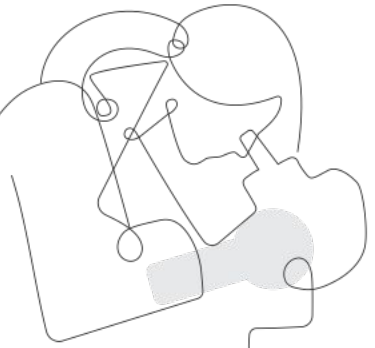
Do Now: *Use the link in the chat to add your best remote learning tips and tricks for teaching Amplify Science to the Jamboard.*

Amplify Science

Unit Internalization & Guided Planning

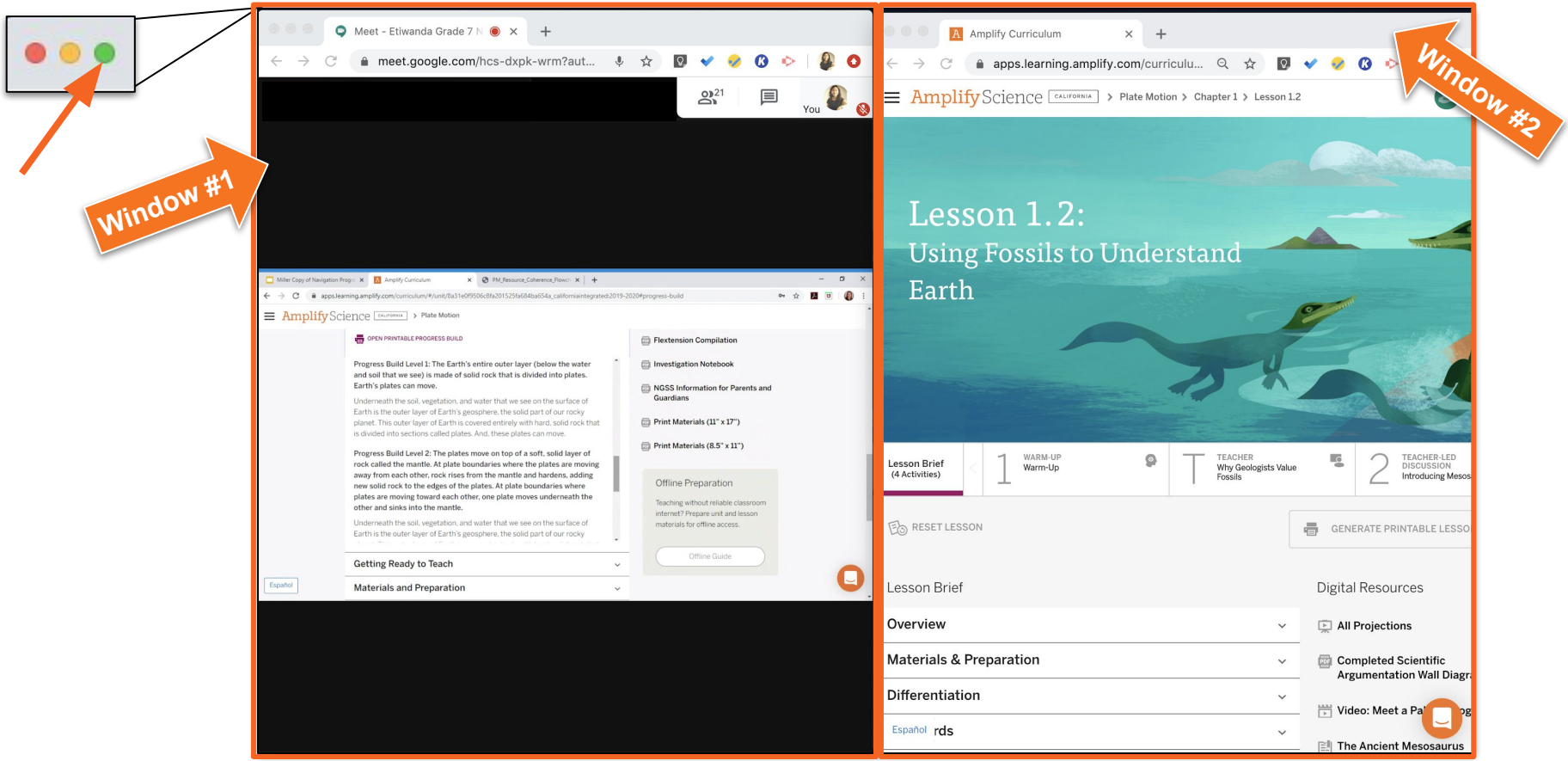
Deep-dive and strengthening workshop
Grade 6, Weather Patterns



LAUSD
3/6/2021
Presented by Your Name

In a new tab, please log in to your Amplify Science account through Schoology.

Use two windows for today's webinar



Norms: Establishing a Culture of Learners

- Please keep your camera on, if possible.
- Take some time to orient yourself to the platform
  - *“where’s the chat box? what are these squares at the top of my screen?, where’s the mute button?”*

- Mute your microphone to reduce background noise unless sharing with the group

- The chat box is available for posting questions or responses to during the training

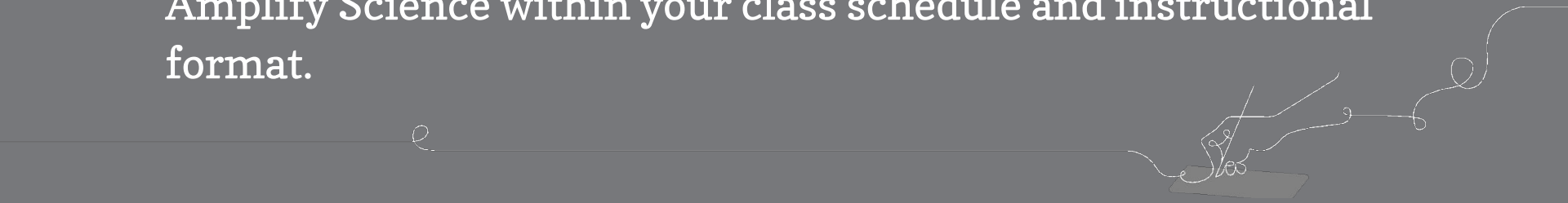
- Make sure you have a note-catcher present

- Be an active participant - chat, ask questions, discuss, share!

Workshop goals

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

- Internalize your upcoming unit.
- Plan for collecting **evidence of student learning** in order to make instructional decisions to **support diverse learner needs**.
- Gather resources to develop a multi-day plan for implementing Amplify Science within your class schedule and instructional format.

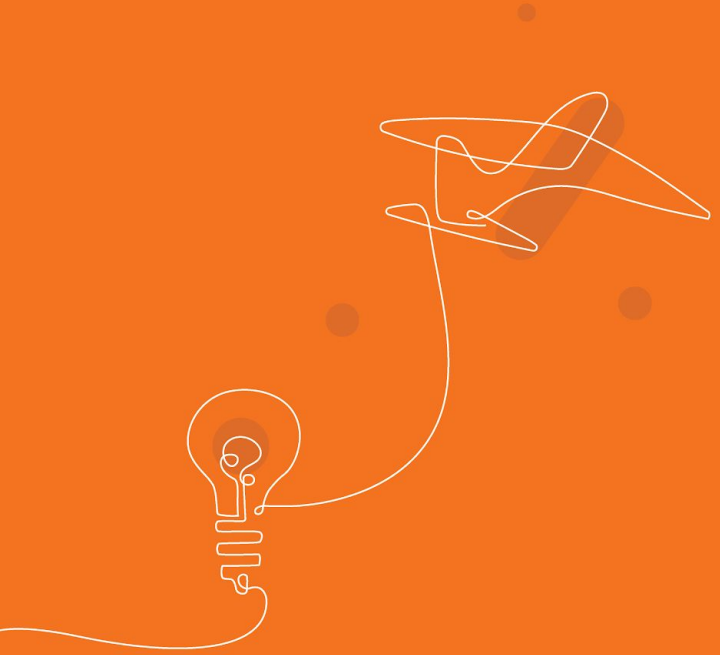


Plan for the day

- Framing the day
  - Welcome
  - Instructional Materials
- Unit Internalization
- Planning to teach
  - Collecting evidence of student learning to meet diverse learner needs
- Reflection and closing

Plan for the day

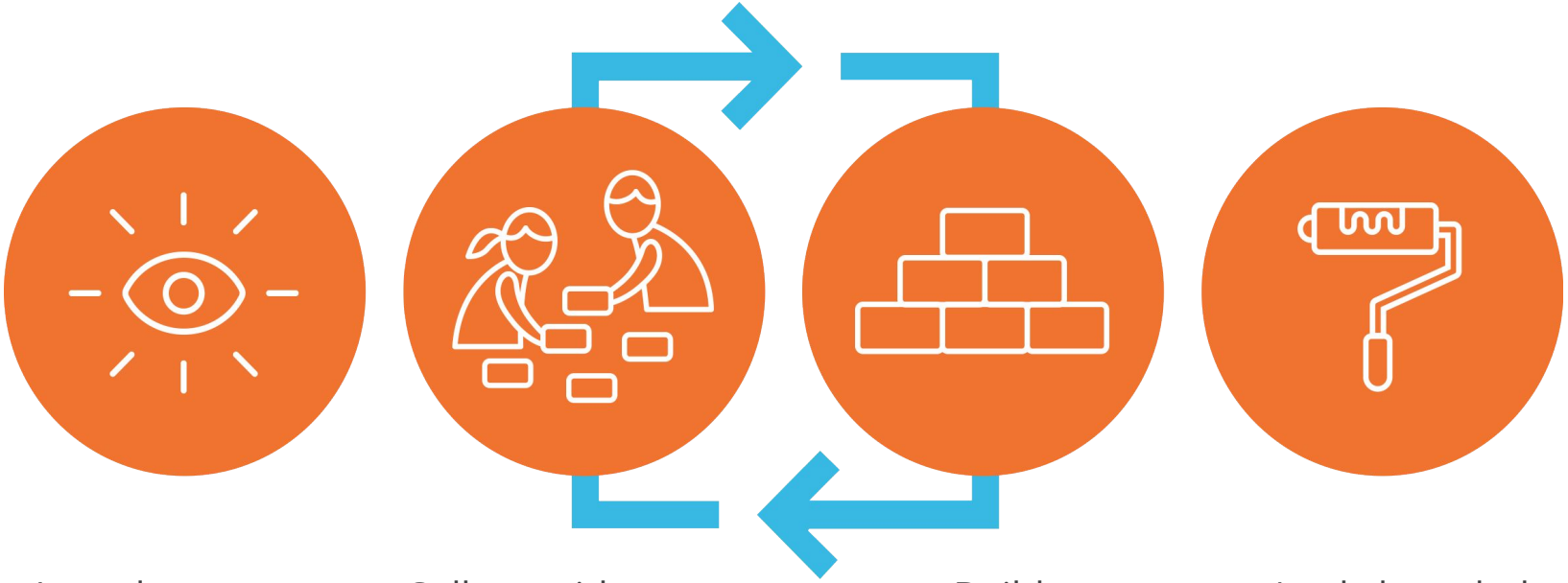
- **Framing the day**
  - **Welcome**
  - **Instructional Materials**
- Unit Internalization
- Planning to teach
  - Collecting evidence of student learning to meet diverse learner needs
- Reflection and closing



Amplify Science Refresher

Amplify.

Amplify Science Instructional Approach

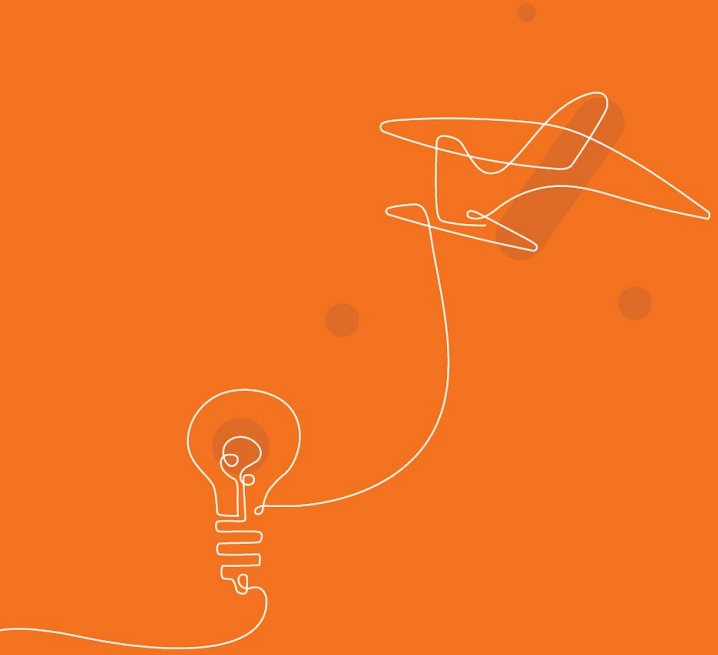


Introduce a phenomenon and a related problem

Collect evidence from multiple sources

Build increasingly complex explanations

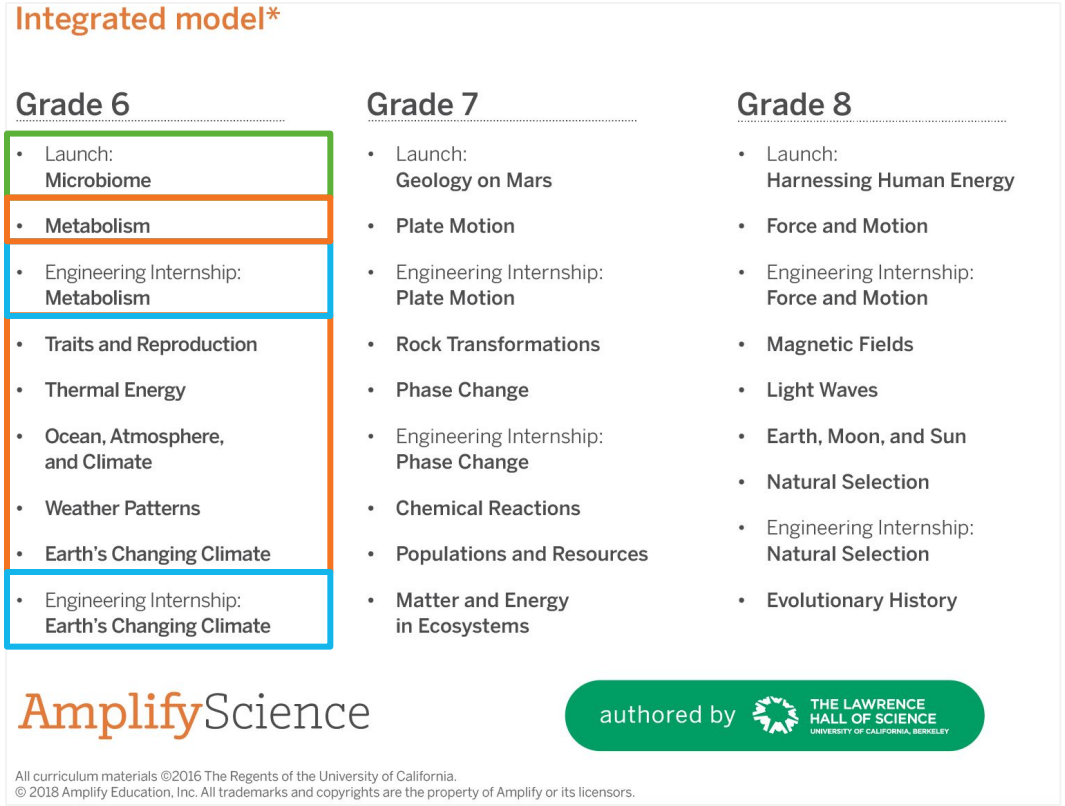
Apply knowledge to solve a different problem



Instructional Materials

Amplify.

Middle school course curriculum structure



Launch unit

- First unit
- 11 lessons

Core units

- Majority of units
- 19 lessons

Engineering Internships

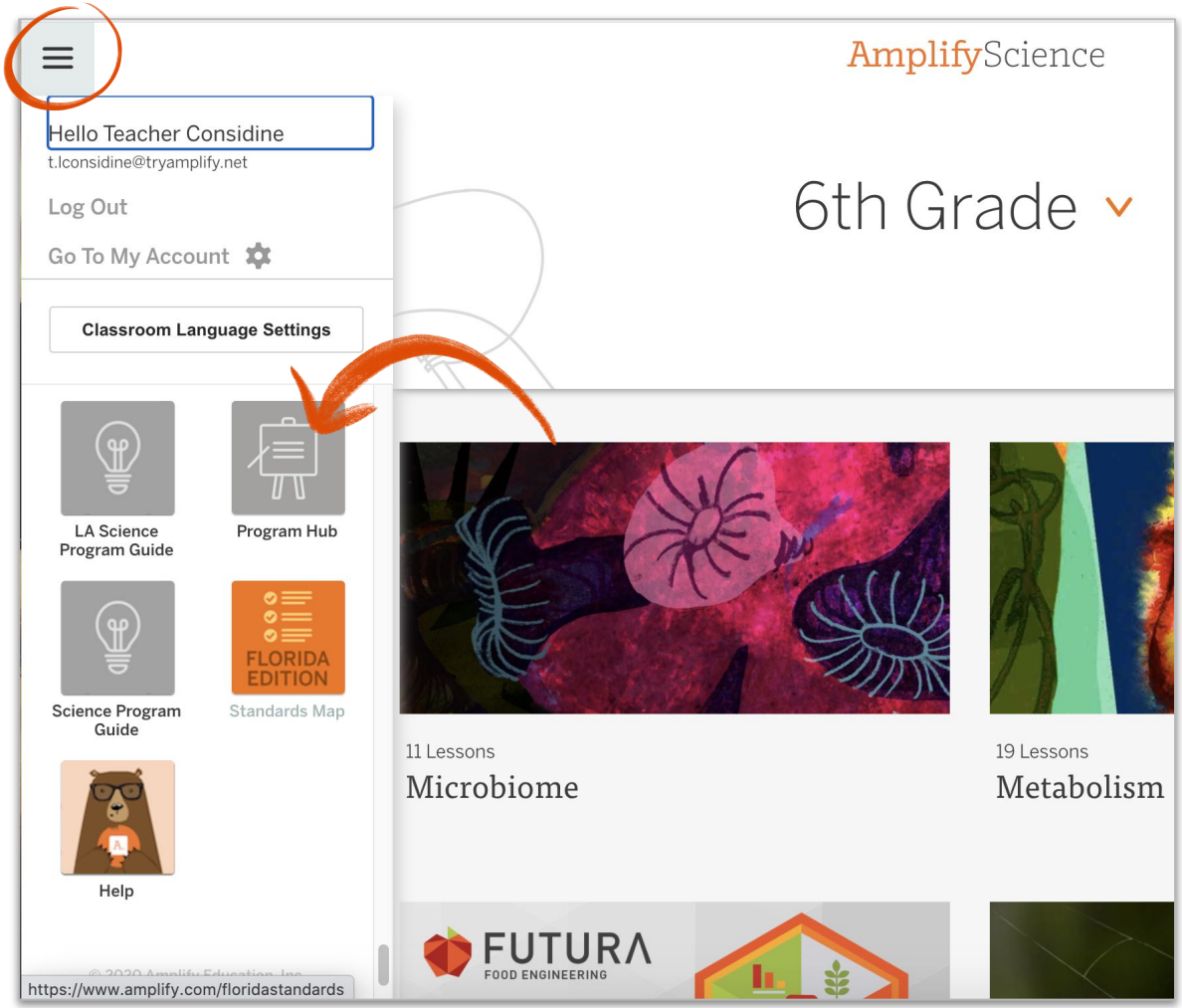
- Two per year
- 10 lessons

Standard Amplify Science Curriculum

Amplify Science @Home Curriculum

Amplify Science @Home Curriculum

In addition to the standard Amplify Science curriculum, you also have access to Amplify Science @Home Curriculum on the Science Program Hub.



AmplifyScience@Home

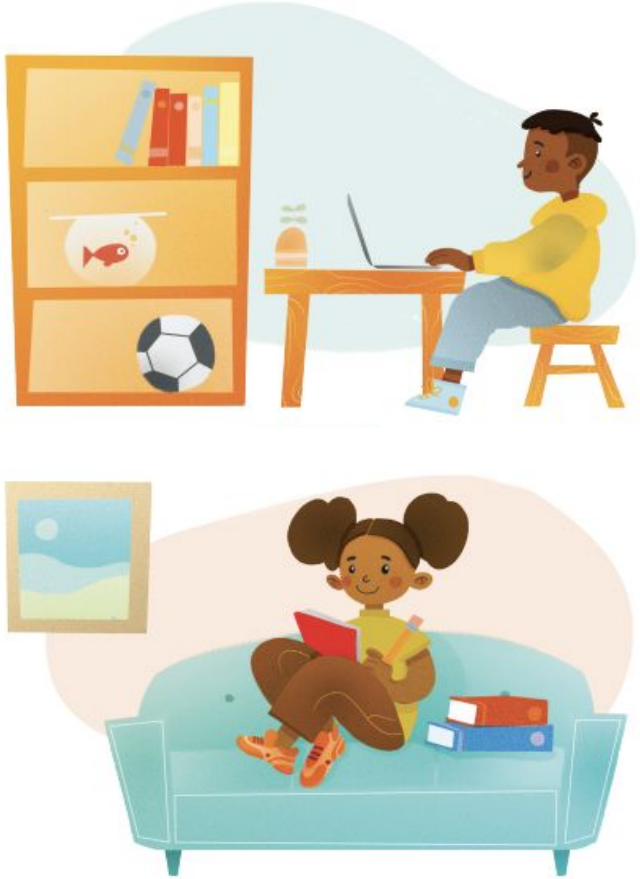
Two different options:

@Home Units

- Digital or print-based versions of Amplify Science units condensed by about 50%

@Home Videos

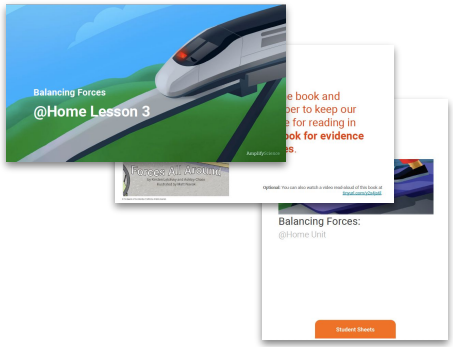
- Video playlists of Amplify Science lessons, taught by real Amplify Science teachers



@Home Units

A shift in approach to respond to user feedback

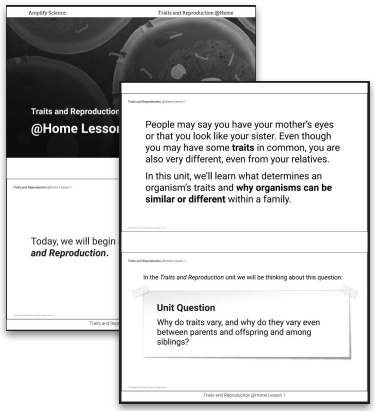
Original approach: two different resources

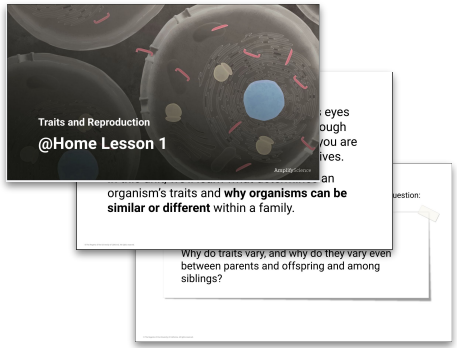


Print-based: @Home packets

Digital: @Home slides and student sheets

Updated approach: one resource, two formats





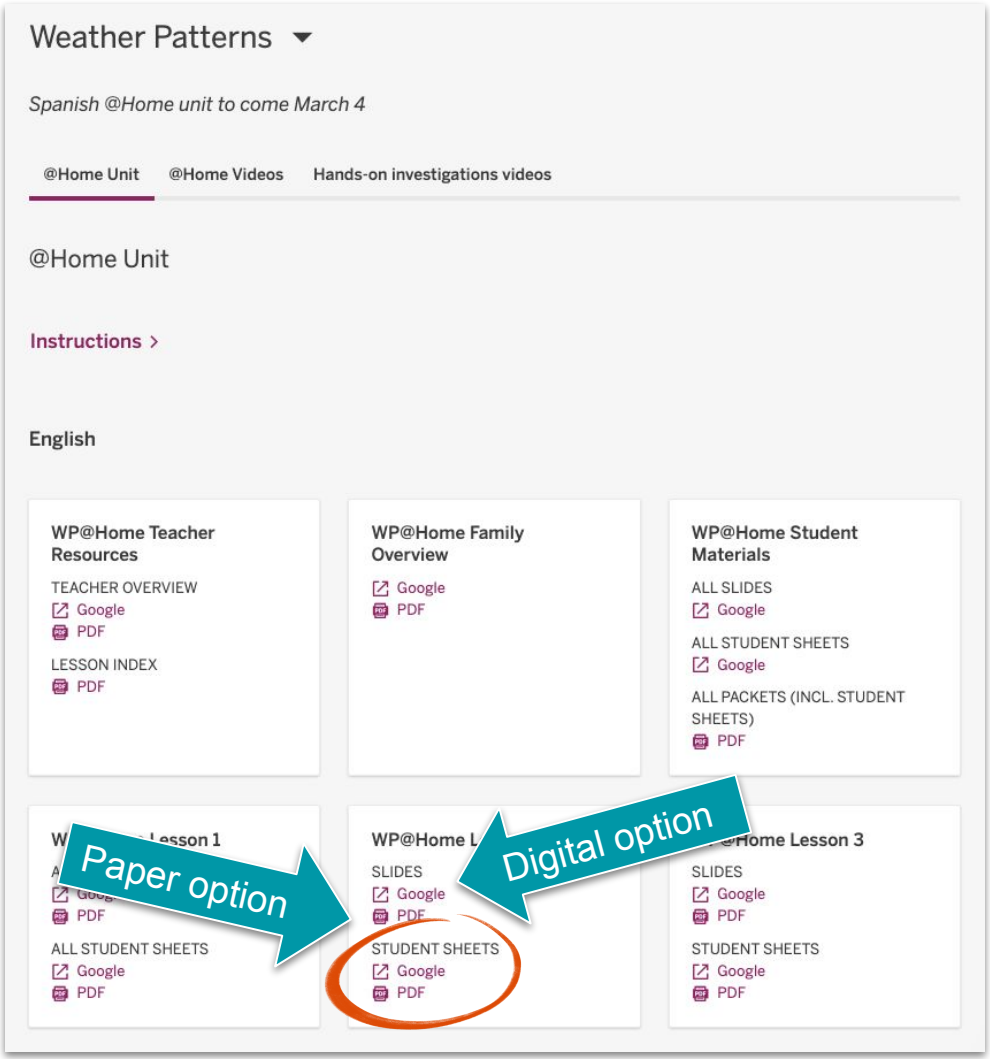
Print-based: PDFs of @Home Slides and student sheets

Digital: Google Slides @Home Slides and Google Doc student sheets

Amplify Science @Home Curriculum

You have access to the Weather Patterns @Home Unit.

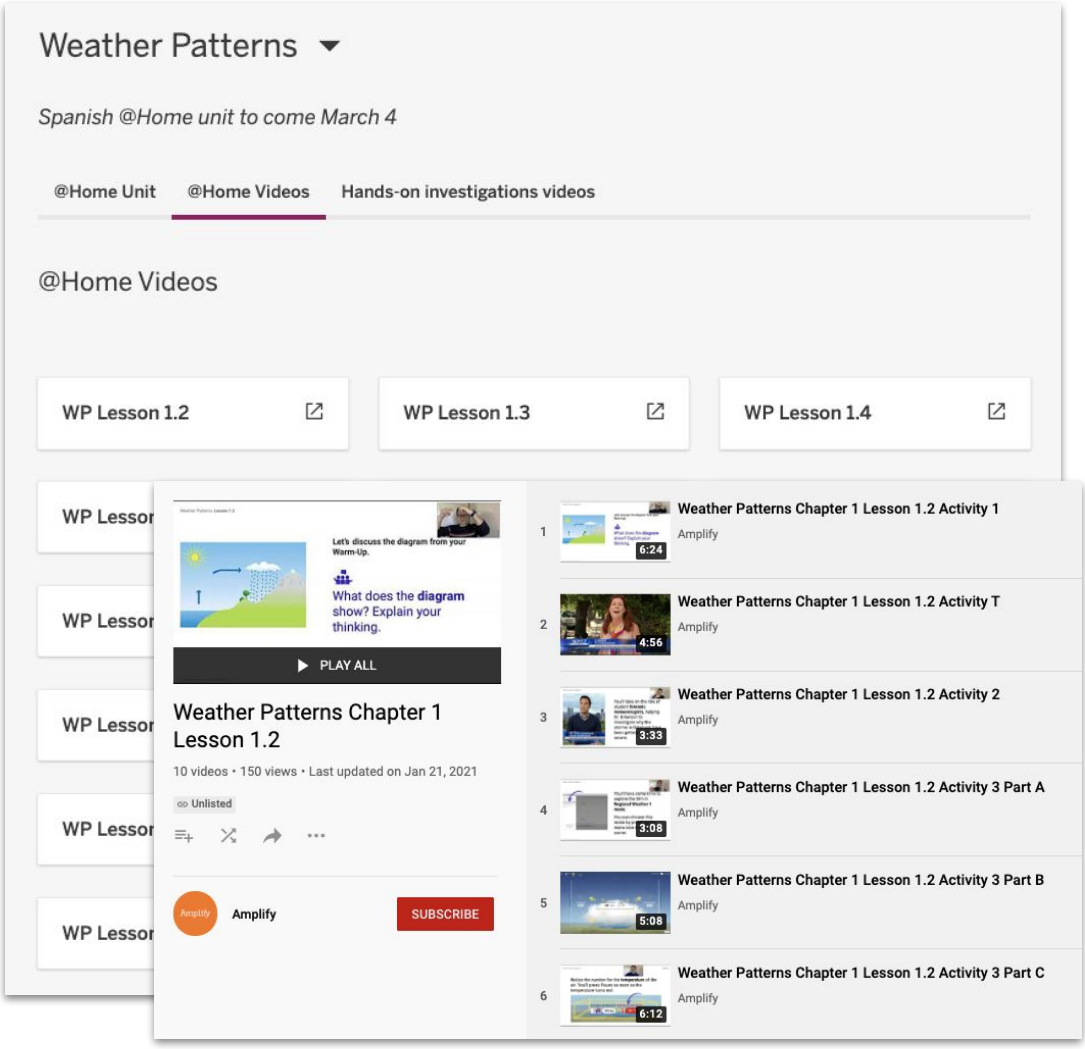
The Weather Patterns @Home Unit has **14 lessons.** Each lesson is written to be **30 minutes** long.

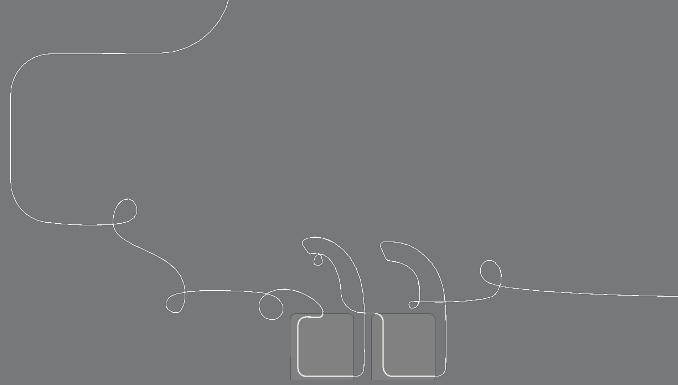


Amplify Science @Home Curriculum

You have access to the Weather Patterns @Home Videos.

There are 16 @Home Videos for the Weather Patterns unit. This covers all lessons expect for the assessment lessons (1.1, 2.5, and 4.4). The video playlists on YouTube teach the standard Amplify Science Lessons.



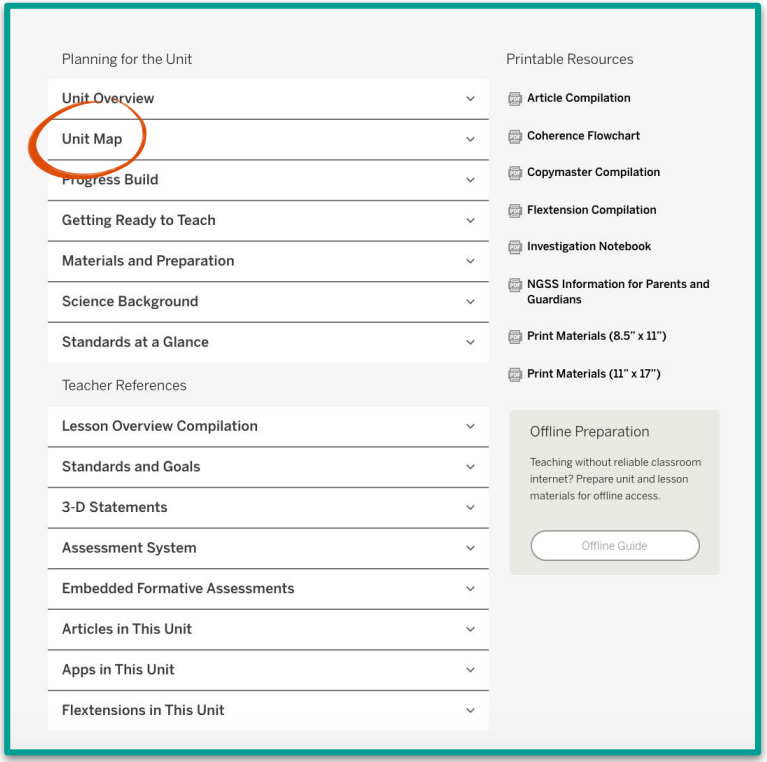


Questions?

Plan for the day

- Framing the day
  - Welcome
  - Instructional Materials
- **Unit Internalization**
- Planning to teach
  - Collecting evidence of student learning to meet diverse learner needs
- Reflection and closing

Unit Guide Resources



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 Next Generation Science Standards (NGSS) (Performance Expectations, Science and Engineering Practices, Disciplinary Core Ideas, and Crosscutting Concepts), Common Core State Standards for English Language Arts, and Common Core State Standards for Mathematics

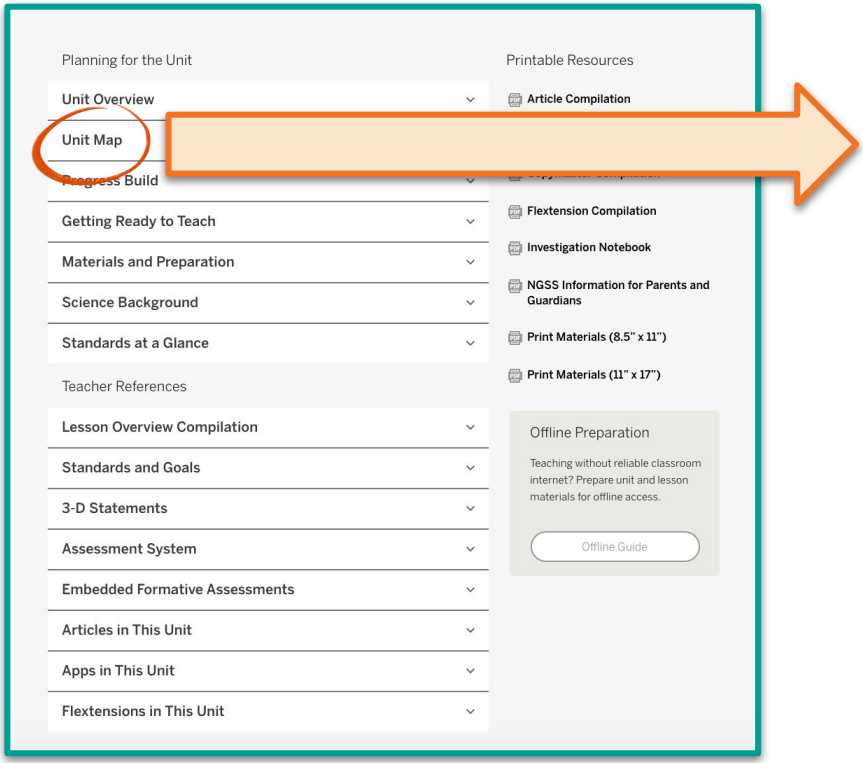
Teacher references

Lesson Overview Compilation	Lesson Overview of each lesson in the unit, including lesson summary, activity purposes, and timing
Standards and Goals	Lists NGSS (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)

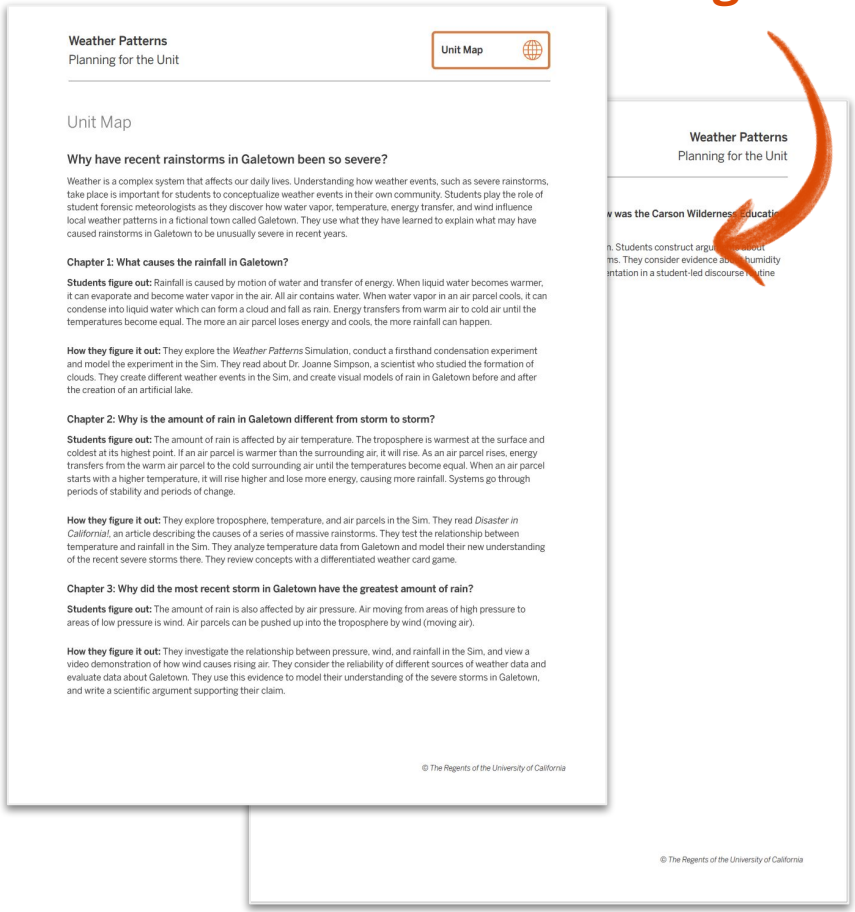
Printable resources

Copymaster Compilation	Compilation of all copymasters for the teacher to print and copy throughout the unit
Investigation Notebook	Digital version of the Investigation Notebook, for copying and projecting
Multi-Language Glossary	Glossary of unit vocabulary in multiple languages
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 Unit Question, Chapter Questions, and Key Concepts provided in the kit

Unit Map

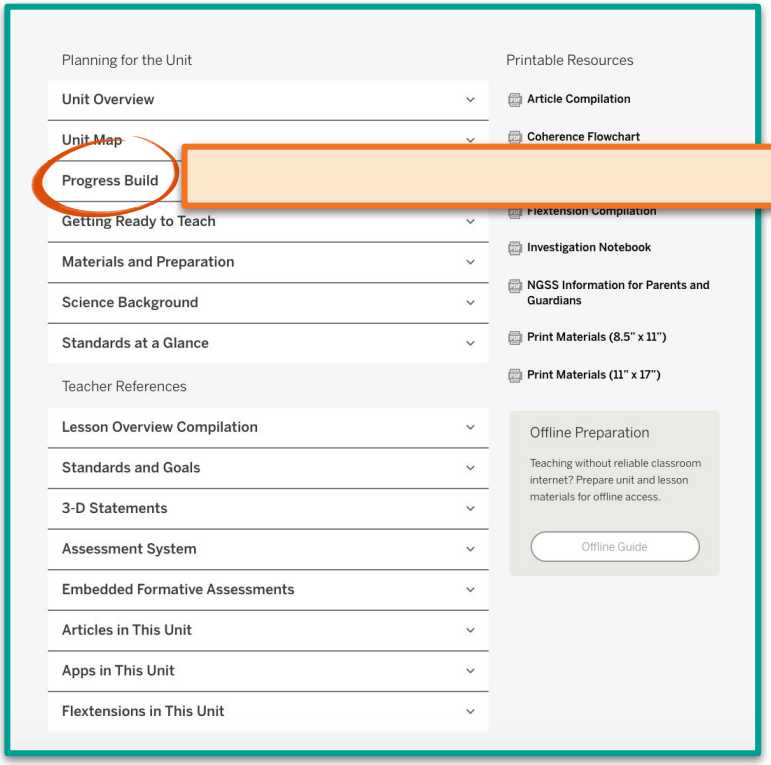


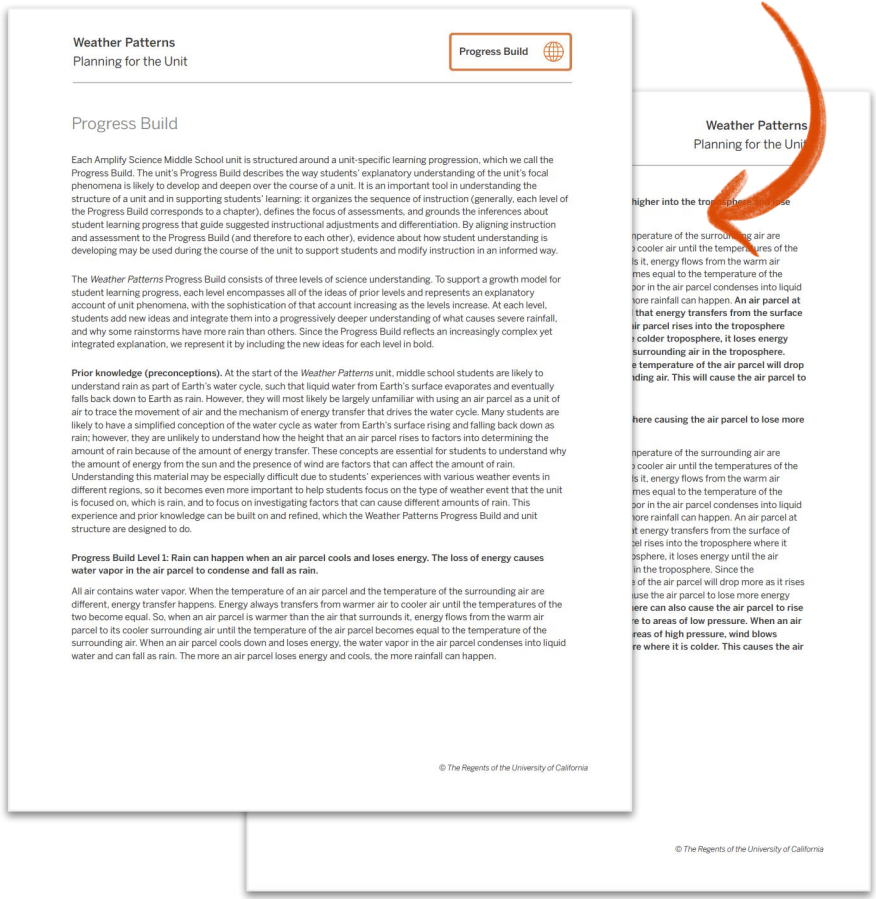
Pages 2-3



Progress Build

Pages 4-5





Weather Patterns
Planning for the Unit

Progress Build

Progress Build

Each Amplify Science Middle School unit is structured around a unit-specific learning progression, which we call the Progress Build. The unit's Progress Build describes the way students' explanatory understanding of the unit's focal phenomena is likely to develop and deepen over the course of a unit. It is an important tool in understanding the structure of a unit and in supporting students' learning: it organizes the sequence of instruction (generally, each level of the Progress Build corresponds to a chapter), defines the focus of assessments, and grounds the inferences about student learning progress that guide suggested instructional adjustments and differentiation. By aligning instruction and assessment to the Progress Build (and therefore to each other), evidence about how student understanding is developing may be used during the course of the unit to support students and modify instruction in an informed way.

The *Weather Patterns* Progress Build consists of three levels of science understanding. To support a growth model for student learning progress, each level encompasses all of the ideas of prior levels and represents an explanatory account of unit phenomena, with the sophistication of that account increasing as the levels increase. At each level, students add new ideas and integrate them into a progressively deeper understanding of what causes severe rainfall, and why some rainstorms have more rain than others. Since the Progress Build reflects an increasingly complex yet integrated explanation, we represent it by including the new ideas for each level in bold.

Prior knowledge (preconceptions). At the start of the *Weather Patterns* unit, middle school students are likely to understand rain as part of Earth's water cycle, such that liquid water from Earth's surface evaporates and eventually falls back down to Earth as rain. However, they will most likely be largely unfamiliar with using an air parcel as a unit of air to trace the movement of air and the mechanism of energy transfer that drives the water cycle. Many students are likely to have a simplified conception of the water cycle as water from Earth's surface rising and falling back down as rain; however, they are unlikely to understand how the height that an air parcel rises to factors into determining the amount of rain because of the amount of energy transfer. These concepts are essential for students to understand why the amount of energy from the sun and the presence of wind are factors that can affect the amount of rain. Understanding this material may be especially difficult due to students' experiences with various weather events in different regions, so it becomes even more important to help students focus on the type of weather event that the unit is focused on, which is rain, and to focus on investigating factors that can cause different amounts of rain. This experience and prior knowledge can be built on and refined, which the Weather Patterns Progress Build and unit structure are designed to do.

Progress Build Level 1: Rain can happen when an air parcel cools and loses energy. The loss of energy causes water vapor in the air parcel to condense and fall as rain.

All air contains water vapor. When the temperature of an air parcel and the temperature of the surrounding air are different, energy transfer happens. Energy always transfers from warmer air to cooler air until the temperatures of the two become equal. So, when an air parcel is warmer than the air that surrounds it, energy flows from the warm air parcel to its cooler surrounding air until the temperature of the air parcel becomes equal to the temperature of the surrounding air. When an air parcel cools down and loses energy, the water vapor in the air parcel condenses into liquid water and can fall as rain. The more an air parcel loses energy and cools, the more rainfall can happen.

Unit Internalization Work Time

Pages 2-5

Guided Unit Internalization

Part 1: Unit-level internalization

Unit title:

What is the phenomenon students are investigating in your unit?

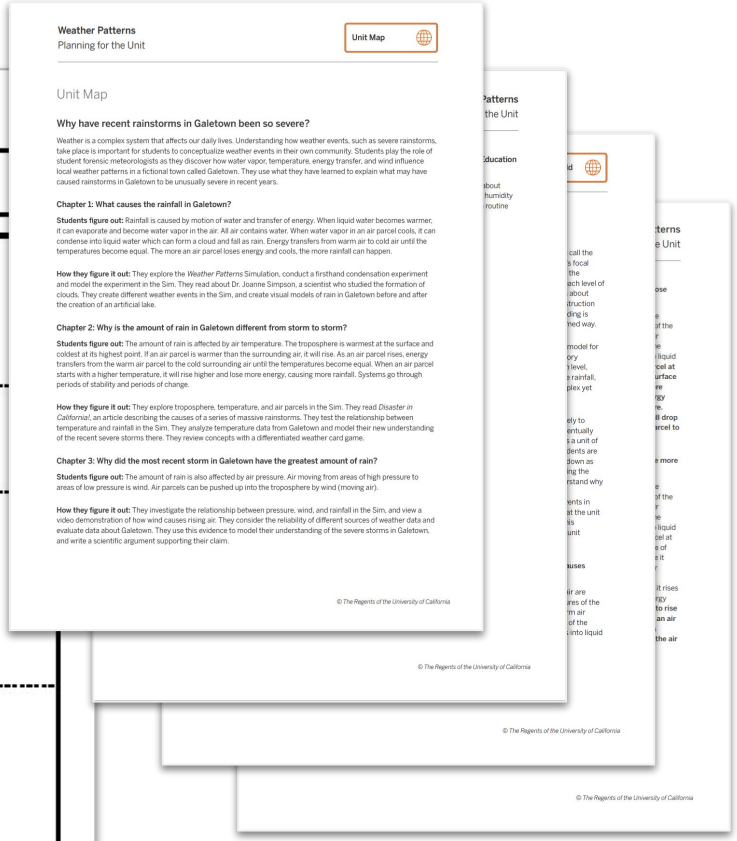
Unit Question:

Student role:

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

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

Page 6



Weather Patterns
Planning for the Unit

Unit Map

Unit Map

Why have recent rainstorms in Galetown been so severe?

Weather is a complex system that affects our daily lives. Understanding how weather events, such as severe rainstorms, take place is important for students to conceptualize weather events in their own community. Students play the role of student forensic meteorologists as they discover how water vapor, temperature, energy transfer, and wind influence local weather patterns in a fictional town called Galetown. They use what they have learned to explain what may have caused rainstorms in Galetown to be unusually severe in recent years.

Chapter 1: What causes the rainfall in Galetown?

Students figure out: Rainfall is caused by motion of water and transfer of energy. When liquid water becomes warmer, it can evaporate and become water vapor in the air. All air contains water. When water vapor in an air parcel cools, it can condense into liquid water which can form a cloud and fall as rain. Energy transfers from warm air to cold air until the temperatures become equal. The more an air parcel loses energy and cools, the more rainfall can happen.

How they figure it out: They explore the *Weather Patterns* Simulation, conduct a firsthand condensation experiment and model the experiment in the Sim. They read about Dr. Joanne Simpson, a scientist who studied the formation of clouds. They create different weather events in the Sim, and create visual models of rain in Galetown before and after the creation of an artificial lake.

Chapter 2: Why is the amount of rain in Galetown different from storm to storm?

Students figure out: The amount of rain is affected by air temperature. The troposphere is warmest at the surface and coldest at its highest point. If an air parcel is warmer than the surrounding air, it will rise. As an air parcel rises, energy transfers from the warm air parcel to the cold surrounding air until the temperatures become equal. When an air parcel starts with a higher temperature, it will rise higher and lose more energy, causing more rainfall. Systems go through periods of stability and periods of change.

How they figure it out: They explore troposphere, temperature, and air parcels in the Sim. They read *Disaster in California!*, an article describing the causes of a series of massive rainstorms. They test the relationship between temperature and rainfall in the Sim. They analyze temperature data from Galetown and model their new understanding of the recent severe storms there. They review concepts with a differentiated weather card game.

Chapter 3: Why did the most recent storm in Galetown have the greatest amount of rain?

Students figure out: The amount of rain is also affected by air pressure. Air moving from areas of high pressure to areas of low pressure is wind. Air parcels can be pushed up into the troposphere by wind (moving air).

How they figure it out: They investigate the relationship between pressure, wind, and rainfall in the Sim, and view a video demonstration of how wind causes rising air. They consider the reliability of different sources of weather data and evaluate data about Galetown. They use this evidence to model their understanding of the severe storms in Galetown, and write a scientific argument supporting their claim.

Unit Guide Document

Unit Map

Lesson Overview Compilation

Unit Map

Progress Buld

Guided Unit Internalization

Part 1: Unit-level internalization

Unit title: Weather Patterns

What is the phenomenon students are investigating in your unit?

Why have rain storms in Galetown been unusually severe in recent years?

Unit Question:

Why do some rain storms have more rain than others?

Student role:

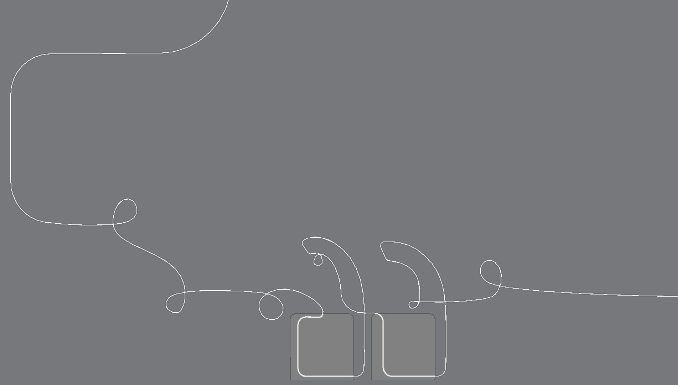
Student forensic meteorologists

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

Rainfall is caused by motion of water and transfer of energy. The amount of rain is affected by air temperature and air pressure. The troposphere is warmest at the surface and coldest at its highest point. If an air parcel is warmer than the surrounding air, it will rise. As an air parcel rises, energy transfers from the warm air parcel to the cold surrounding air until the temperatures become equal. When an air parcel starts with a higher temperature, it will rise higher and lose more energy, causing more rainfall. Systems go through periods of stability and periods of change. Air moving from areas of high pressure to areas of low pressure is wind. Air parcels can be pushed up into the troposphere by wind.

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

Rain can happen when an air parcel cools and loses energy. The loss of energy causes water vapor in the air parcel to condense and fall as rain. A warmer air parcel has more energy, so it can rise higher into the troposphere and lose more energy, which can result in a greater amount of rain. Wind can push an air parcel higher into the troposphere causing the air parcel to lose more energy, which can result in a greater amount of rain.



Questions?

Plan for the day

- Framing the day
  - Welcome
  - Instructional Materials
- Unit Internalization
- **Planning to teach**
  - **Collecting evidence of student learning to meet diverse learner needs**
- Reflection and closing

Page 2

Unit Map

Why have recent rainstorms in Galetown been so severe?

Weather is a complex system that affects our daily lives. Understanding how weather events, such as severe rainstorms, take place is important for students to conceptualize weather events in their own community. Students play the role of student forensic meteorologists as they discover how water vapor, temperature, energy transfer, and wind influence local weather patterns in a fictional town called Galetown. They use what they have learned to explain what may have caused rainstorms in Galetown to be unusually severe in recent years.

Chapter 1: What causes the rainfall in Galetown?

Students figure out: Rainfall is caused by motion of water and transfer of energy. When liquid water becomes warmer, it can evaporate and become water vapor in the air. All air contains water. When water vapor in an air parcel cools, it can condense into liquid water which can form a cloud and fall as rain. Energy transfers from warm air to cold air until the temperatures become equal. The more an air parcel loses energy and cools, the more rainfall can happen.

How they figure it out: They explore the *Weather Patterns* Simulation, conduct a firsthand condensation experiment and model the experiment in the Sim. They read about Dr. Joanne Simpson, a scientist who studied the formation of clouds. They create different weather events in the Sim, and create visual models of rain in Galetown before and after the creation of an artificial lake.

Chapter 1: Understanding Rain Clouds

JUMP DOWN TO CHAPTER OVERVIEW

Lesson 1.1:
Pre-Unit Assessment

SETTINGS

Lesson 1.2:
Welcome to the Weather Patterns Unit

Lesson 1.3:
Investigating Condensation

Lesson 1.4:
Reading "What Are Clouds?"

Lesson 1.5:
Investigating Why Clouds Produce Rain

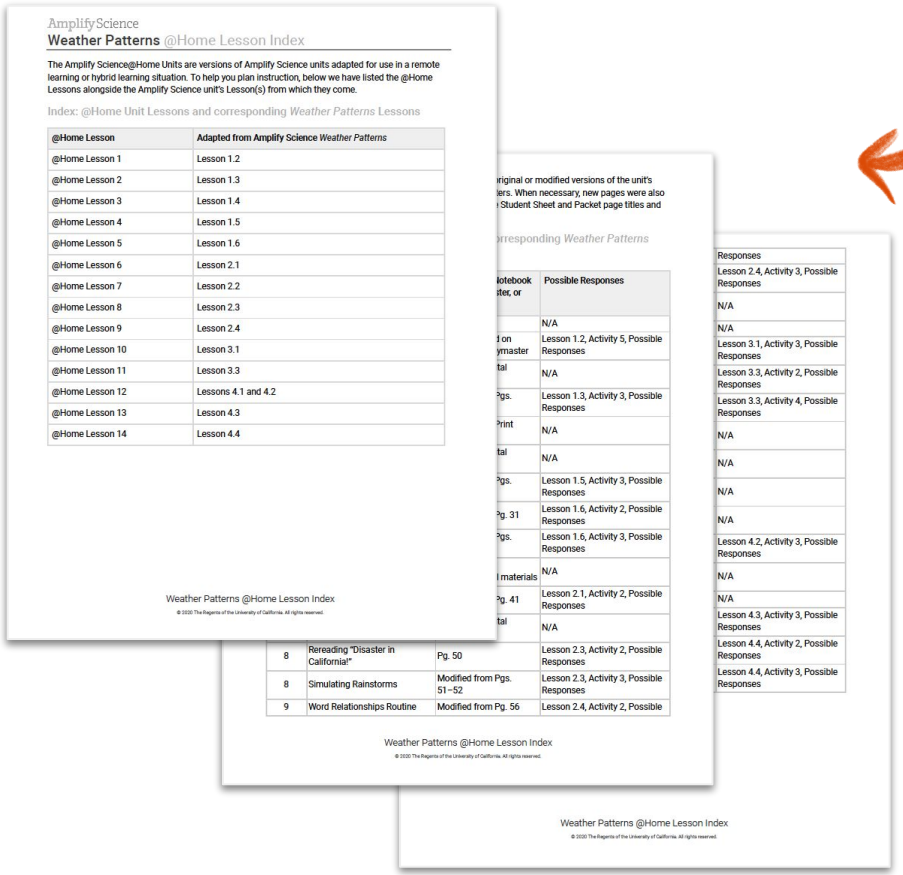
Lesson 1.6:
Explaining Surface Water and Rain in Galetown

@Home Unit Lesson Index

Pages 8-10

This resource correlates lessons from the Standard Curriculum with @Home Unit Lessons.

It also lists the @Home Unit Student Sheets with information about where they came from (i.e. Student Investigation Notebook, copymaster, or new for the @Home Unit)



AmplifyScience
Weather Patterns @Home Lesson Index

The Amplify Science@Home Units are versions of Amplify Science units adapted for use in a remote learning or hybrid learning situation. To help you plan instruction, below we have listed the @Home Lessons alongside the Amplify Science unit's Lesson(s) from which they come.

Index: @Home Unit Lessons and corresponding *Weather Patterns* Lessons

@Home Lesson	Adapted from Amplify Science *Weather Patterns*
@Home Lesson 1	Lesson 1.2
@Home Lesson 2	Lesson 1.3
@Home Lesson 3	Lesson 1.4
@Home Lesson 4	Lesson 1.5
@Home Lesson 5	Lesson 1.6
@Home Lesson 6	Lesson 2.1
@Home Lesson 7	Lesson 2.2
@Home Lesson 8	Lesson 2.3
@Home Lesson 9	Lesson 2.4
@Home Lesson 10	Lesson 3.1
@Home Lesson 11	Lesson 3.3
@Home Lesson 12	Lessons 4.1 and 4.2
@Home Lesson 13	Lesson 4.3
@Home Lesson 14	Lesson 4.4

Weather Patterns @Home Lesson Index

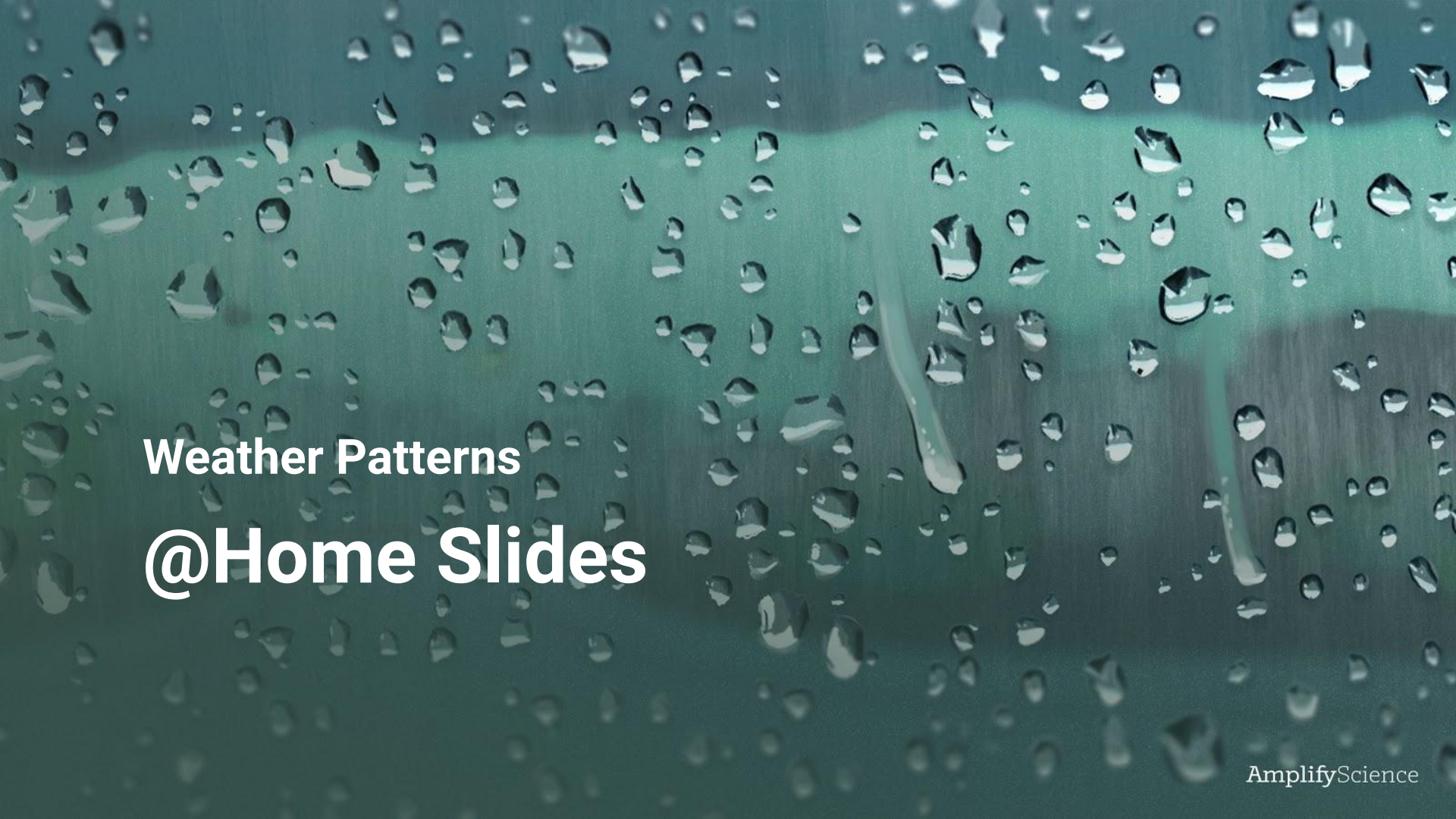
Amplify.

Key activities

- **Introducing the Big Storms in Galetown:** After activating prior knowledge about the water cycle, students are introduced to the unit problem and their role as student forensic meteorologists.
- **Do:** Students use the *Weather Patterns* Sim, or watch a video of the Sim investigation, to investigate how the amount of surface water can affect the amount of water vapor in the air.
- **Reflect:** Students reflect on the water cycle processes they observed in the Sim.
- **Do:** With a member of their household, students observe the weather and water in their environment at home.

Ideas for synchronous or in-person instruction

Before meeting, have students watch the introductory video. While meeting, have students share their ideas about the water cycle. Have students complete the Sim investigation. Then, lead a class discussion about the data they gathered and about the water cycle processes they observed in the Sim.



Weather Patterns

@Home Slides

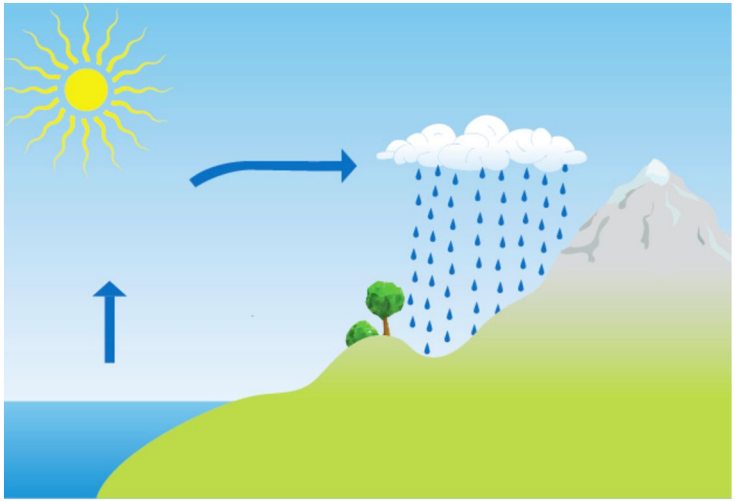
AmplifyScience

Weather Patterns

@Home Lesson 1

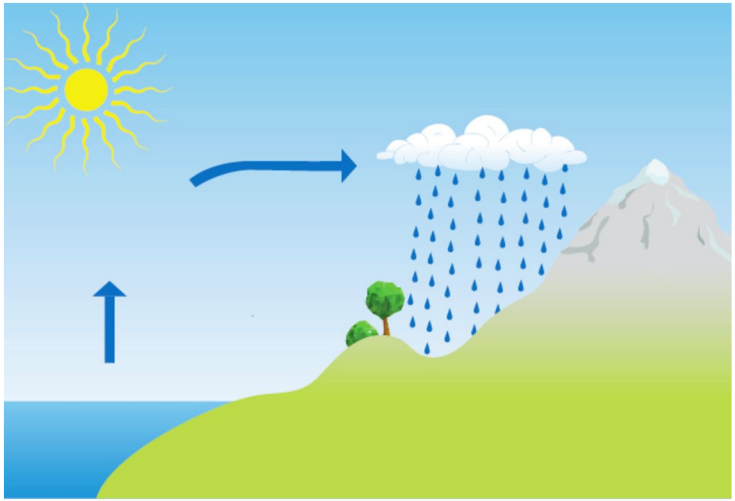
AmplifyScience

Today, we will begin a new unit called ***Weather Patterns*.**



You may have seen a diagram like this before. Examine the diagram and think about the question:

What does this diagram show?



This diagram shows one way of representing the water cycle—the idea that water continually **cycles** among land, ocean, and atmosphere.

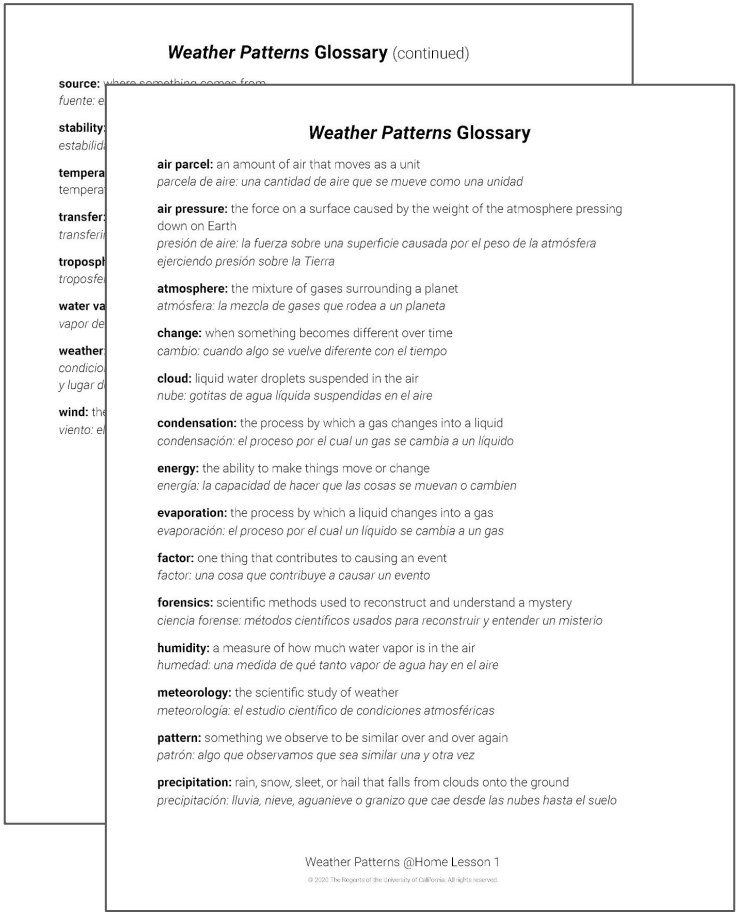
This happens through many different processes.

The water cycle is an important part of weather.

weather

conditions such as rain, clouds, and wind
at a particular time and place

In this lesson and throughout the unit, you will need to **access different pages,** such as the glossary on the next slide. Check with your teacher about how you will access materials and complete and submit work in this @Home Unit.



***Weather Patterns* Glossary** (continued)

source: where something comes from
fuente: el

stability:
estabilid

tempera
tempera

transfer:
transferi

troposph
troposfe

water va
vapor de

weather
condicio
y lugar d

wind: th
viento: el

***Weather Patterns* Glossary**

air parcel: an amount of air that moves as a unit
parcela de aire: una cantidad de aire que se mueve como una unidad

air pressure: the force on a surface caused by the weight of the atmosphere pressing down on Earth
presión de aire: la fuerza sobre una superficie causada por el peso de la atmósfera ejerciendo presión sobre la Tierra

atmosphere: the mixture of gases surrounding a planet
atmósfera: la mezcla de gases que rodea a un planeta

change: when something becomes different over time
cambio: cuando algo se vuelve diferente con el tiempo

cloud: liquid water droplets suspended in the air
nube: gotitas de agua líquida suspendidas en el aire

condensation: the process by which a gas changes into a liquid
condensación: el proceso por el cual un gas se cambia a un líquido

energy: the ability to make things move or change
energía: la capacidad de hacer que las cosas se muevan o cambien

evaporation: the process by which a liquid changes into a gas
evaporación: el proceso por el cual un líquido se cambia a un gas

factor: one thing that contributes to causing an event
factor: una cosa que contribuye a causar un evento

forensics: scientific methods used to reconstruct and understand a mystery
ciencia forense: métodos científicos usados para reconstruir y entender un misterio

humidity: a measure of how much water vapor is in the air
humedad: una medida de qué tanto vapor de agua hay en el aire

meteorology: the scientific study of weather
meteorología: el estudio científico de condiciones atmosféricas

pattern: something we observe to be similar over and over again
patrón: algo que observamos que sea similar una y otra vez

precipitation: rain, snow, sleet, or hail that falls from clouds onto the ground
precipitación: lluvia, nieve, aguanieve o granizo que cae desde las nubes hasta el suelo

Weather Patterns @Home Lesson 1

Throughout the unit, you can look up vocabulary words in the **glossary** to help you understand what they mean. You can find this in your student pages or in the Amplify Library.

Weather Patterns Glossary pages or Amplify Library

In this unit, we will **investigate a mystery** about a town with severe rainstorms to understand why, in general, some rainstorms are bigger than others.

Throughout the unit, we will work to answer this question:

Unit Question

Why do some rainstorms have more rain than others?

What is happening in Galetown?

What do you think might be causing this problem?

You will watch a **video** to learn more about Galetown and its mystery of rainstorms.

As the video plays, listen for information related to these two questions.

Using the print version? Watch the video here: **tinyurl.com/AMPWP-01**

Dr. Emerson, the forensic meteorologist featured in the video, is a fictional character, as is the town where this takes place.

However, the science you will be learning in this unit is real and the scenario in the town is realistic.

A **forensic meteorologist** uses data to study weather that happened in the past.

As student forensic meteorologists you will help Dr. Emerson to investigate why the storms in Galetown have been getting more severe.

What caused Galetown to have more severe rainstorms?

Claim 1: The lake that was built near Galetown caused it to have more severe rainstorms.

Claim 2: Warmer weather caused Galetown to have more severe rainstorms.

Claim 3: Stronger winds caused Galetown to have more severe rainstorms.

We'll investigate these three **claims.** The information we've received from Dr. Emerson and the citizens of Galetown may help us explain the increase in rainfall.

Before we think about and try to decide which claim is strongest, we need to understand what actually causes rain.

In our first chapter of this unit, we will focus on collecting evidence to answer this question:

Chapter 1 Question

What causes the rainfall in Galetown?

Key activities

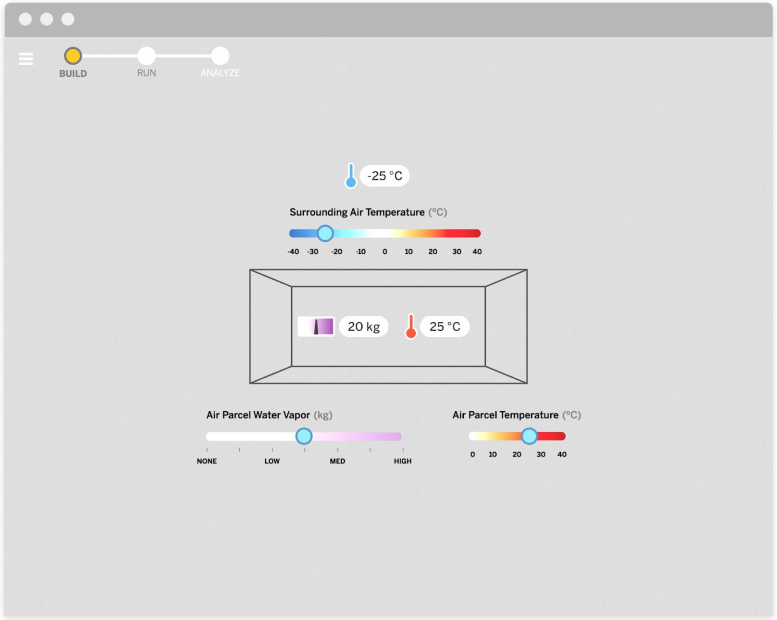
- **Introducing the Big Storms in Galetown:** After activating prior knowledge about the water cycle, students are introduced to the unit problem and their role as student forensic meteorologists.
- **Do:** Students use the *Weather Patterns* Sim, or watch a video of the Sim investigation, to investigate how the amount of surface water can affect the amount of water vapor in the air.
- **Reflect:** Students reflect on the water cycle processes they observed in the Sim.
- **Do:** With a member of their household, students observe the weather and water in their environment at home.

Ideas for synchronous or in-person instruction

Before meeting, have students watch the introductory video. While meeting, have students share their ideas about the water cycle. Have students complete the Sim investigation. Then, lead a class discussion about the data they gathered and about the water cycle processes they observed in the Sim.

In this lesson, you will use the *Weather Pattern* Simulation or watch a video of the Sim investigation.

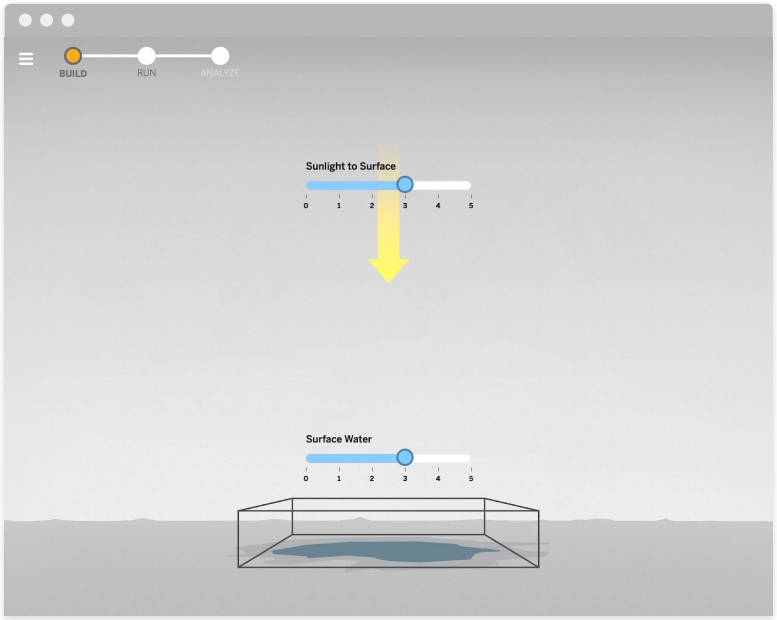
Check with your teacher about how you will access Sims and other digital tools in this @Home Unit.



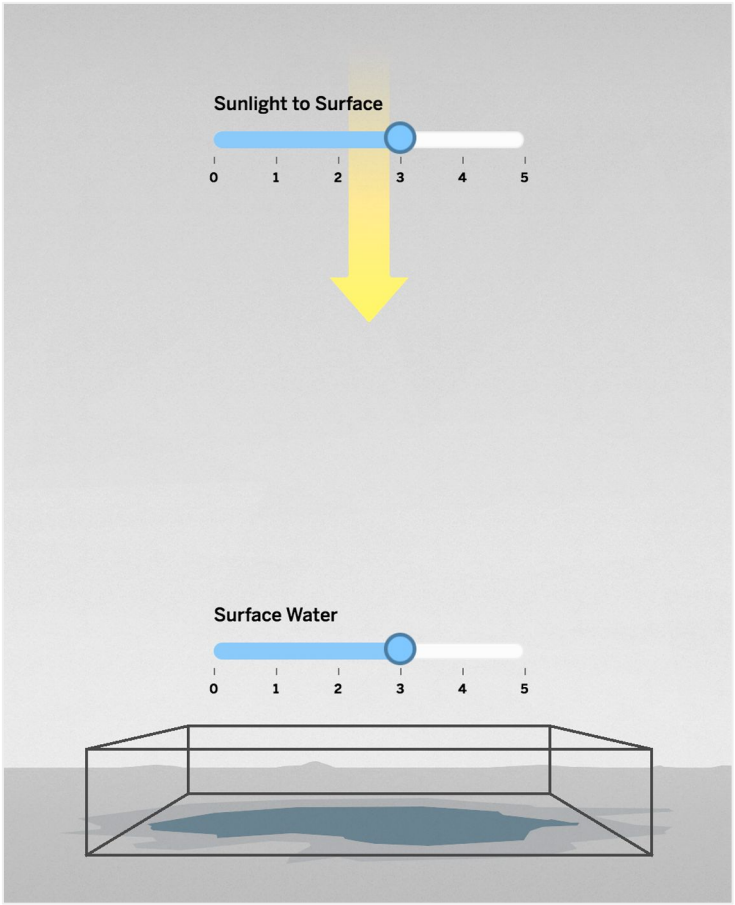
The *Weather Patterns* Simulation is a **scientific model** that will help us investigate what causes rain and why some rainstorms have more rain than others.

Next, you will watch a video about how to use the Sim.

Using the print version? Watch the video here: **tinyurl.com/AMPWP-02**



Which different **processes of the water cycle** did you see in the Sim?



In Build, you can change Sunlight to Surface and Surface Water.

Surface water is water on Earth like lakes and the ocean. Sunlight heats Earth and will also make the surface water evaporate.

What caused Galetown to have more severe rainstorms?

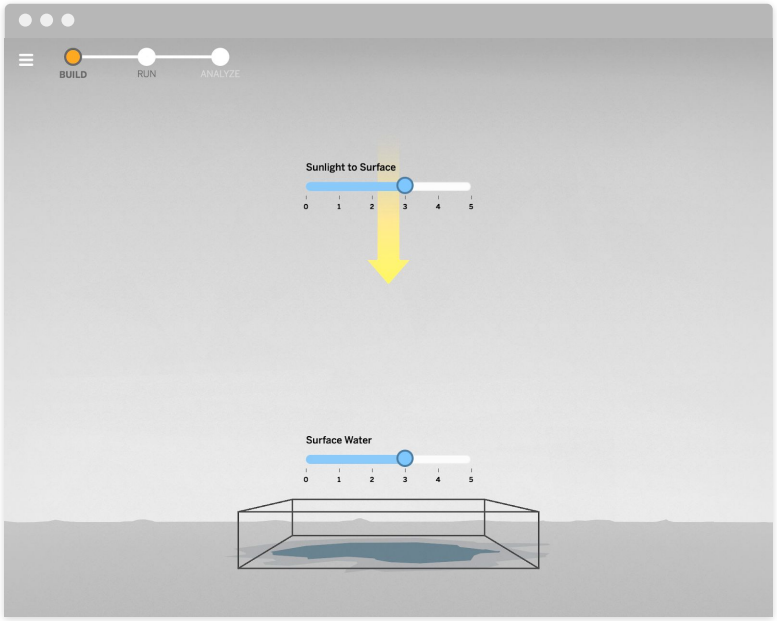
Claim 1: The lake that was built near Galetown caused it to have more severe rainstorms.

Claim 2: Warmer weather caused Galetown to have more severe rainstorms.

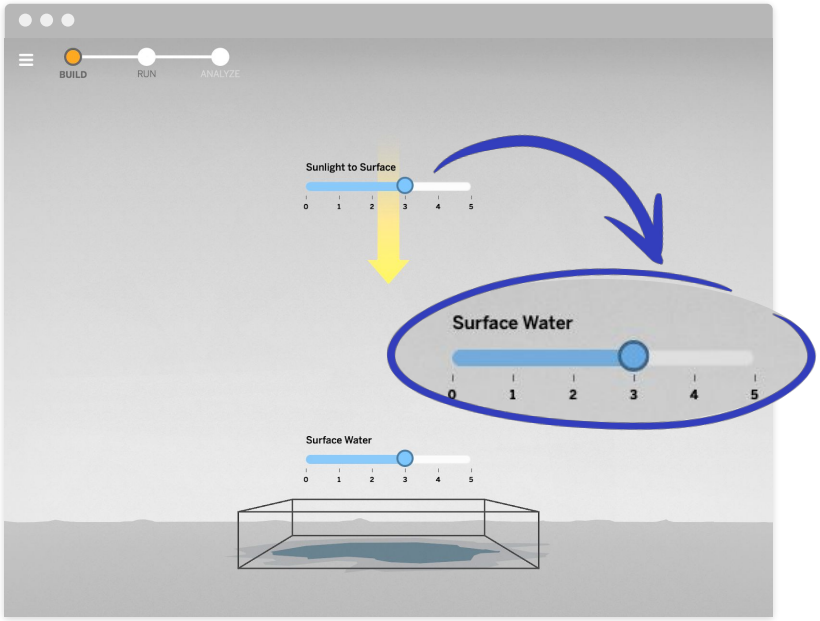
Claim 3: Stronger winds caused Galetown to have more severe rainstorms.

Remember, Claim 1 says that the lake affected Galetown's storms. Think about this question:

How could a lake affect the process of evaporation?

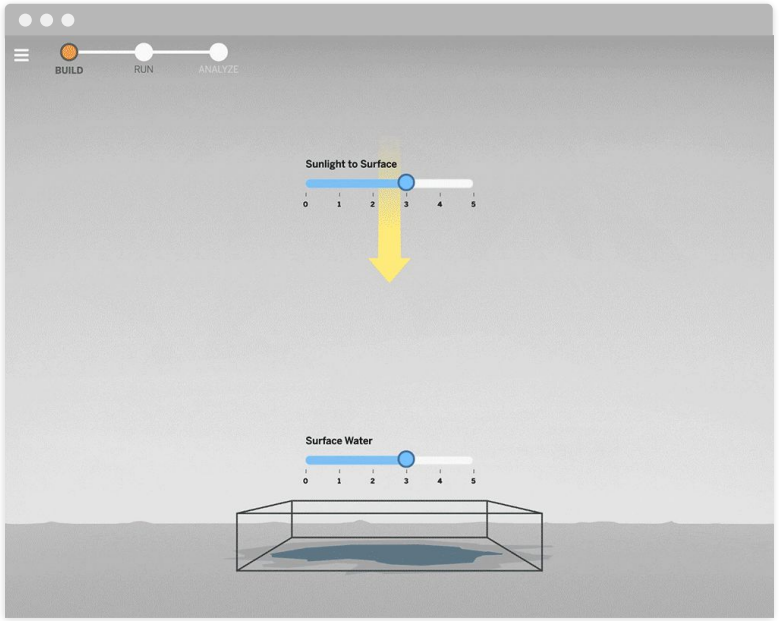


You will use **Regional Weather 1 mode** in the Sim to investigate how the amount of surface water can affect the amount of water vapor that forms.



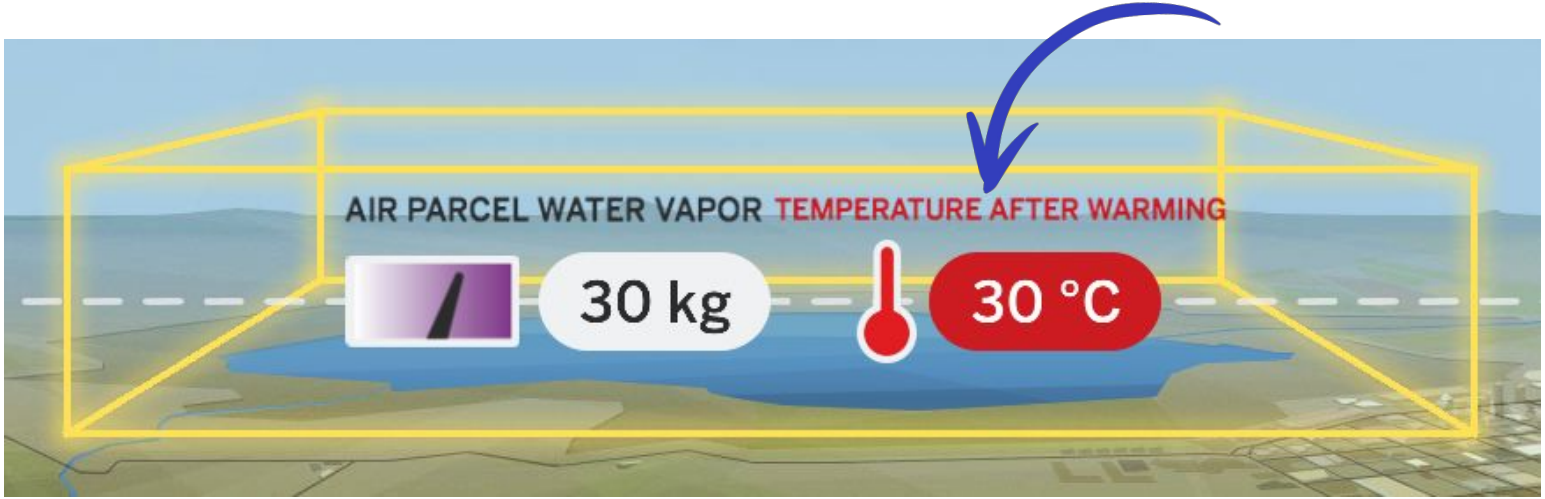
In Build, you will set a different level of **Surface Water** for each test.

You'll keep the Sunlight to Surface level **constant**.

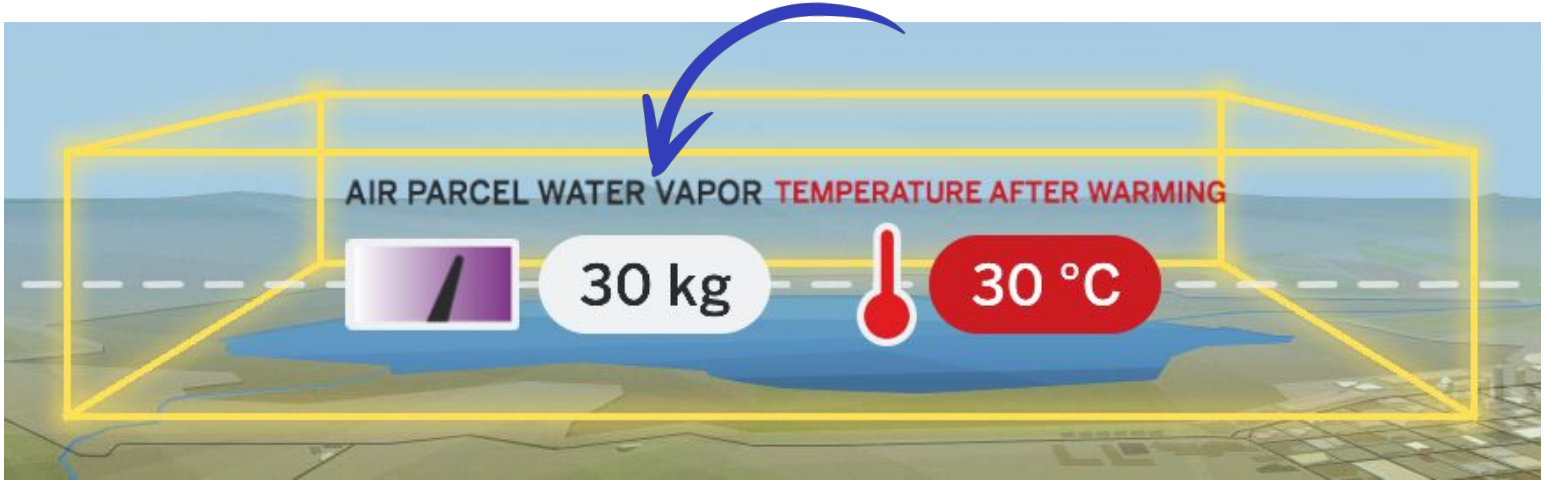


In **Run**, you can observe what happens as sunlight warms the surface.

Notice the number for the **temperature** of the air. You'll press Pause as soon as this number turns red.



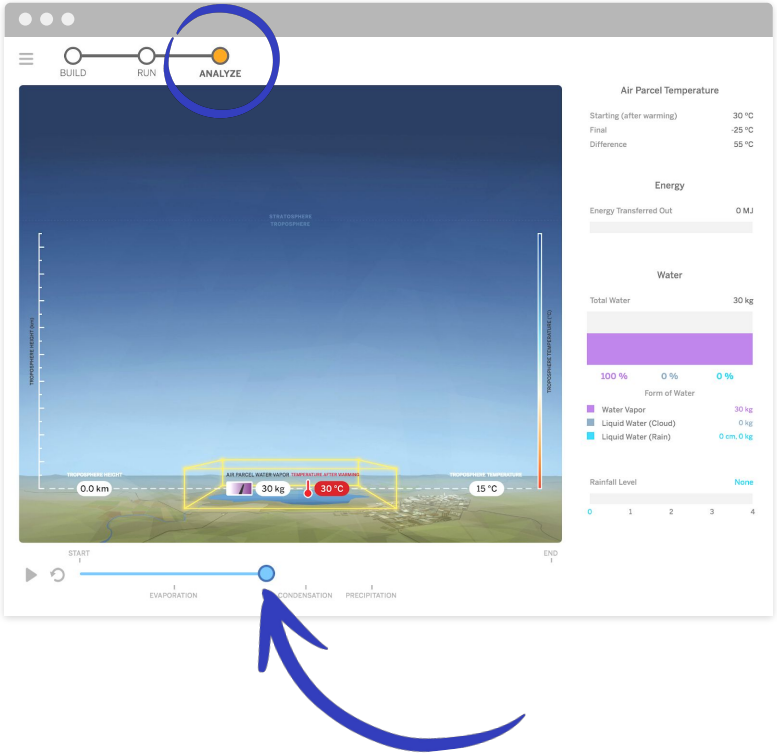
In your data table, you'll record the amount of **water vapor** in the air at the moment the temperature label turns red.



Water vapor is invisible, so we can't see it. But the Sim shows us it is in the air.

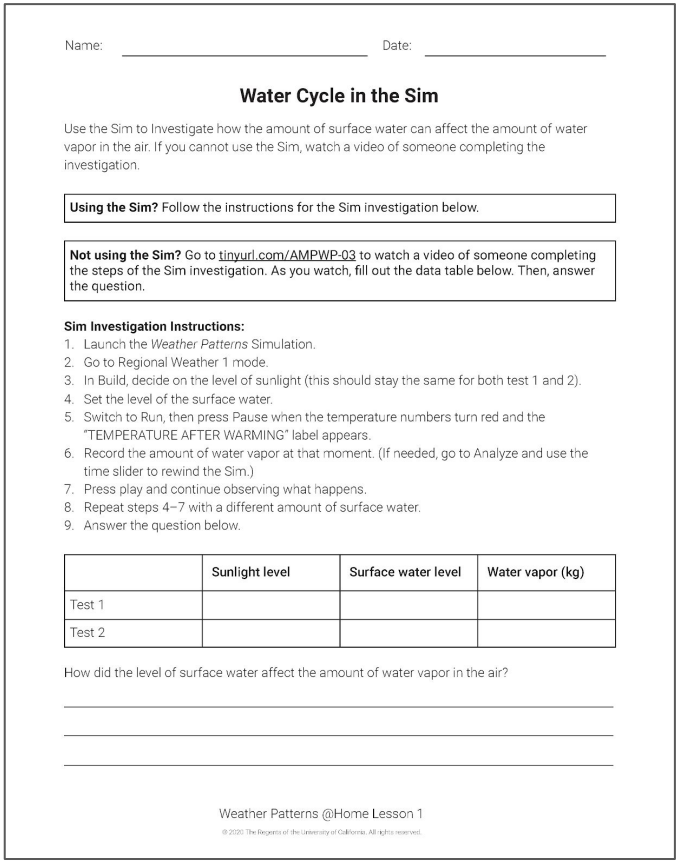
What is **water vapor**?

How does water vapor form?



If you miss the moment when the temperature label turns red in Run, you can go to Analyze.

Analyze has a **time slider** that lets you go back to any time during the run.



Name: _____ Date: _____

Water Cycle in the Sim

Use the Sim to Investigate how the amount of surface water can affect the amount of water vapor in the air. If you cannot use the Sim, watch a video of someone completing the investigation.

Using the Sim? Follow the instructions for the Sim investigation below.

Not using the Sim? Go to tinyurl.com/AMPWP-03 to watch a video of someone completing the steps of the Sim investigation. As you watch, fill out the data table below. Then, answer the question.

Sim Investigation Instructions:

1. Launch the *Weather Patterns* Simulation.
2. Go to Regional Weather 1 mode.
3. In Build, decide on the level of sunlight (this should stay the same for both test 1 and 2).
4. Set the level of the surface water.
5. Switch to Run, then press Pause when the temperature numbers turn red and the "TEMPERATURE AFTER WARMING" label appears.
6. Record the amount of water vapor at that moment. (If needed, go to Analyze and use the time slider to rewind the Sim.)
7. Press play and continue observing what happens.
8. Repeat steps 4–7 with a different amount of surface water.
9. Answer the question below.

	Sunlight level	Surface water level	Water vapor (kg)
Test 1			
Test 2			

How did the level of surface water affect the amount of water vapor in the air?

_____

_____

_____

Weather Patterns @Home Lesson 1

Go to the Water Cycle in the Sim activity. Use the Sim or watch a video of this Sim investigation.

Investigate how the amount of surface water can affect the amount of water vapor in the air.

Water Cycle in the Sim page or **Lesson 1.2, Activity 3, Part 2**

Key activities

- **Introducing the Big Storms in Galetown:** After activating prior knowledge about the water cycle, students are introduced to the unit problem and their role as student forensic meteorologists.
- **Do:** Students use the *Weather Patterns* Sim, or watch a video of the Sim investigation, to investigate how the amount of surface water can affect the amount of water vapor in the air.
- **Reflect:** Students reflect on the water cycle processes they observed in the Sim.
- **Do:** With a member of their household, students observe the weather and water in their environment at home.

Ideas for synchronous or in-person instruction

Before meeting, have students watch the introductory video. While meeting, have students share their ideas about the water cycle. Have students complete the Sim investigation. Then, lead a class discussion about the data they gathered and about the water cycle processes they observed in the Sim.

Evaporation is one process of the water cycle that you observed in the Sim.

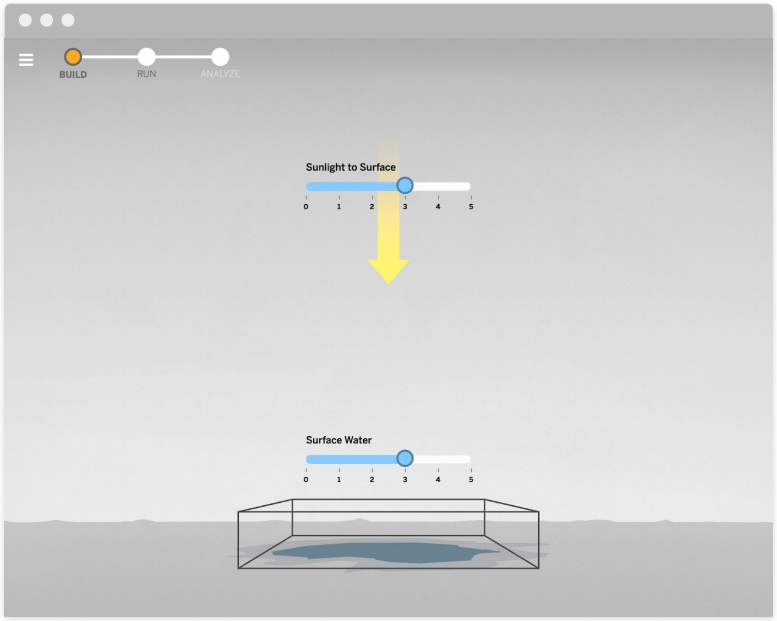
evaporation

the process by by which a liquid changes into a gas

You observed how surface water can affect the amount of water vapor in the air.

water vapor

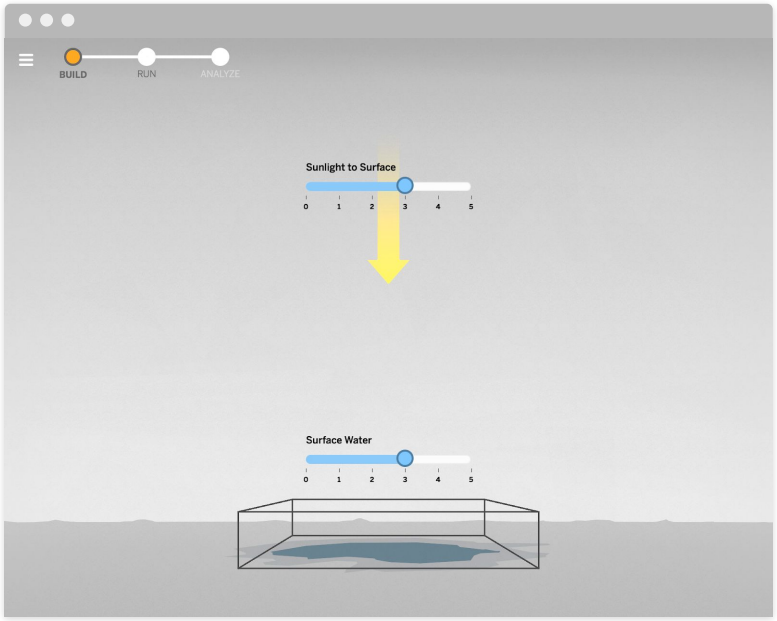
water as a gas



Use your data and observations to think about these questions.

What evidence did you see of **evaporation,** and how did it occur?

What happened when you changed the amount of **surface water?**



You should have noticed the amount of water vapor increased in the air parcel. **The sun heats up the surface water, which causes it to evaporate.**

When you had a higher amount of surface water, more water evaporated, causing more water vapor in the air.

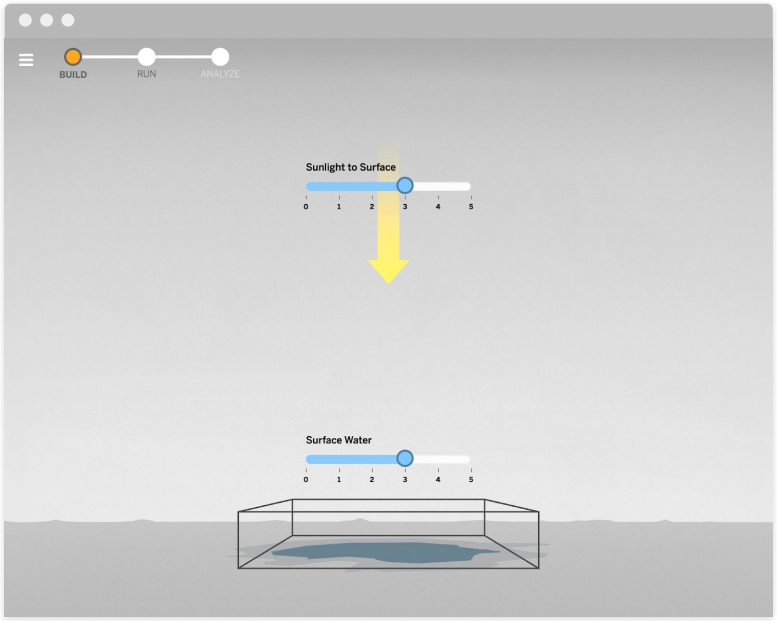
What you observed in the Sim helps you understand this **key concept**:

1. **When liquid water becomes warmer it can evaporate and become water vapor in the air. All air contains water.**

Condensation is another process of the water cycle that you may have observed in the Sim.

condensation

the process by which a gas changes into a liquid



Think back to your Sim investigation.

What evidence of **condensation** did you see in the Sim?

You should have noticed water vapor turned into a cloud, which then turned into rain.

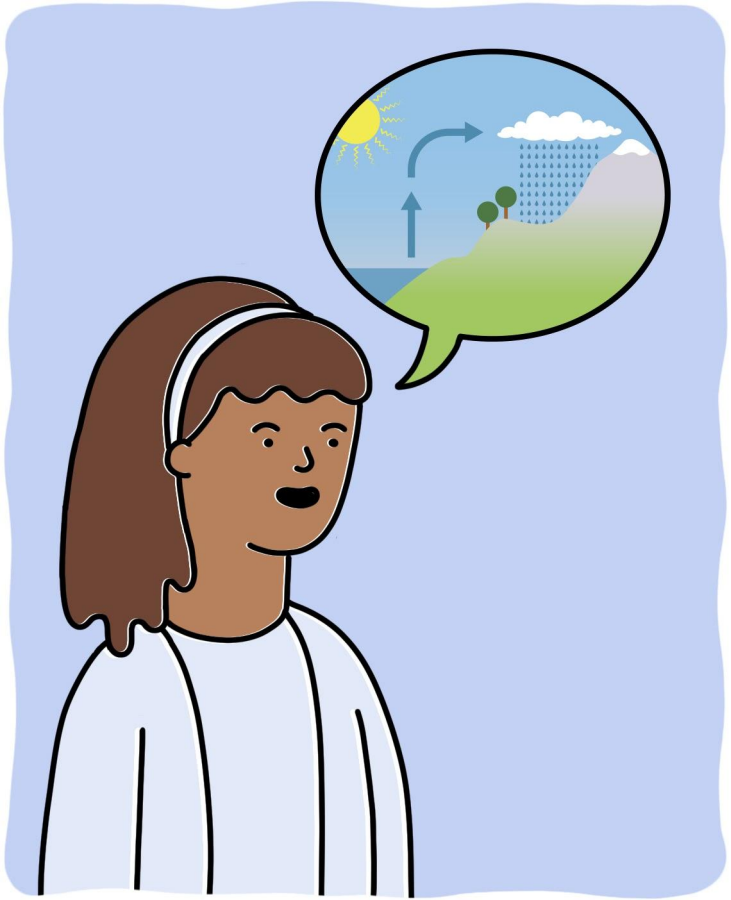
In the next lesson, you will further investigate condensation.

Key activities

- **Introducing the Big Storms in Galetown:** After activating prior knowledge about the water cycle, students are introduced to the unit problem and their role as student forensic meteorologists.
- **Do:** Students use the *Weather Patterns* Sim, or watch a video of the Sim investigation, to investigate how the amount of surface water can affect the amount of water vapor in the air.
- **Reflect:** Students reflect on the water cycle processes they observed in the Sim.
- **Do:** With a member of their household, students observe the weather and water in their environment at home.

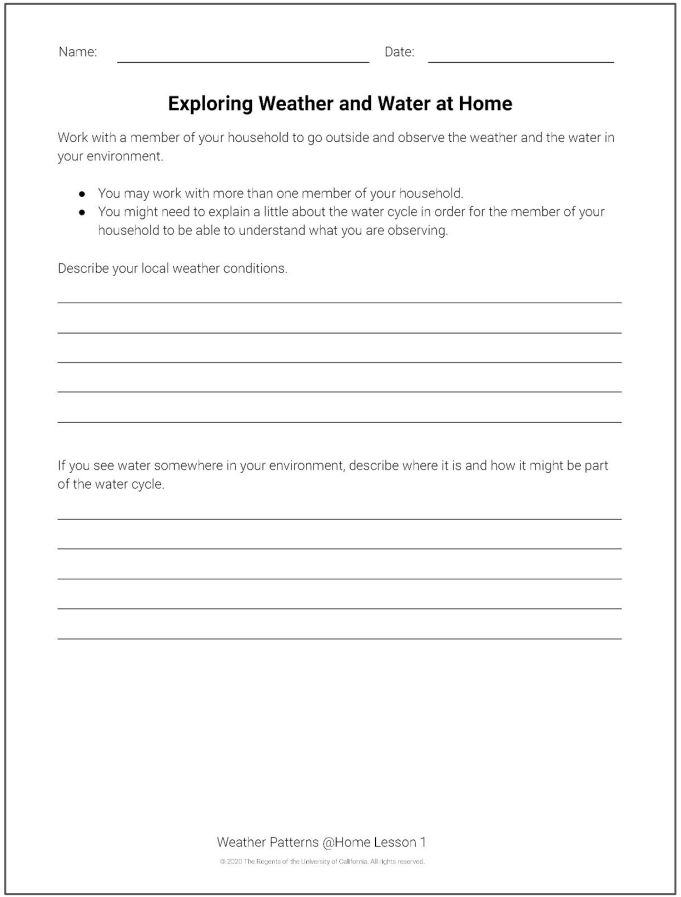
Ideas for synchronous or in-person instruction

Before meeting, have students watch the introductory video. While meeting, have students share their ideas about the water cycle. Have students complete the Sim investigation. Then, lead a class discussion about the data they gathered and about the water cycle processes they observed in the Sim.



For the last activity, you will **choose someone in your household** to go outside with to observe weather and water.

You may need to explain the water cycle.



Name: _____ Date: _____

Exploring Weather and Water at Home

Work with a member of your household to go outside and observe the weather and the water in your environment.

- You may work with more than one member of your household.
- You might need to explain a little about the water cycle in order for the member of your household to be able to understand what you are observing.

Describe your local weather conditions.

_____

_____

_____

_____

_____

If you see water somewhere in your environment, describe where it is and how it might be part of the water cycle.

_____

_____

_____

_____

_____

Weather Patterns @Home Lesson 1

Go to the Exploring Weather and Water at Home activity.

Investigate how the amount of surface water can affect the amount of water vapor in the air.

Exploring Weather and Water at Home page or **Lesson 1.2, Activity 5**

End of @Home Lesson

THE LAWRENCE HALL OF SCIENCE
UNIVERSITY OF CALIFORNIA, BERKELEY

Amplify.

Published and Distributed by Amplify. www.amplify.com

Key activities

- **Introducing the Big Storms in Galetown:** After activating prior knowledge about the water cycle, students are introduced to the unit problem and their role as student forensic meteorologists.
- **Do:** Students use the *Weather Patterns* Sim, or watch a video of the Sim investigation, to investigate how the amount of surface water can affect the amount of water vapor in the air.
- **Reflect:** Students reflect on the water cycle processes they observed in the Sim.
- **Do:** With a member of their household, students observe the weather and water in their environment at home.

Ideas for synchronous or in-person instruction

Before meeting, have students watch the introductory video. While meeting, have students share their ideas about the water cycle. Have students complete the Sim investigation. Then, lead a class discussion about the data they gathered and about the water cycle processes they observed in the Sim.

Suggestions for Online Synchronous Time

Online synchronous time

Online discussions: It's worthwhile to establish norms and routines for online discussions in science to ensure equity of voice, turn-taking, etc.

Digital tool demonstrations: You can share your screen and demonstrate, or invite your students to share their screen and think-aloud as they use a Simulation or other digital tool.

Interactive read-alouds: Screen share a digital book or article, and pause to ask questions and invite discussion as you would in the classroom.

Shared Writing: This is a great opportunity for a collaborative document that all your students can contribute to.

Co-constructed class charts: You can create digital charts, or create physical charts in your home with student input.

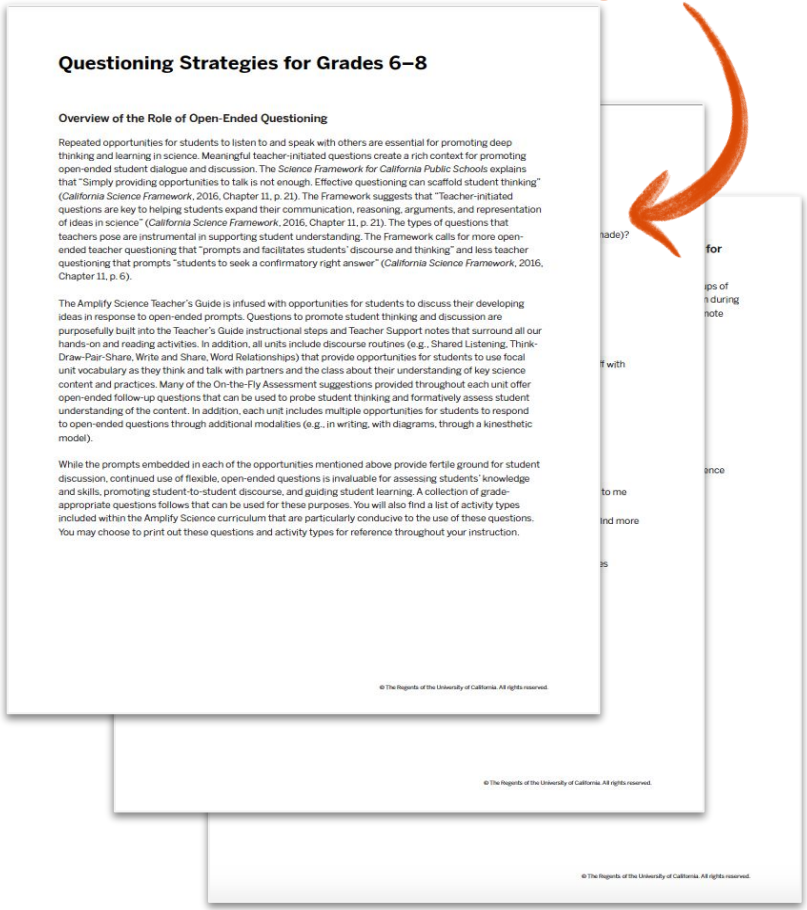
page 18

Questioning Strategies

Pages 19-21

Open-Ended Questions to Facilitate Student Thinking & Discourse

- Questions to assess students' knowledge and skills
- Questions to promote student-to-student discourse
- Questions to guide student learning



Questioning Strategies for Grades 6–8

Overview of the Role of Open-Ended Questioning

Repeated opportunities for students to listen to and speak with others are essential for promoting deep thinking and learning in science. Meaningful teacher-initiated questions create a rich context for promoting open-ended student dialogue and discussion. The *Science Framework for California Public Schools* explains that "Simply providing opportunities to talk is not enough. Effective questioning can scaffold student thinking" (*California Science Framework*, 2016, Chapter 11, p. 21). The Framework suggests that "Teacher-initiated questions are key to helping students expand their communication, reasoning, arguments, and representation of ideas in science" (*California Science Framework*, 2016, Chapter 11, p. 21). The types of questions that teachers pose are instrumental in supporting student understanding. The Framework calls for more open-ended teacher questioning that "prompts and facilitates students' discourse and thinking" and less teacher questioning that prompts "students to seek a confirmatory right answer" (*California Science Framework*, 2016, Chapter 11, p. 6).

The Amplify Science Teacher's Guide is infused with opportunities for students to discuss their developing ideas in response to open-ended prompts. Questions to promote student thinking and discussion are purposefully built into the Teacher's Guide instructional steps and Teacher Support notes that surround all our hands-on and reading activities. In addition, all units include discourse routines (e.g., Shared Listening, Think-Draw-Pair-Share, Write and Share, Word Relationships) that provide opportunities for students to use focal unit vocabulary as they think and talk with partners and the class about their understanding of key science content and practices. Many of the On-the-Fly Assessment suggestions provided throughout each unit offer open-ended follow-up questions that can be used to probe student thinking and formatively assess student understanding of the content. In addition, each unit includes multiple opportunities for students to respond to open-ended questions through additional modalities (e.g., in writing, with diagrams, through a kinesthetic model).

While the prompts embedded in each of the opportunities mentioned above provide fertile ground for student discussion, continued use of flexible, open-ended questions is invaluable for assessing students' knowledge and skills, promoting student-to-student discourse, and guiding student learning. A collection of grade-appropriate questions follows that can be used for these purposes. You will also find a list of activity types included within the Amplify Science curriculum that are particularly conducive to the use of these questions. You may choose to print out these questions and activity types for reference throughout your instruction.

Reflection: Teaching @Home Lesson 1

How would you teach this lesson?

How might you include suggestions for online synchronous time and/or questioning strategies?

Multi-day planning, including planning for differentiation and evidence of student work

Day @Home Lesson 1

Minutes for science: 15 min

Instructional format:
- [x] Asynchronous
- [ ] Synchronous

Lesson or part of lesson:
Introducing the Big Storms in Galetown (slides 1-17)

Mode of instruction:
- [x] Preview
- [ ] Review
- [ ] Teach full lesson live
- [ ] Teach using synchronous suggestions
- [x] Students work independently using:
  - [ ] Printed @Home Slides
  - [x] Digital @Home Slides
  - [ ] @Home Videos

Students will...	Teacher will...
View slides and the video that introduces students to the unit. Jot down initial ideas about their reactions to the video.	Assign slides 1-17 in Schoology and provide direction for students to jot down their ideas about the unit problem to share when the class meets together.

Minutes for science: _____

Instructional format:
- [ ] Asynchronous
- [x] Synchronous

Lesson or part of lesson:

Mode of instruction:
- [ ] Preview
- [ ] Review
- [ ] Teach full lesson live
- [ ] Teach using synchronous suggestions
- [ ] Students work independently using:
  - [ ] Printed @Home Slides
  - [ ] Digital @Home Slides
  - [ ] @Home Videos

Students will...	Teacher will...

Multi-day planning, including planning for differentiation and evidence of student work

Day @Home Lesson 1

Minutes for science: 15 min.

Instructional format:
- [x] Asynchronous
- [ ] Synchronous

Lesson or part of lesson:
Introducing the Big Storms in Galetown (slides 1-17)

Mode of instruction:
- [x] Preview
- [ ] Review
- [ ] Teach full lesson live
- [ ] Teach using synchronous suggestions
- [x] Students work independently using:
  - [ ] Printed @Home Slides
  - [x] Digital @Home Slides
  - [ ] @Home Videos

Students will...	Teacher will...
View slides and the video that introduces students to the unit. Jot down initial ideas about their reactions to the video.	Assign slides 1-17 in Schoology and provide direction for students to jot down their ideas about the unit problem to share when the class meets together.

Minutes for science: 30 min

Instructional format:
- [ ] Asynchronous
- [x] Synchronous

Lesson or part of lesson:
Summarize the introduction to the unit, students engage with the simulation and reflect on the water cycle

Mode of instruction:
- [ ] Preview
- [ ] Review
- [ ] Teach full lesson live
- [x] Teach using synchronous suggestions
- [ ] Students work independently using:
  - [ ] Printed @Home Slides
  - [ ] Digital @Home Slides
  - [ ] @Home Videos

Students will...	Teacher will...
Discuss the claims and their initial ideas. Engage with the simulation to develop an understanding of the water cycle, then reflect on their observations. Complete the observation activity on slides 40-41 for hw.	Revisit the unit question on slide 10 and the claims on slide 15. Present slides 18-31 giving students an opportunity to engage with the simulation. Use slides 32-39 to lead a reflection conversation. Assign the final *do* activity for homework, slides 40-41.

Look at the *Students will* columns. What are students working in the lesson(s) that you could collect, review, or provide feedback on?
See Some Types of Written Work in Amplify Science to the right for guidance.

If there isn't a work product listed above, do you want to add one? Make notes below.

Asynchronous: students jot down their initial ideas

Synchronous: record observations while engaging with the simulation and record observations as they explore weather and water for homework

How will students submit this work product to you?
See the Completing and Submitting Written Work tables to the right for guidance on how students can complete and submit work.

Asynchronous: students jot initial ideas on paper or digitally to bring with them to the asynchronous lesson

Synchronous: Students will use the student sheets to record their observations while engaging with the simulation as well as their observations as they explore weather and water at home and submit through Schoology.

Some Types of Written Work in Amplify Science

- Daily written reflections
- Homework tasks
- Investigation notebook pages
- Written explanations (typically at the end of Chapter)
- Diagrams
- Recording pages for Sim uses, investigations, etc

Completing Written Work	Submitting Written Work
• Plain paper and pencil (videos include prompts for setup) • (6-8) Student platform • Investigation Notebook • Record video or audio file describing work/answering prompt • Teacher-created digital format (Google Classroom, etc)	• Take a picture with a smartphone and email or text to teacher • Through teacher-created digital format • During in-school time (hybrid model) or lunch/materials pick-up times • (6-8) Hand-in button on student platform

How will you differentiate this lesson for diverse learners? (Navigate to the lesson level on the standard Amplify Science platform and click on differentiation in the left menu.)

Look at the *Students will* columns. What are students working in the lesson(s) that you could collect, review, or provide feedback on?
See Some Types of Written Work in Amplify Science to the right for guidance.

If there isn't a work product listed above, do you want to add one? Make notes below.

Asynchronous: students jot down their initial ideas

Synchronous: record observations while engaging with the simulation and record observations as they explore weather and water for homework

Some Types of Written Work in Amplify Science

- Daily written reflections
- Homework tasks
- Investigation notebook pages
- Written explanations (typically at the end of Chapter)
- Diagrams
- Recording pages for Sim uses, investigations, etc

How will students submit this work product to you?
See the Completing and Submitting Written Work tables to the right for guidance on how students can complete and submit work.

Asynchronous: students jot initial ideas on paper or digitally to bring with them to the asynchronous lesson

Synchronous: Students will use the student sheets to record their observations while engaging with the simulation as well as their observations as they explore weather and water at home and submit through Schoology.

Completing Written Work	Submitting Written Work
• Plain paper and pencil (videos include prompts for setup) • (6-8) Student platform • Investigation Notebook • Record video or audio file describing work/answering prompt • Teacher-created digital format (Google Classroom, etc)	• Take a picture with a smartphone and email or text to teacher • Through teacher-created digital format • During in-school time (hybrid model) or lunch/materials pick-up times • (6-8) Hand-in button on student platform

How will you differentiate this lesson for diverse learners? (Navigate to the lesson level on the standard Amplify Science platform and click on differentiation in the left menu.)

Supports:

- Encourage students to engage in student-to-student discussion
- Provide students with the Multi-Language Glossary where appropriate, add images
- Leverage primary language for discussions
- Teacher modeling of the simulation (could also use the video)
- Strategic partnering

Extension: Have students create a visual representation of what they learned from the simulation/discussion.

Teacher Overview - Chapter 1

Overview of @Home Lessons 2-5

@Home Lesson 2: GROUP 1

- Students use the Weather Patterns Sim, or watch a video of the Sim investigation, to examine the factors affecting condensation and the amount of energy transfer. Students reflect on why and when condensation happens.

@Home Lesson 3: GROUP 2

- Students actively read an article (“What Are Clouds?”) about cloud formation and Joanne Simpson, a pioneering meteorologist. Pairs discuss the article and their annotations.

@Home Lesson 4: GROUP 3

- Students reread a section of the “What Are Clouds?” article to gather evidence about what causes an air parcel to cool. Students use the Weather Patterns Sim, or watch a video of the Sim investigation, to collect data on different weather events. Students discuss their data with a partner to draw conclusions about energy transfer and rain.

@Home Lesson 5: GROUP 4

- Students engage in the Word Relationships routine where they use unit vocabulary to create sentences that help answer the Chapter 1 Question. Students review the @Home Science Wall, including the Chapter 1 Question, key concepts, and vocabulary. Students create visual models of two storms to explain their thinking about how the addition of a lake can affect rainstorms.

Breakout groups

pages 13-14

Discussion prompts

Planning:

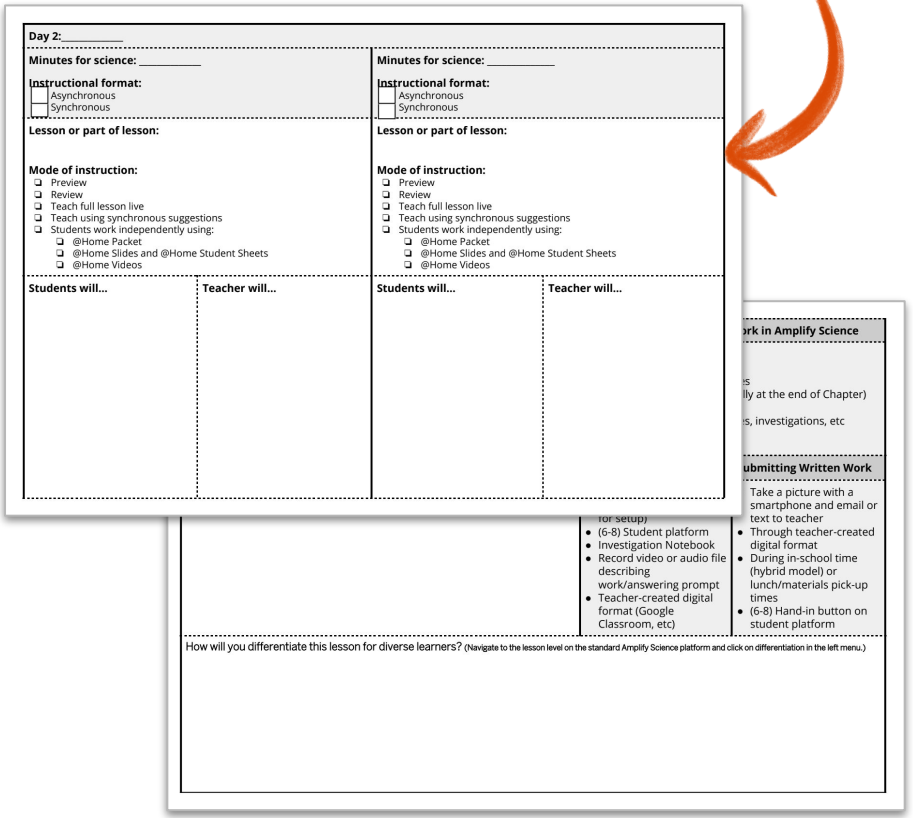
- Dig into the @Home Resources for your assigned lesson.

Student work:

- Discuss how you can collect evidence of student work

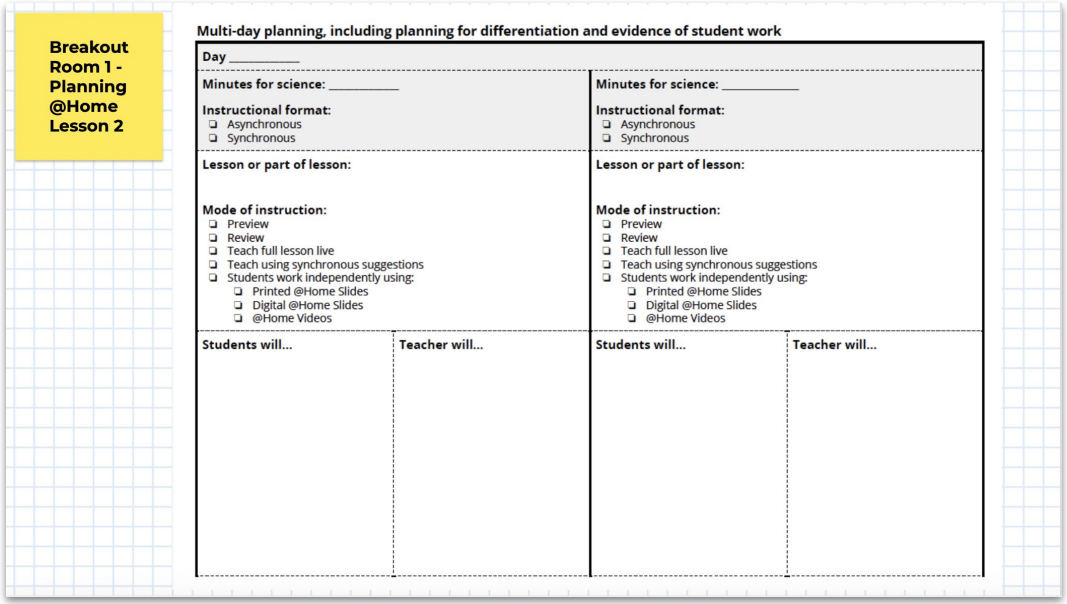
Differentiation:

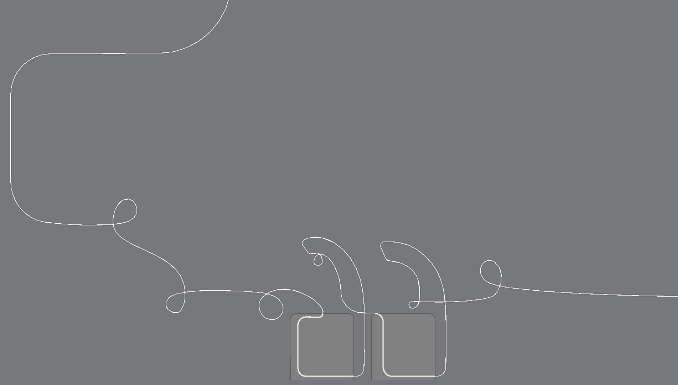
- Consider how you might differentiate your lesson



Planning Share Out

- What are your key takeaways from planning?
- Which lesson parts did you plan for synchronous vs. asynchronous time?





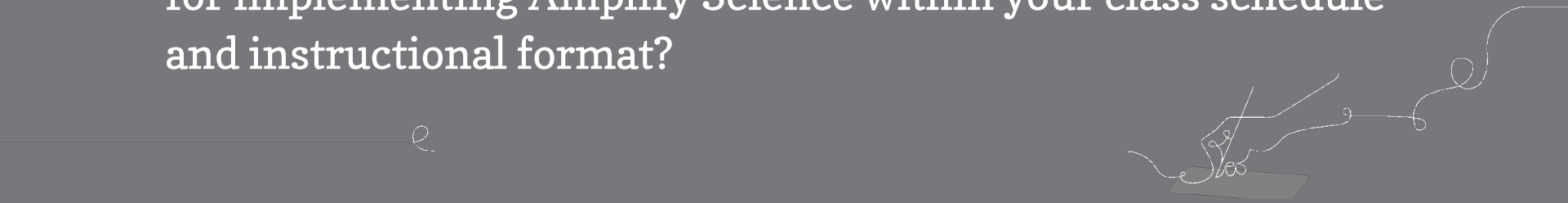
Questions?

Plan for the day

- Framing the day
  - Welcome
  - Instructional Materials
- Unit Internalization
- Planning to teach
  - Collecting evidence of student learning to meet diverse learner needs
- **Reflection and closing**

During this workshop did we meet our objectives?

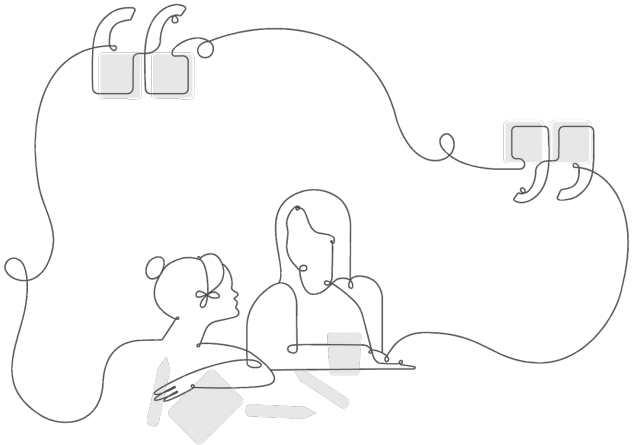
- Were you able to internalize your upcoming unit?
- Do you know how to plan for **collecting evidence of student learning** in order to make instructional decisions to **support diverse learner needs**?
- Do you have the resources you need to develop a multi-day plan for implementing Amplify Science within your class schedule and instructional format?



Upcoming LAUSD MS Office Hours

Bi-weekly from 3-4pm

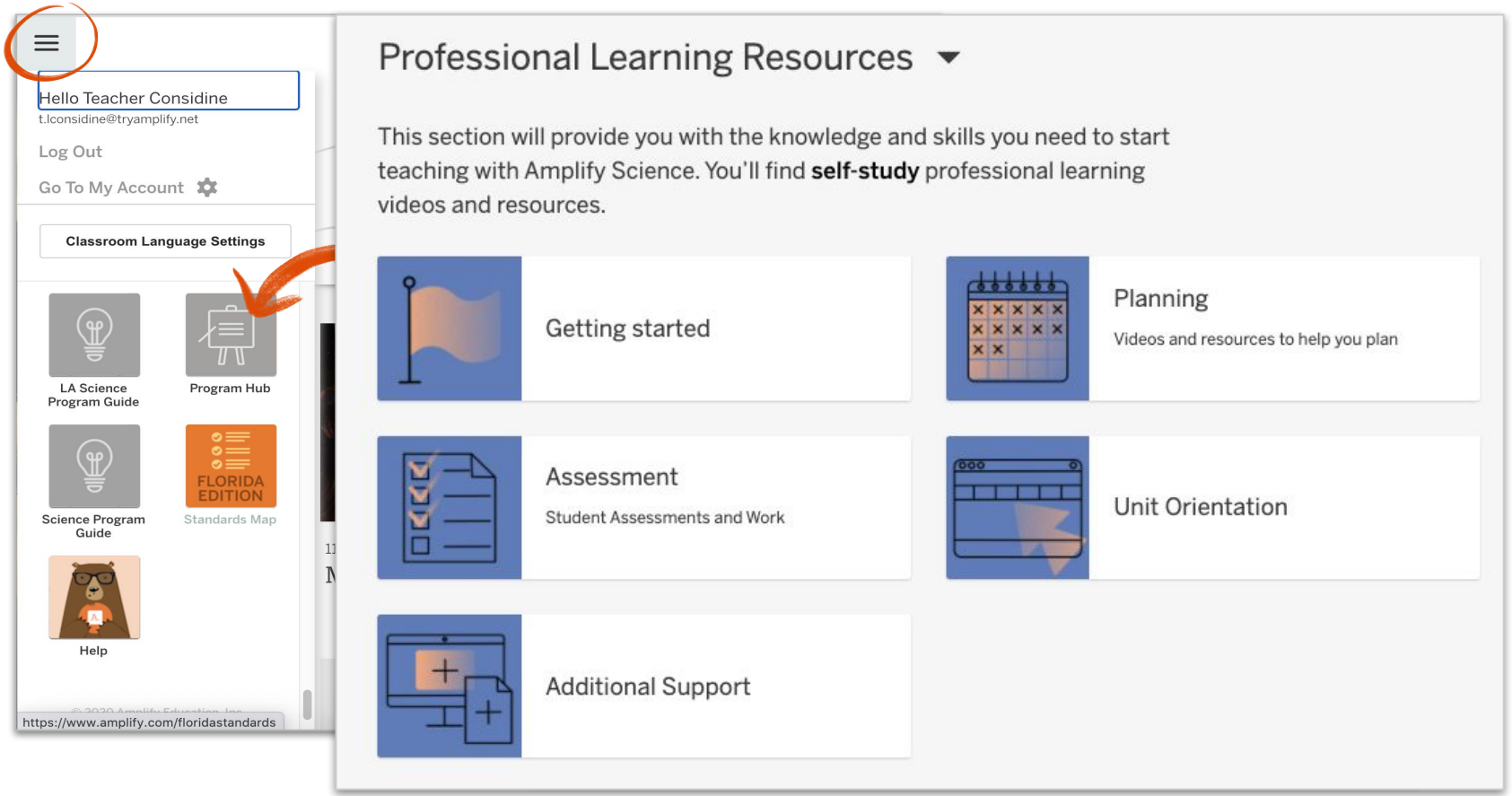
- Thursday, 3/11
- Thursday, 3/25
- Thursday, 4/8
- Thursday, 4/22
- Thursday, 5/13
- Thursday, 5/27



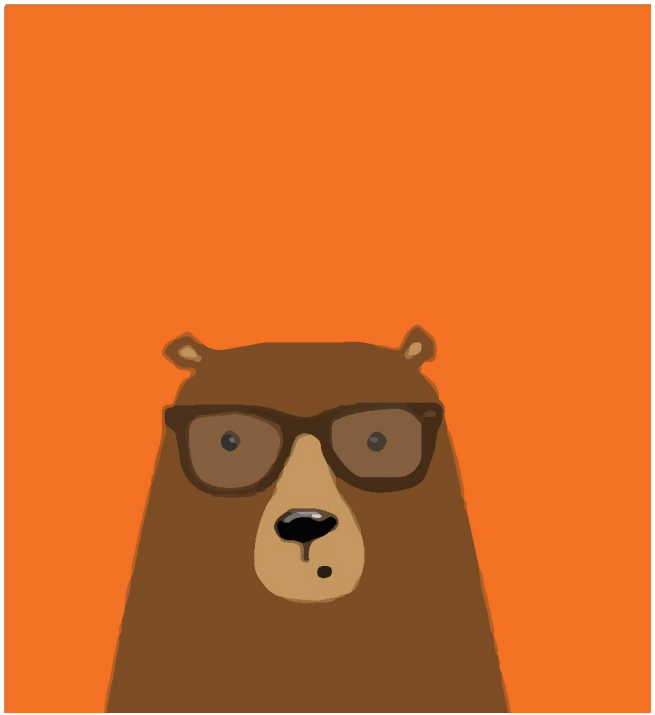
https://tinyurl.com/6-8OfficeHours

Additional Amplify resources

Program Hub: Professional Learning Resources



Additional Amplify resources

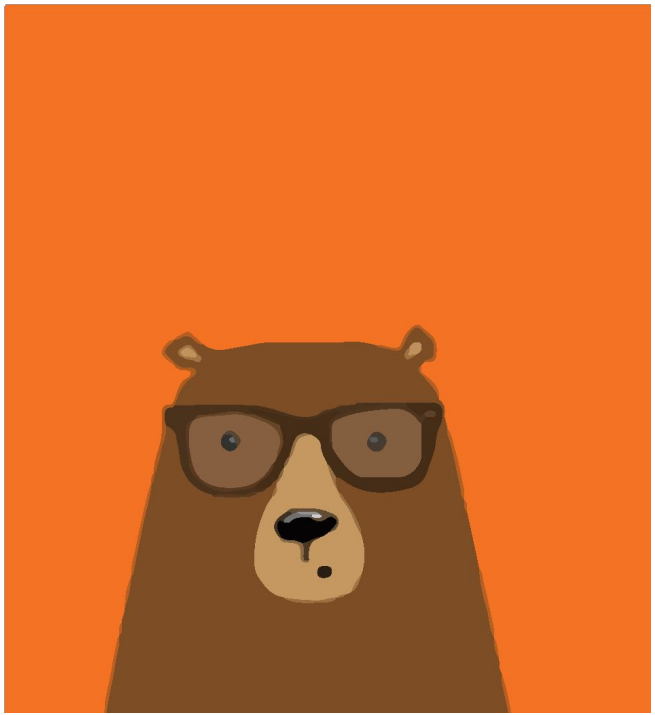


Caregivers site

Provide your students' families information about Amplify Science and what students are learning

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

Additional Amplify resources



Program Guide

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

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

Amplify Help

Find lots of advice and answers from the Amplify team.

my.amplify.com/help

Additional Amplify Support

Customer Care

Seek information specific to enrollment and rosters, technical support, materials and kits, and teaching support, weekdays 7AM-7PM EST.

scihelp@amplify.com

800-823-1969

Amplify Chat

When contacting the customer care 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.

Welcome to Amplify Science!

This site contains supporting resources designed for the Los Angeles Unified School District Amplify Science adoption for grades TK–8.

All LAUSD schools have access to Amplify Science resources at this time.

Click here for Remote Learning Resources for Amplify Science

Click here to go back to the LAUSD homepage.

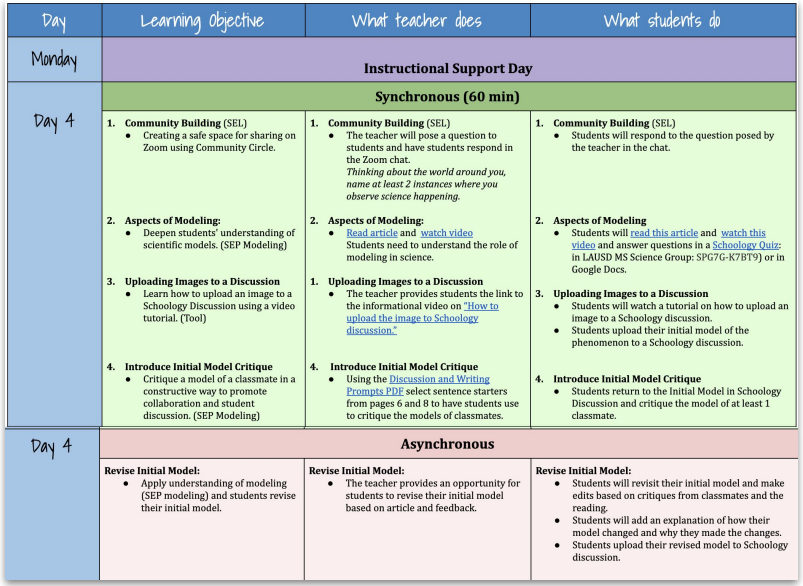
Click the button below to preview the digital Teacher's Guide, and check back for exciting updates to this site!

https://amplify.com/lausd-science/

Smart Start Plans

Middle School Science Schoology Group

- Access code to join the Schoology Group: **SPG7G-K7BT9**
- Once in the group, you will find the Smart Start Plans under *resources*.



Day	Learning Objective	What teacher does	What students do
Monday	**Instructional Support Day**		
Day 4	**Synchronous (60 min)**		
	1. Community Building (SEL) • Creating a safe space for sharing on Zoom using Community Circle.	**1. Community Building** (SEL) • The teacher will pose a question to students and have students respond in the Zoom chat. *Thinking about the world around you, name at least 2 instances where you observe science happening.*	**1. Community Building** (SEL) • Students will respond to the question posed by the teacher in the chat.
	2. Aspects of Modeling: • Deepen students' understanding of scientific models. (SEP Modeling)	**2. Aspects of Modeling:** • Read article and watch video Students need to understand the role of modeling in science.	**2. Aspects of Modeling** • Students will read this article and watch this video and answer questions in a Schoology Quiz: in LAUSD MS Science Group: SPG7G-K7BT9) or in Google Docs.
	3. Uploading Images to a Discussion • Learn how to upload an image to a Schoology Discussion using a video tutorial. (Tool)	**1. Uploading Images to a Discussion** • The teacher provides students the link to the informational video on "How to upload the image to Schoology discussion."	**3. Uploading Images to a Discussion** • Students will watch a tutorial on how to upload an image to a Schoology discussion. • Students upload their initial model of the phenomenon to a Schoology discussion.
	4. Introduce Initial Model Critique • Critique a model of a classmate in a constructive way to promote collaboration and student discussion. (SEP Modeling)	**4. Introduce Initial Model Critique** • Using the Discussion and Writing Prompts PDF select sentence starters from pages 6 and 8 to have students use to critique the models of classmates.	**4. Introduce Initial Model Critique** • Students return to the Initial Model in Schoology Discussion and critique the model of at least 1 classmate.
Day 4	**Asynchronous**		
	Revise Initial Model: • Apply understanding of modeling (SEP modeling) and students revise their initial model.	**Revise Initial Model:** • The teacher provides an opportunity for students to revise their initial model based on article and feedback.	**Revise Initial Model:** • Students will revisit their initial model and make edits based on critiques from classmates and the reading. • Students will add an explanation of how their model changed and why they made the changes. • Students upload their revised model to Schoology discussion.

Creating Assignments in Schoology

- Click Add Materials.
- Select Add Assignment.
- Fill out the Create Assignment form.
- Options. Use Options to turn on/off the following features: Use Individually Assign to only display the assignment to a specific member of the course or a grading group.
- Click Create to complete

LAUSD Shared Logins

AmplifyScience

Go to: my.amplify.com

A. Log In with Amplify

District Shared Logins		
Grade	**Username**	**Password**
Kindergarten	LAUSDscienceK	LAUSD1234
1	LAUSDscience1	LAUSD1234
2	LAUSDscience2	LAUSD1234
3	LAUSDscience3	LAUSD1234
4	LAUSDscience4	LAUSD1234
5	LAUSDscience5	LAUSD1234
6	LAUSDscience6	LAUSD1234
7	LAUSDscience7	LAUSD1234
8	LAUSDscience8	LAUSD1234

Elementary Student Apps Shared Logins

English
- Username: ampsci123
- Password: ampsci123

Spanish
- Username: ampsci123sp
- Password: ampsci123sp