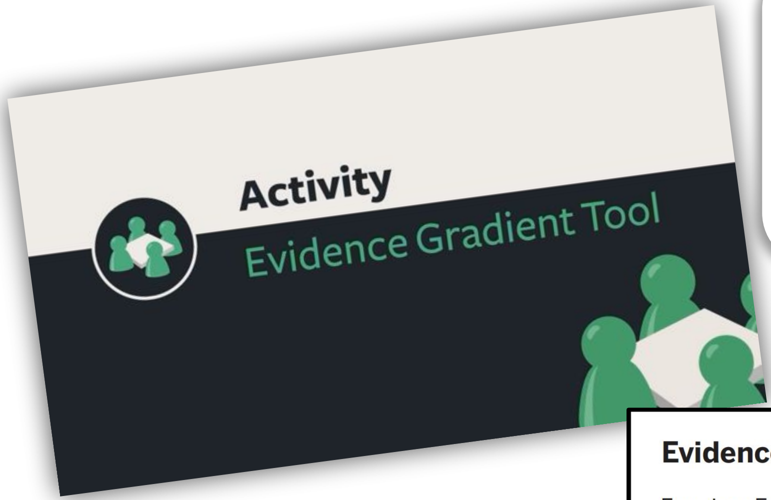
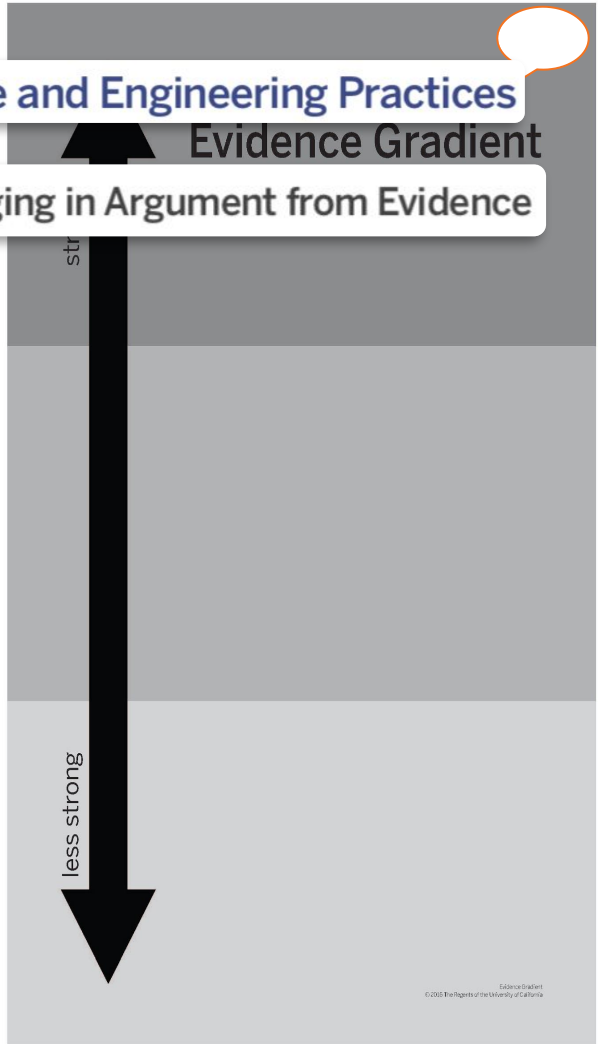


Science and Engineering Practices

7. Engaging in Argument from Evidence



Evidence Card A

Fungi on Earth are often colorful.

Geology on Mars—Jelly Donut Evidence Cards: S
Lesson 1.3—AMP615582.11-G

Evidence Card B

Fungi can grow very quickly on Earth. Some fungi can double in size in just one day.

Geology on Mars—Jelly Donut Evidence Cards: Set 1
Lesson 1.3—AMP615582.11-GOM

How can visualizing help students understand the nature of evidence?

Reasoning Tool

Reasoning Tool

Evidence	This matters because . . . (How does this evidence support the claim?)	Therefore, . . . (claim)

Microbiome—Reasoning Tool—Lesson 2.5—AMP615585.26-MB

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Students read each article twice
The first read is always to annotate
(questions, connections, comments, etc.

Science and Engineering Practices

8. Obtaining, Evaluating, and Communicating Information

Active Reading

Subsequent reads are for a particular purpose

- To examine a specific visual representation
- To answer a question
- To find evidence to support a claim, or
- To draw conclusions across texts, etc.

Plan for the day

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Guided Unit Internalization

Part 1: Unit-level internalization

Unit title: Geology on Mars

What is the phenomenon students are investigating in your unit?

investigate the planet Mars and search for evidence of past liquid water on the surface to determine if it is habitable.

Unit Question:

Student role: planetary geologists

By the end of the unit, students figure out ...

What science ideas do students need to figure out in order to explain the phenomenon?

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How can we search for evidence that other planets were once habitable?	planetary geologists

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☰ AmplifyScience > Energy Conversions

Planning for the Unit

- Unit Overview
- Unit Map
- Progress Build
- Getting Ready to Teach
- Materials and Preparation
- Science Background
- Standards at a Glance

Teacher References

- Lesson Overview Compilation
- Standards and Goals
- 3-D Statements
- Assessment System

Printable Resources

- Coherence Flowcharts
- Copymaster Compilation
- Flextension Compilation
- Investigation Notebook
- Multi-Language Glossary
- NGSS In
Guardian
- Print Ma
- Print Ma

Offline

Teaching
internet?
materials

Español

Summarize what students figure out by the **end of the unit.**

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Guided Unit Internalization

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Unit Question: How can we search for evidence that other planets were once habitable?

Student role: planetary geologists

By the end of the unit, students figure out ...

Rocky planets are made up of geospheres, hydrospheres and biospherse.. Scientists use models to test their ideas and get evidence about processes in the natural world that are difficult to observe. The channel on Mars was probably formed by water.

What science ideas do students need to figure out in order to explain the phenomenon?

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What science ideas do students need to figure out in order to explain the phenomenon?

The rover *Curiosity* found rocks near the channel that were made up of many smaller rocks. On Earth, the type of rock that is made of smaller rocks is found near channels made by water. On Earth, rocks found in or near channels made by flowing lava are made up of just one type of rock because they are made of hardened lava.

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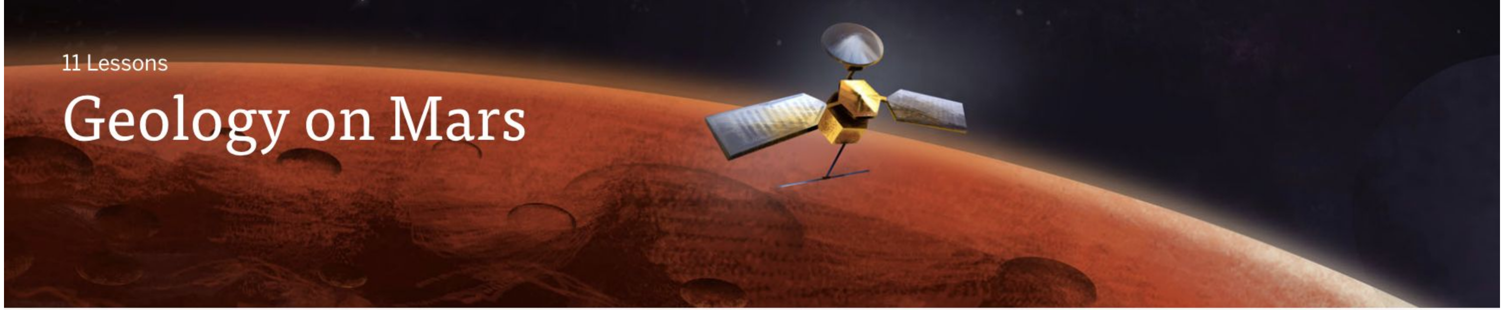
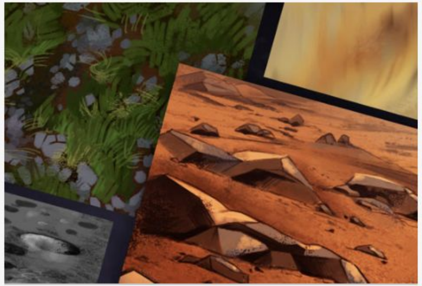


JUMP DOWN TO UNIT GUIDE



Chapter 1 Question

What geologic process could have formed the channel on Mars?

Chapter 1:
Comparing Earth and Rocky Planets

3 Lessons

- Students consider a channel shaped by geologic processes on Mars, comparing it to landforms shaped by known geologic processes on Earth.
- Introduced to argumentation

3 Lessons

5 Lessons

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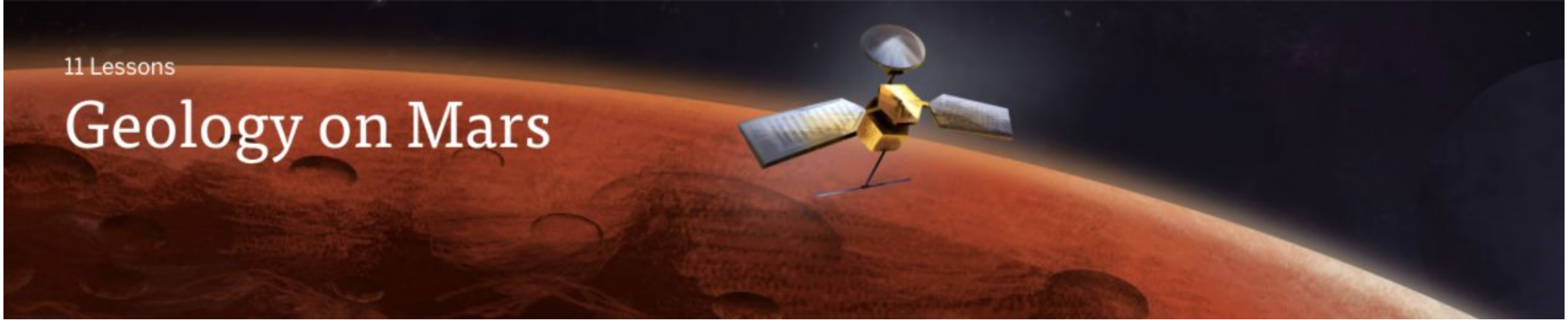


Chapter 2: Using Models as Evidence

JUMP DOWN TO CHAPTER OVERVIEW

Lesson 2.1: "Investigating Landforms on Venus"

Lesson 2.2: Modeling a Geologic Process

Lesson 2.3: Gathering Additional Evidence from Models

Chapter 2 Question

How can we gather more evidence about whether lava or water formed the channel on Mars?

Geology on Mars—Chapter 2 Question—Lesson 2.1—AMP615582.16-GOM

Discussing Annotations

Step 1: Prepare to Share

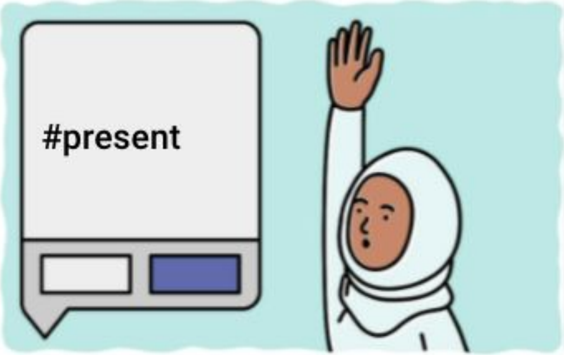
Choose an interesting question or connection to share with a partner.

Tag it with **#share.**

Step 2: Discuss

Talk about your chosen annotation with a partner.

Tag it with **#discussed** if you were able to resolve your questions.



Step 3: Prepare to Present

Choose an interesting or unanswered question to present to the class.

Tag it with **#present.**

Lesson 2.2

Second Read of "Investiga

the novae on Venus

the landforms in

Scientists their

ideas and cesses in

the natura to

observe.

Classroom Wall

Unit Question
How can we search for evidence that other planets were once habitable?

Chapter 1 Question
What geologic process could have formed the channel on Mars?

Chapter 2 Question
How can we gather more evidence about whether lava or water formed the channel on Mars?

Key Concepts

1. Earth, Mars, and other rocky planets can be thought of as systems. These systems are made up of interacting spheres that can include the geosphere, atmosphere, hydrosphere, and biosphere.

2. When landforms on different rocky planets look similar, it is evidence that they may have been formed by the same geologic process.

3 Scientists can use models to test their ideas and get evidence about processes in the natural world that are difficult to observe.

4. When landforms on different rocky planets look similar, it is evidence that they may have been formed by the same geologic process.

5. Models represent the natural processes being investigated in important ways, but they are not exactly the same.

Vocabulary

habitable

Rocky planet

system

claim

landform

reasoning

channel

model

Geologic process

evidence

Model Lesson

Geology on Mars

Lesson 2.3: Gathering Additional Evidence from Models

AmplifyScience

Preparing to Teach

- Know the unit's big idea
- Understand how the lesson will flow
- Prepare your digital device plan
- Gather your materials

Geology on Mars

Lesson 2.3: Gathering Additional Evidence from Models

AmplifyScience

Activity 1

Warm-Up

Warm-Up

Marta observed a flowing stream in a sandy area. She developed a claim that water flowing over sand will create a curved and winding channel.

1. How can she test this idea in the Flowing Water Model?

Activity 2

Testing an Idea with the Flowing Water Model

Chapter 2 Question

How can we gather more evidence about whether lava or water formed the channel on Mars?

We used a Flowing Water Model to get more evidence about what formed the channel on Mars. We observed that landforms formed by flowing water **remain after the water stops.**

Homework

Reflecting on the Flowing Water Model

In this lesson, you used a scientific model to learn more about the geologic process of flowing water.

1. How was the Flowing Water Model similar to flowing water on Earth?

2. How was the Flowing Water Model different than flowing water on Earth?

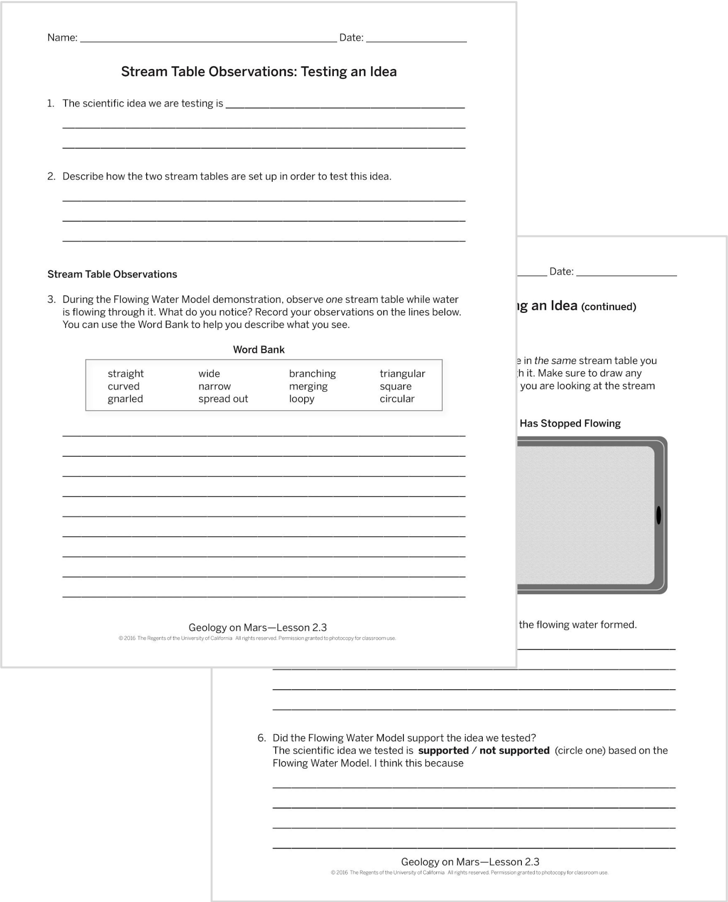
3. How would you change the Flowing Water Model to make it more like the actual geologic process on Earth?

You compared the Flowing Water Model with flowing water on Earth.

How was the model **similar** to the geologic process of flowing water on Earth? How was it **different**?

Key Concept

5. Models represent the natural processes being investigated in important ways, but they are not exactly the same.


Name: ______________________ Date: __________

Stream Table Observations: Testing an Idea

1. The scientific idea we are testing is ______________________

2. Describe how the two stream tables are set up in order to test this idea.

Stream Table Observations

3. During the Flowing Water Model demonstration, observe *one* stream table while water is flowing through it. What do you notice? Record your observations on the lines below. You can use the Word Bank to help you describe what you see.

Word Bank

straight	wide	branching	triangular
curved	narrow	merging	square
gnarled	spread out	loopy	circular

Geology on Mars—Lesson 2.3

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Date: __________

g an Idea (continued)

e in *the same* stream table you
h it. Make sure to draw any
you are looking at the stream

Has Stopped Flowing

the flowing water formed.

6. Did the Flowing Water Model support the idea we tested?
The scientific idea we tested is **supported** / **not supported** (circle one) based on the Flowing Water Model. I think this because

Geology on Mars—Lesson 2.3

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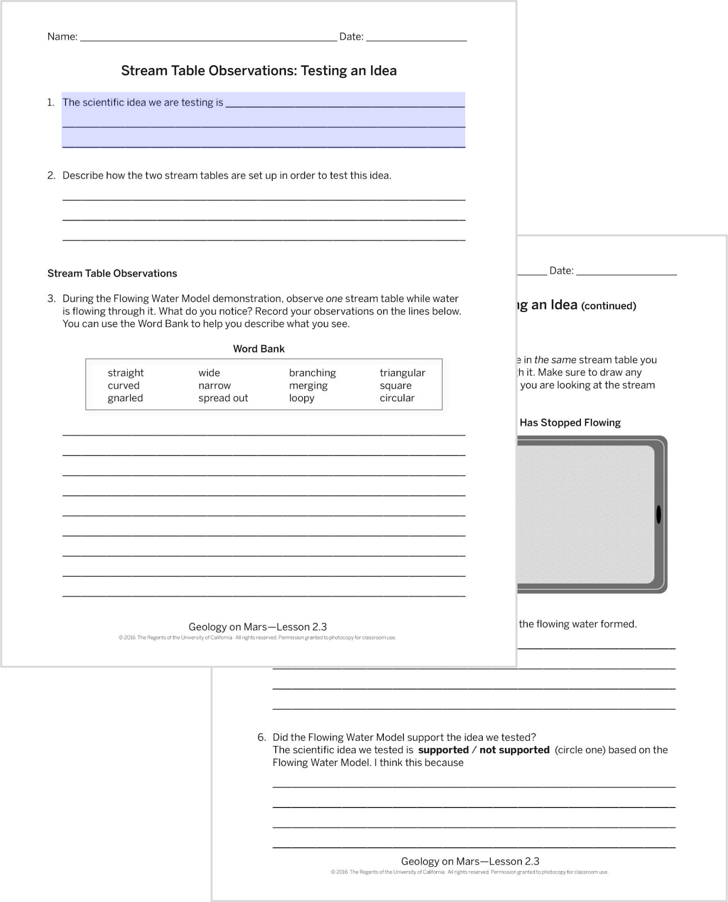
Today, we will use the Flowing Water Model again to look at how **steep hillsides** might affect how channels form.

Investigation Notebook **pg 32–33**

The stream tables are slanted to show how water flows downhill in the natural world. You will use the two stream tables in a model to **test an idea** about water flowing downhill.

When water flows down a hill, how do you think the **steepness of the hill** might **affect the channel** formed by the water?



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Geology on Mars—Lesson 2.3

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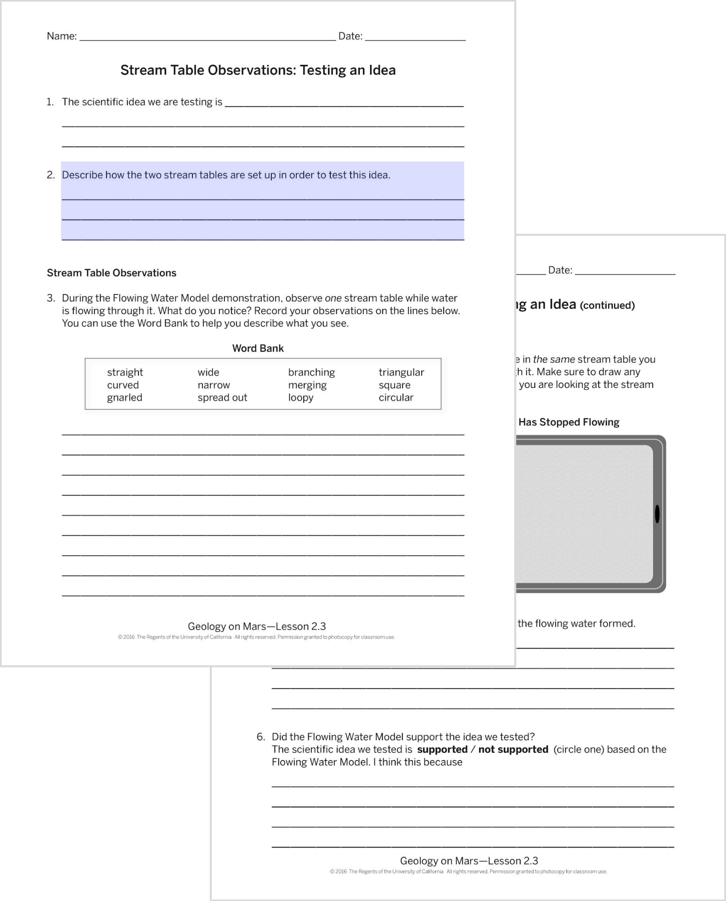
We generated an idea about how steepness will affect the channel.

Record the idea we'll test using the stream tables.

Let's brainstorm some ways to change the Flowing Water Model.

How can we set up and **change the conditions** of the two stream tables to test our idea?



Name: ________________________________ Date: ______________

Stream Table Observations: Testing an Idea

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____
____

2. Describe how the two stream tables are set up in order to test this idea.
____
____
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Geology on Mars—Lesson 2.3

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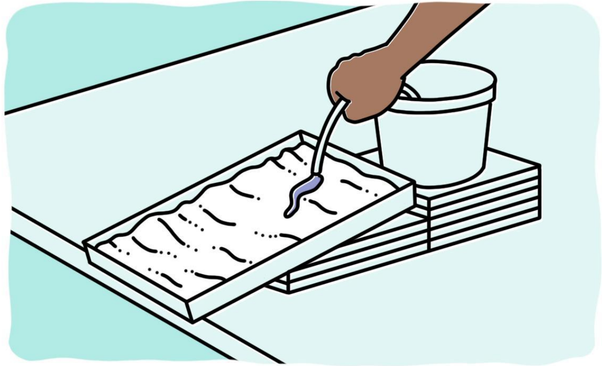
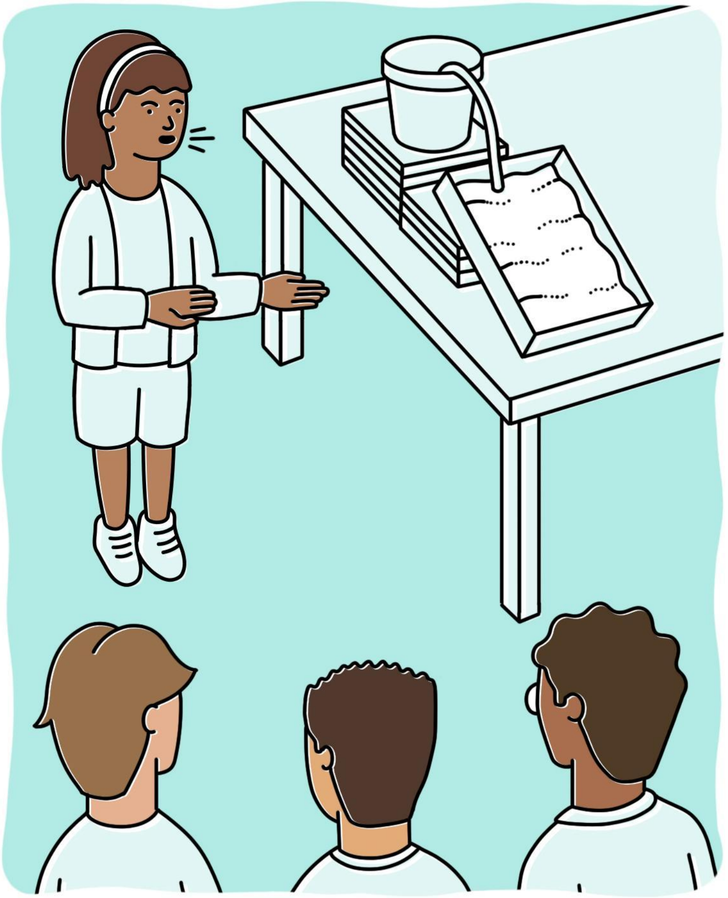
Record how we'll set up the two stream tables differently to test our idea.

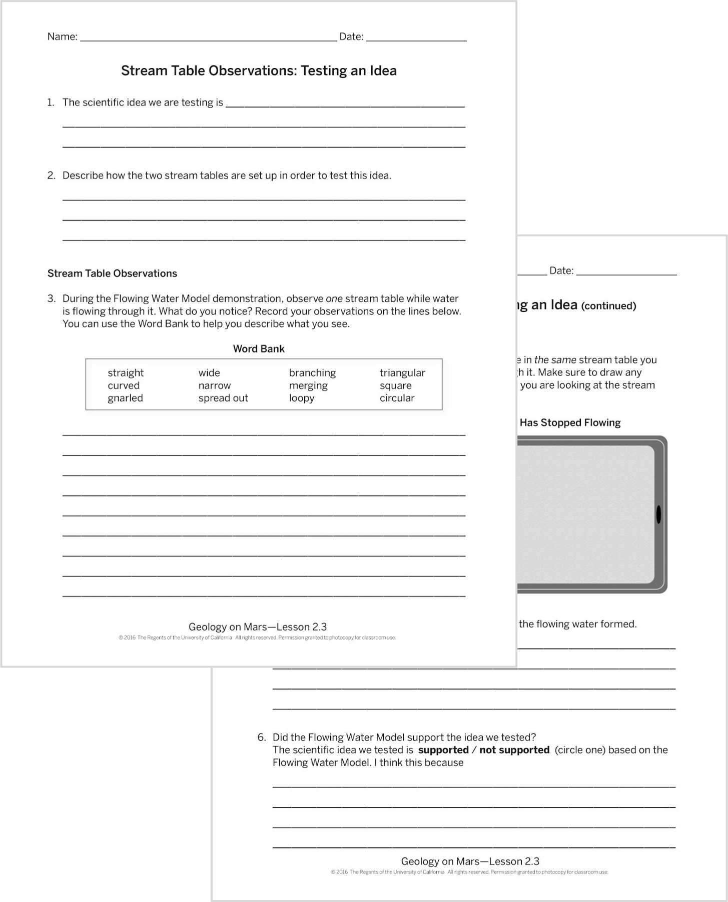
Test an Idea with the Flowing Water Model

1. Gather around the stream tables. You only need to observe the stream table closest to you.
2. Begin recording your observations as I start the flow of water and continue until the water stops.
3. Take notes on the landforms that remain in the table you observed. Draw the landforms the flowing water formed and record their observations.
4. Share your observations with a partner from the other group, and discuss differences between the two stream tables.





What did you **observe** as we tested our idea?



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Did the evidence you gathered from the Flowing Water Model **support the idea** we were testing?

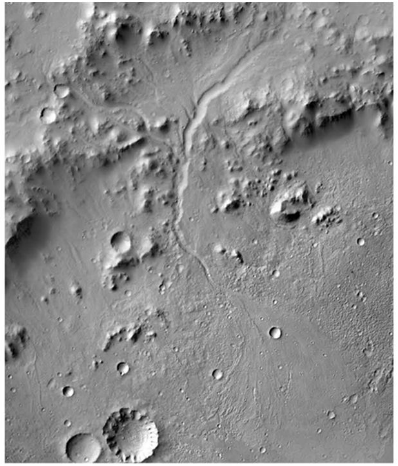
Activity 3

Observing a Flowing Lava Model

Question: What geologic process could have formed the channel on Mars?

Claim 1: Flowing water formed the channel on Mars.

Claim 2: Flowing lava formed the channel on Mars.



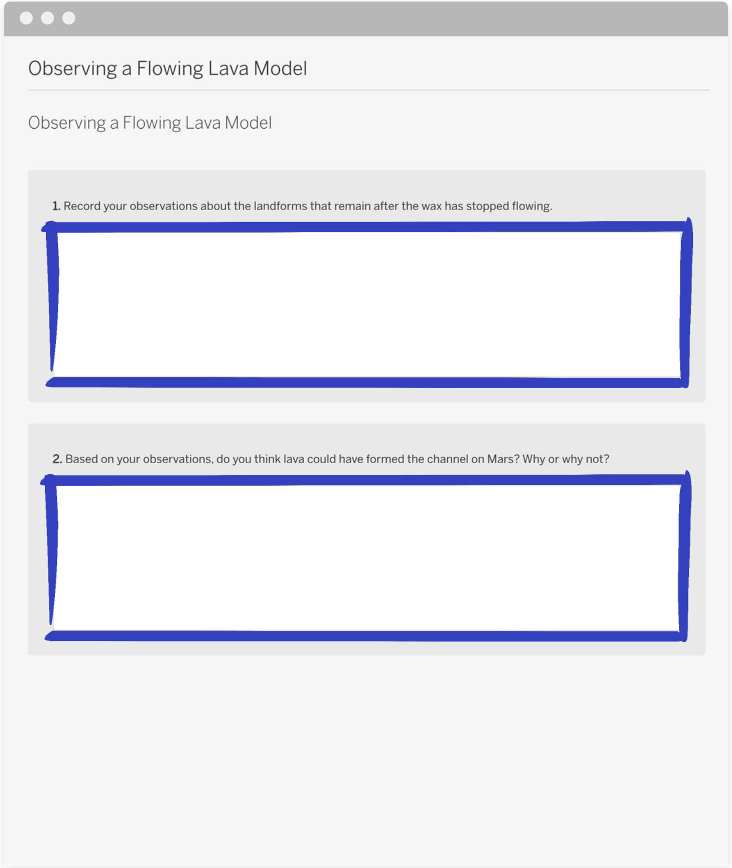
We have been focusing on Claim 1 for the past two lessons.

Now, we'll turn our attention to **Claim 2**—the flowing lava claim.

We'll watch a video of a new model to get evidence about whether **flowing lava** could have formed the channel on Mars.

The Flowing Water Model used real water to represent water in the natural world, but actual lava cannot be used to represent flowing lava.

The Flowing Lava Model uses **wax to represent lava.** They are both thick melted substances, and we can use wax to learn about the landforms that flowing lava might form in the natural world.



In a moment, you will **carefully observe** the model in the video.

Then, you'll record your observations and share your ideas with a partner.

Observing a Flowing Lava Model

1. Record your observations about the landforms that remain after the wax has stopped flowing.

Share your ideas about whether flowing lava could have formed the channel on Mars. You can **record new ideas** as you share.

We used the Flowing Lava Model to get evidence about the flowing lava claim.

Does the Flowing Lava Model **support the flowing lava claim?**

You have been **gathering evidence** about what formed the channel on Mars.

By now, you probably have an idea of which claim you think is **more convincing.** In the next few lessons, you will consider **new evidence** from NASA about which geologic process formed the channel on Mars.

Activity 4

Homework

For this activity, you will consider how the Flowing Lava Model is **similar** to and **different** than the geologic process of flowing lava on Earth.

Homework

Thinking About Modeling Flowing Lava

In this lesson, you observed a scientific model to learn more about the geologic process of flowing lava. Think about how the Flowing Lava Model was similar to and different than real flowing lava and the landforms it forms on Earth.

1. How was the Flowing Lava Model similar to flowing lava on Earth?

End of Lesson

THE LAWRENCE HALL OF SCIENCE
UNIVERSITY OF CALIFORNIA, BERKELEY

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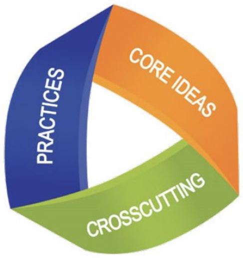
What Science and Engineering Practices did students engage with during the lesson?



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

Lesson ___	Activity Overview	
What is the purpose of this lesson? use models to test ideas and get evidence.	**Activity 1 (10 min)**	Warm Up
What will students learn? Flowing water and flowing lava can create channels	**Activity 2 (25 min)**	Testing an Idea with the flowing water model
3-D Statement (identify SEP, CCC, and DCI): Students continue to use models to investigate how the channel formed on Mars (cause and effect, systems and system models).	**Activity 3 (3 min)**	Observing a flowing lava model
Student Resources: 2 stream table trays, (from lesson 2.2) 4 buckets, 2 tubes, sand, (4 bags) modeling clay	**Activity 4 (7 min)**	Teacher only (show video)
Assessment Opportunities: none	**Activity 5)**	Homework

From the Lesson at a glance in the overview

Lesson Reflection

Answer in the chat feature

How is a launch unit lesson similar/different from a core unit lesson?

What questions do you have?

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Ask in the chat feature

Questions?

Plan for the day

- Framing the day
- Introduction to the Launch Unit
- Unit Internalization
- **Planning with the Classroom Slides**
- Closing

4 Easy Steps to Teaching an Amplify Lesson

Step 1: Download the Classroom Slides

Step 2: Read the Overview Section

Step 3: Read the Materials & Preparation Section

Step 4: Read the Differentiation Section

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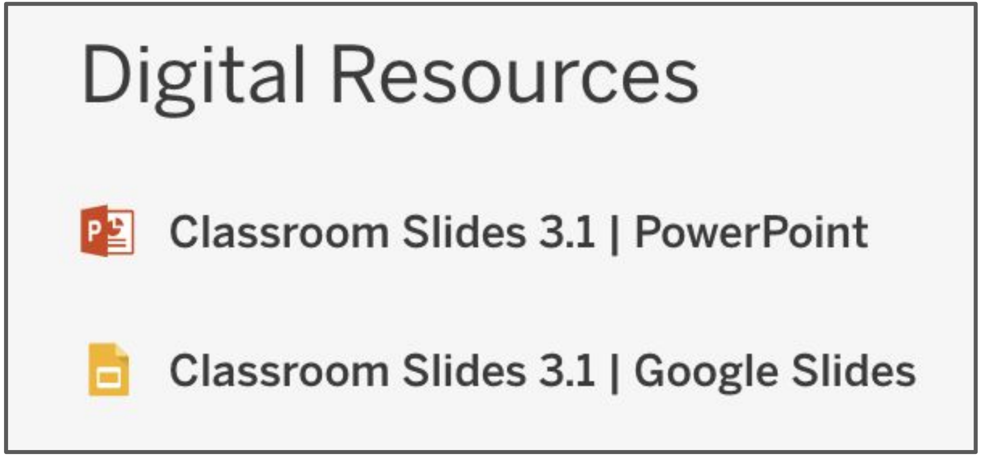
Breakout Groups: Directions for Planning Time

1. Download the slides for the lesson you would like to plan
2. Insert the next slide at the front of the slide deck
3. Navigate at the lesson level to answer the questions on this slide
4. Make edits directly on your side deck to meet the needs of your students



Lesson __	Activity Overview	
What is the purpose of this lesson?	**Activity 1 (##min)**	
What will students learn?	**Activity 2 (##min)**	
3-D Statement (identify SEP, CCC, and DCI):	**Activity 3 (##min)**	
Student Resources:	**Activity 4 (##min)**	
Assessment Opportunities:	**Activity 5 (##min)**	

Navigation Temperature Check

Rate yourself on your comfort level accessing Amplify Science materials and navigating a digital curriculum.

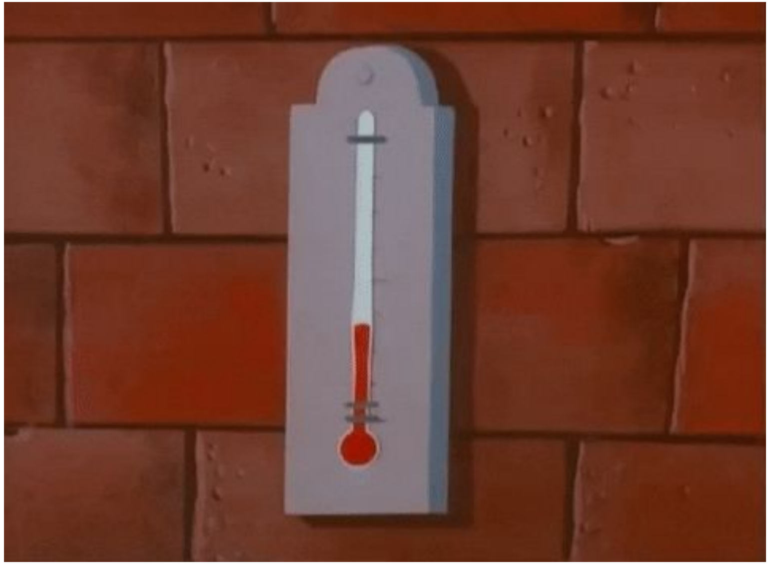
1 = Extremely Uncomfortable

2 = Uncomfortable

3 = Mild

4 = Comfortable

5 = Extremely Comfortable



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Breakout groups

Please choose a person from your group to share out!

Planning:

- What did you add to your slide decks?

Differentiation:

- How do you plan to differentiate the lesson for diverse learners?

Lesson __	Activity Overview	
What is the purpose of this lesson?	Activity 1 (##min)	
What will students learn?	Activity 2 (##min)	
3-D Statement (identify SEP, CCC, and DCI):	Activity 3 (##min)	
Student Resources:	Activity 4 (##min)	
Assessment Opportunities:	Activity 5 (##min)	

Plan for the day

- Framing the day
- Introduction to the Launch Unit
- Unit Internalization
- Planning with the Classroom Slides
- **Closing**

Overarching goals

By the end of this series, you will be able to:

- ☑ Leverage successes and learnings from remote and hybrid teaching in your transition back to school for the 2021-22 school year.
- ☑ Navigate the Amplify Science curriculum.
- ☑ Describe what teaching and learning look like in Amplify Science.
- ☑ Understand the benefits of teaching the standard Amplify Science curriculum.
- ☑ Apply program essentials to prepare to teach.