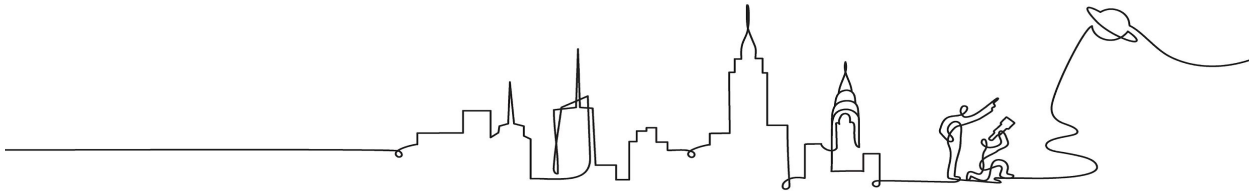
Welcome to Amplify Science!

Follow the directions below as we wait to begin.

1. Please log in to your Amplify Account.

2. Sign in using link dropped in chat.

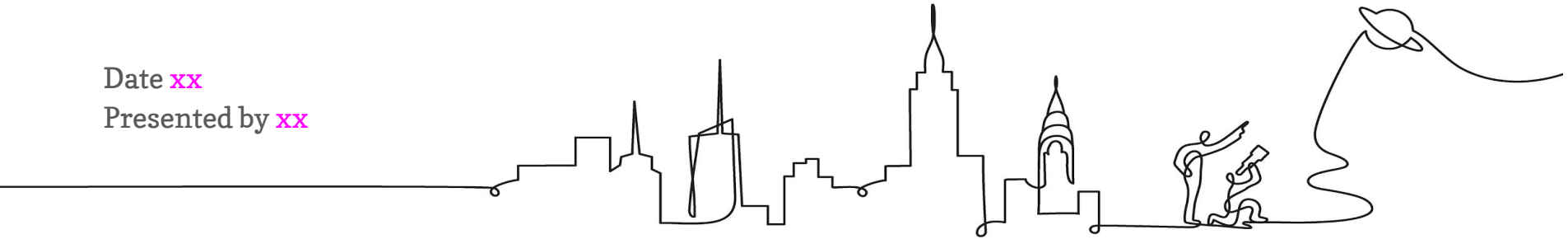
3. In the chat, share your name, grade level, and school you teach in.



Amplify Science
New York City

6-8 Analyzing Student Assessment Data
Instructional Leads

Date xx
Presented by xx



Remote Professional Learning Norms

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?"*

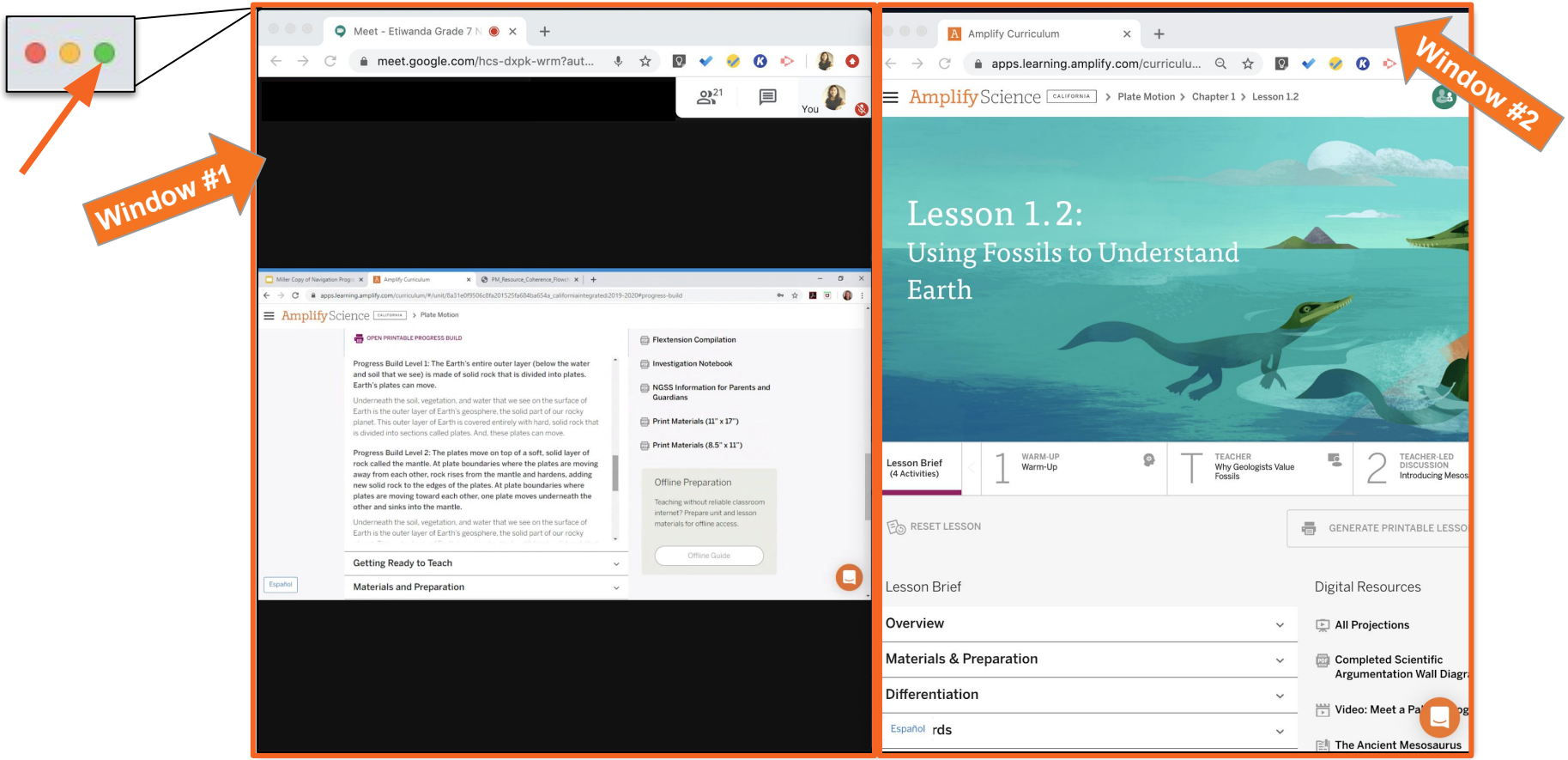
Mute your microphone to reduce background noise unless sharing with the group

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

Make sure you have a note-catcher present

Engage at your comfort level - chat, ask questions, discuss, share!

Use two windows for today's webinar

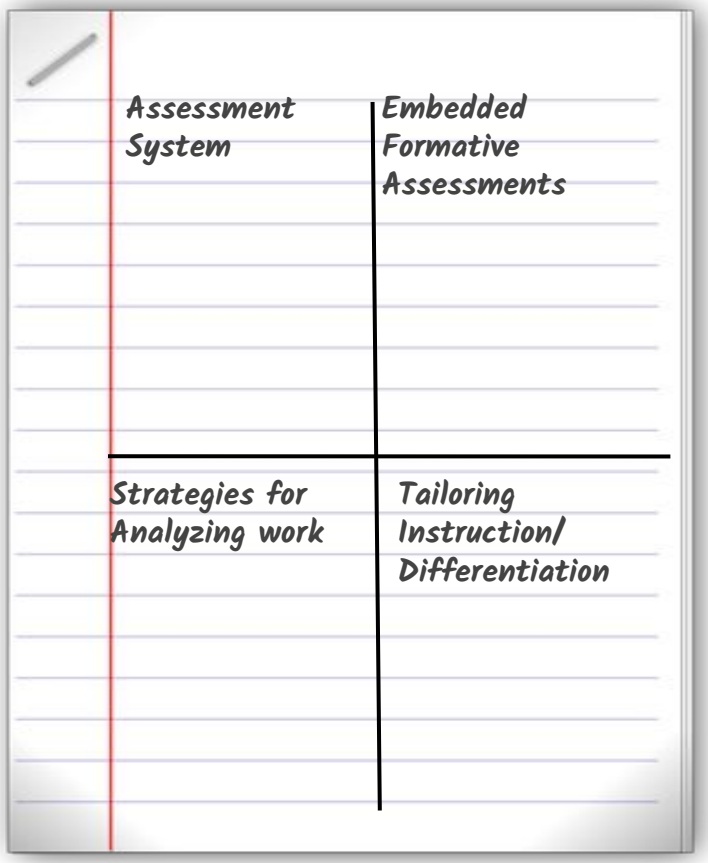


Objectives

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

- Explore how embedded formative assessments can be used to provide credible, actionable, and timely diagnostic information about students progress towards unit goals
- Take a deep dive into the Amplify Science formative assessment system through an exemplar experience
- Learn strategies for analyzing students work and assessment data
- Examine resources for tailoring instruction and explore supports for differentiation

Capturing key takeaways!



Plan for the day

- **Framing the day**
  - Welcome and introductions
  - Anticipatory Activity
- **Amplify Science Assessment System**
  - Credible, Actionable, Timely
  - Progress Build
  - Embedded Formative Assessments
- **Amplify Science Formative Assessment**
  - Exemplar Sequence
- **Strategies for Analyzing Student Work**
  - Prepare, Analyze, Identify, Discuss
  - Discourse routines
  - Assessment Data
- **Tailoring Instruction/Differentiation**
  - Resources for tailoring instruction
  - Differentiation for diverse learners
- **Closing**
  - Reflection/Survey

Who's in the Room?

Represent for your borough!

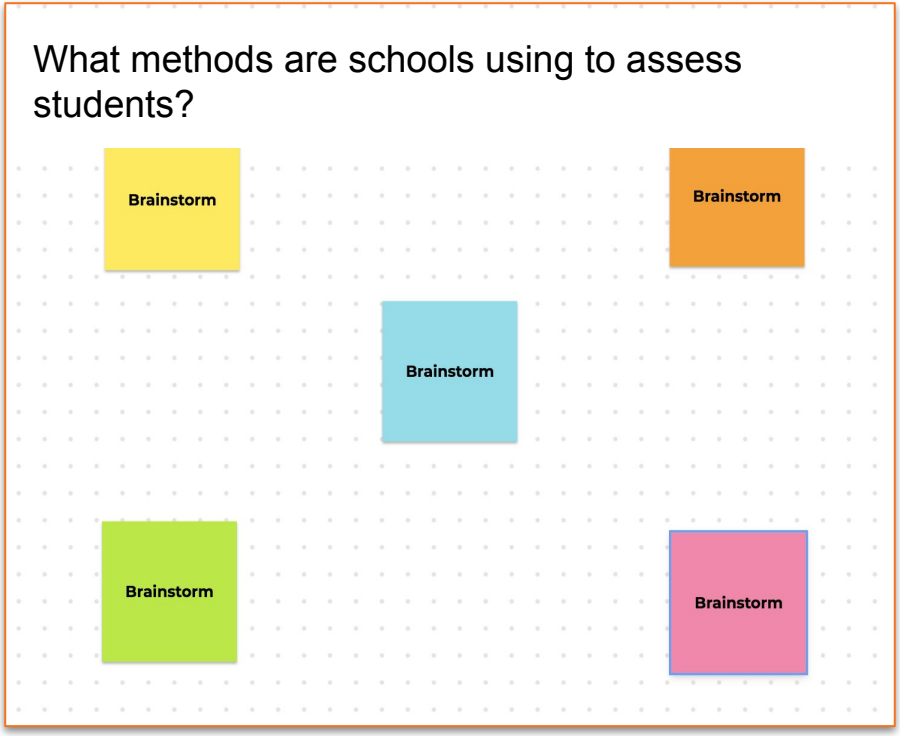
Share your **name & borough** office

1- Brooklyn North
2- Brooklyn South
3- Queens North
4- Queens South
5- The Bronx
6- Staten Island
7- Manhattan

Anticipatory activity

Share in the chat….

- What methods are schools using to assess students?



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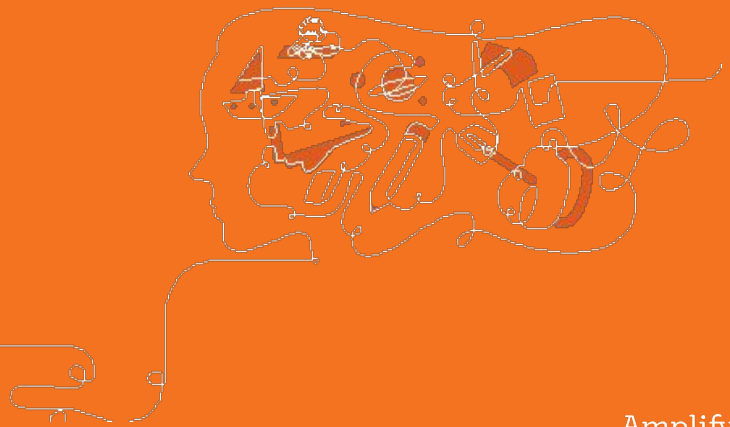
Credible, Actionable, Timely



Design Principles of Formative Assessment

- **Credible:** information from the assessment is trustworthy
- **Actionable:** information is at a level of specificity such that a teacher can use it to bolster instruction
- **Timely:** information comes at a time when a teacher is able to take action and when a student can productively leverage feedback

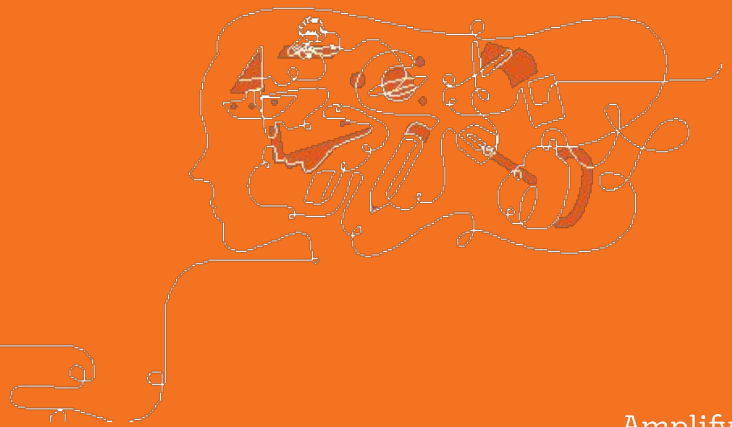
Assessment System

- The Assessment System includes formal and informal opportunities for students to demonstrate understanding and for teachers to gather information throughout the unit. Built largely around instructionally embedded performances, these opportunities encompass a range of modalities that, as a system, attend to the three-dimensional nature of science learning specified in the Next Generation Science Standards (NGSS) and the National Research Council's *Framework for K–12 Science Education* (2012).
- Each assessment was developed for a particular purpose. Entry-Level and Summative Assessments, includes assessments that can be used to measure growth, including entry-level assessments that reveal students' thinking at the beginning of the unit, and assessments that indicate students' level of understanding at the end of the unit, which can show the progress students have made and that can be used summatively.
- The second section, Monitoring Progress, includes assessments that can be used to monitor students' progress—formative assessments that provide teachers with actionable information and instructional suggestions for supporting students' learning and keeping all students on track—and assessments that help students monitor their own progress.
- Finally, the Assessments and Grading section provides suggestions around how the assessments might relate to grading.
- Assessment in kindergarten and grade 1 emphasizes multiple opportunities for students to show what they know through their oral and physical responses to prompts during partner and class discussions, through their engagement and participation in activities, and through some independent work products.

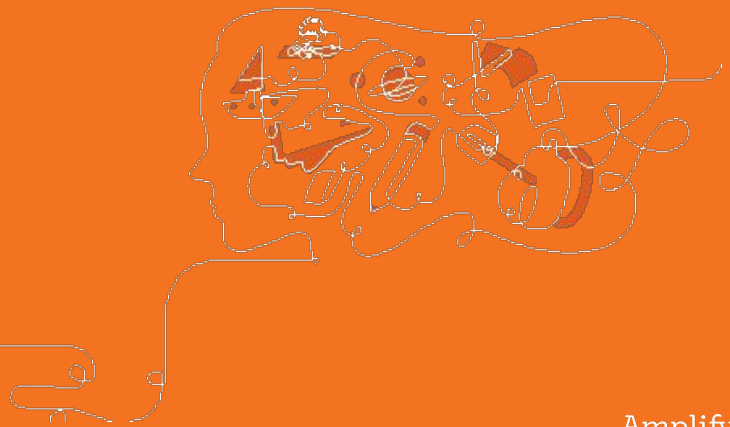
Assessment System Components

- **Assessment guides/rubrics:** Guidance is provided to gauge the level of student performance on the assessment task, with suggestions for student feedback and questioning strategies to advance learning, revise performance, or elicit and clarify student thinking. Assessment guides/rubrics are available in Digital Resources in the Lesson Brief for the lesson in which the task occurs.
- **Clipboard Assessment Tool:** The Clipboard Assessment Tool offers support for conducting brief, talk-based checks that reveal students' thinking and correspond to the level of the Progress Build. The Clipboard Assessment Tool is provided at key points in the unit (in Digital Resources) and includes tailored sets of questions and the specific activities that present an opportunity to ask those questions. Also included is space to write notes about students' ideas.
- **Possible student responses:** Possible student responses are provided to model how evidence of understanding, or partial understanding, may be demonstrated by the student for the specific task. Possible student responses are provided in the Possible Responses tab in the activity where there is an applicable notebook page. Possible student responses also appear in the Assessment Guide for the End-of-Unit Assessment (in Digital Resources).
- **Look for/Now what? notes:** Each On-the-Fly Assessment includes a two-part description of what evidence of understanding would look like for the task (Look for) and how instruction may be adjusted in response (Now what?). These are accessible by pressing the orange hummingbird icon in the activity in which they appear.
- **Assess understanding/Tailor instruction notes:** Each Critical Juncture Assessment includes a two-part description of how the expected level of student understanding may be demonstrated in the task (Assess understanding) and how instruction may be adjusted in response (Tailor instruction) at the class, group, and student level. These are accessible by pressing the orange hummingbird icon for the activity in which they appear.

Progress Build

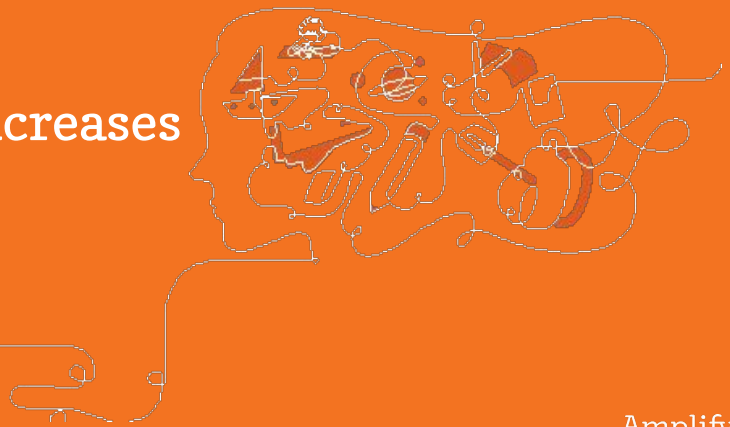


What is a progress build?

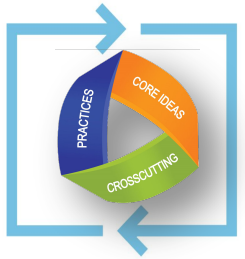


A **progress build** is a unit specific learning progression.

- Every core unit has a progress build
- The progress build is structured sequentially, each level builds on the previous level
- Students conceptual understanding increases at each level of the progress build



Progress Build Structure



Do,
Talk,
Read,
Write,
Visualize

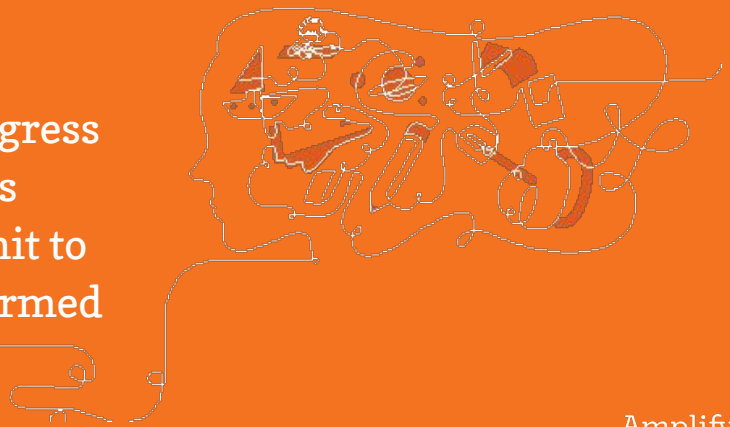
Build increasingly complex explanations

Why is a progress build important to instruction?

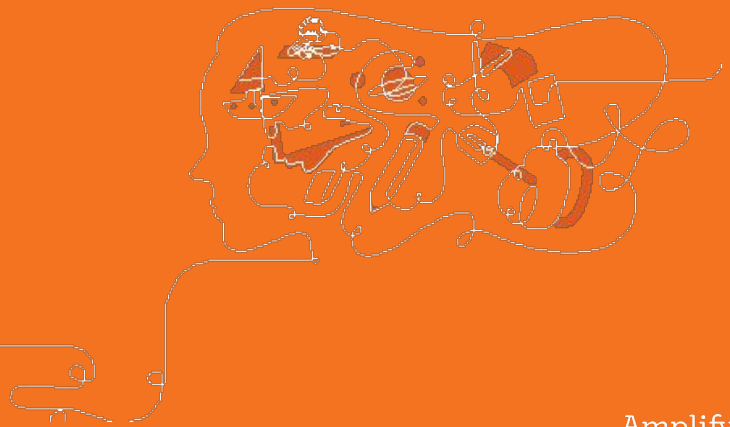
- The progress build describes the way students explanatory understanding of the unit phenomena deepens over time.

- Provides teachers with a clear understanding of the structure of a unit, organizes the sequence of instruction, and defines the focus of assessments.

- **By aligning instruction and assessments** to the Progress Build, 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.



Embedded Formative Assessments

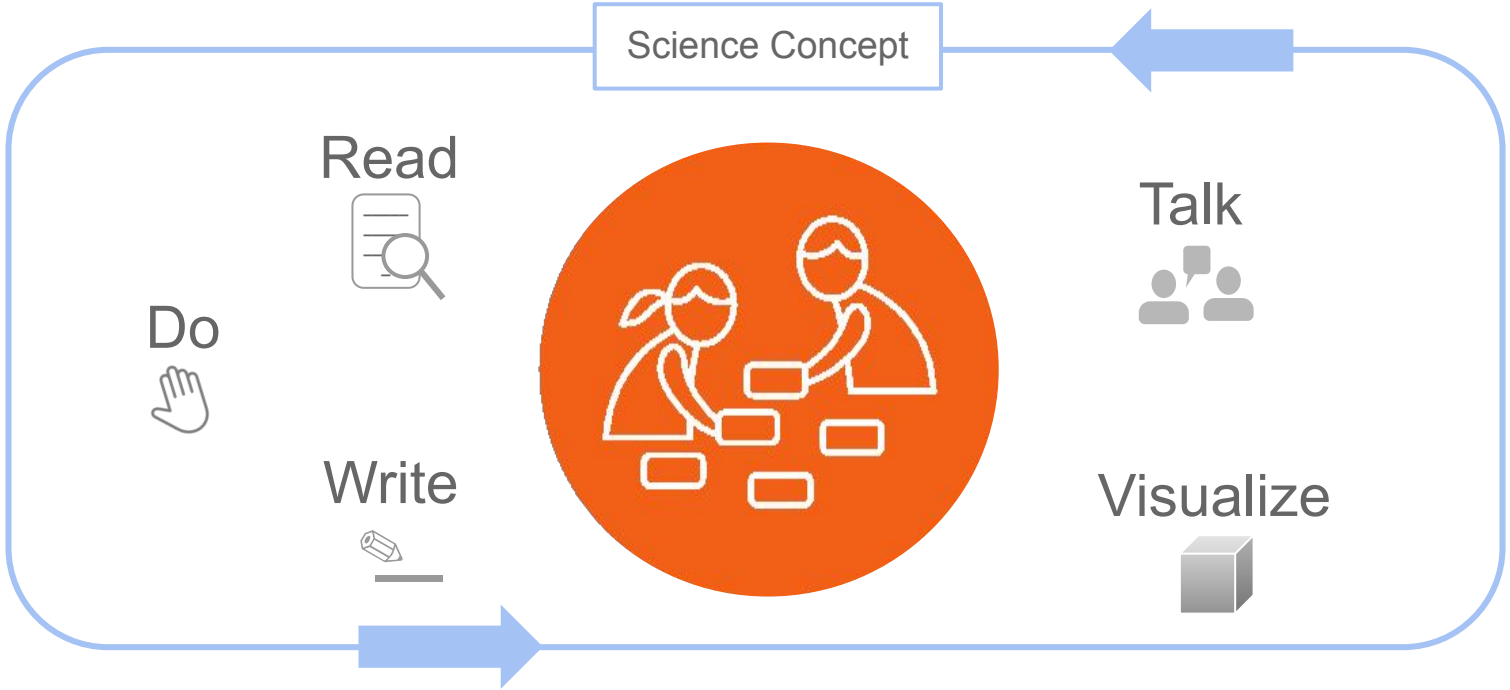


What is Formative Assessment?

Formative assessment is a cycle of eliciting, interpreting, and taking action on information about student learning.

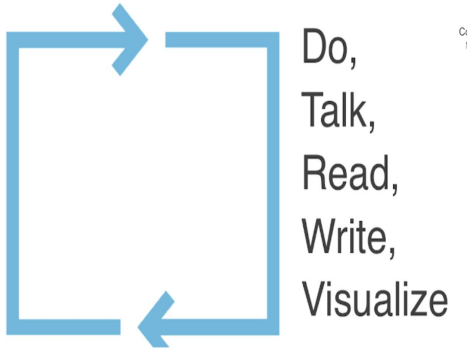
Multimodal learning

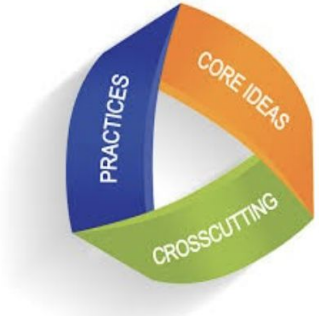
Gathering evidence from different sources



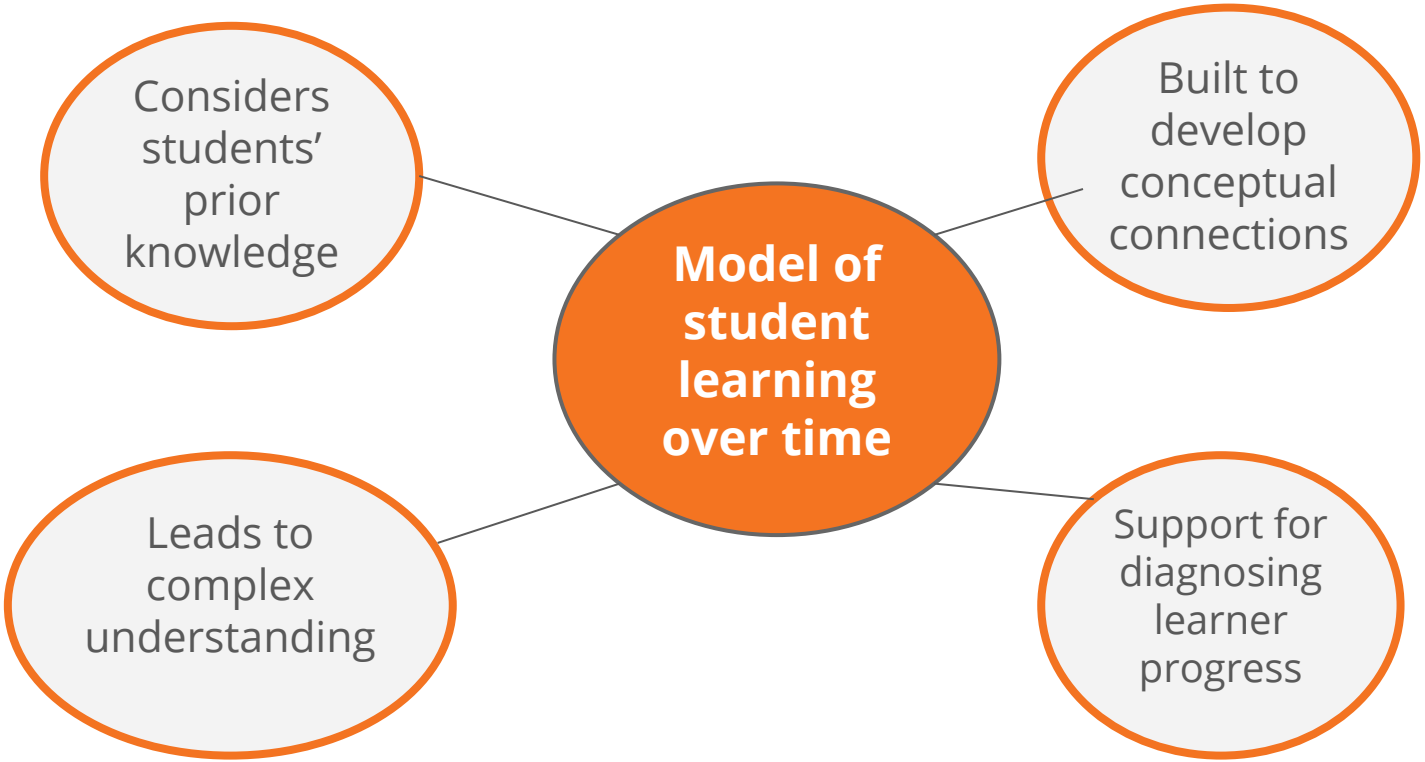
Formative assessment in Amplify Science

- Encompasses a range of modalities
- Provides window into student thinking
- Assesses the 3 dimensions
- Embedded into instruction





Design Principles of Formative Assessment



Types of assessments

Formative Assessments

Used to guide instruction

Pre-Unit
Designed to gauge students' initial understanding and pre-conceptions about core ideas in the unit.

On-the-Fly
Quick check for understanding designed to help monitor and support student progress throughout the unit.

Critical Juncture
Designed to occur at points in the unit in which it is especially important that students understand the content before continuing.

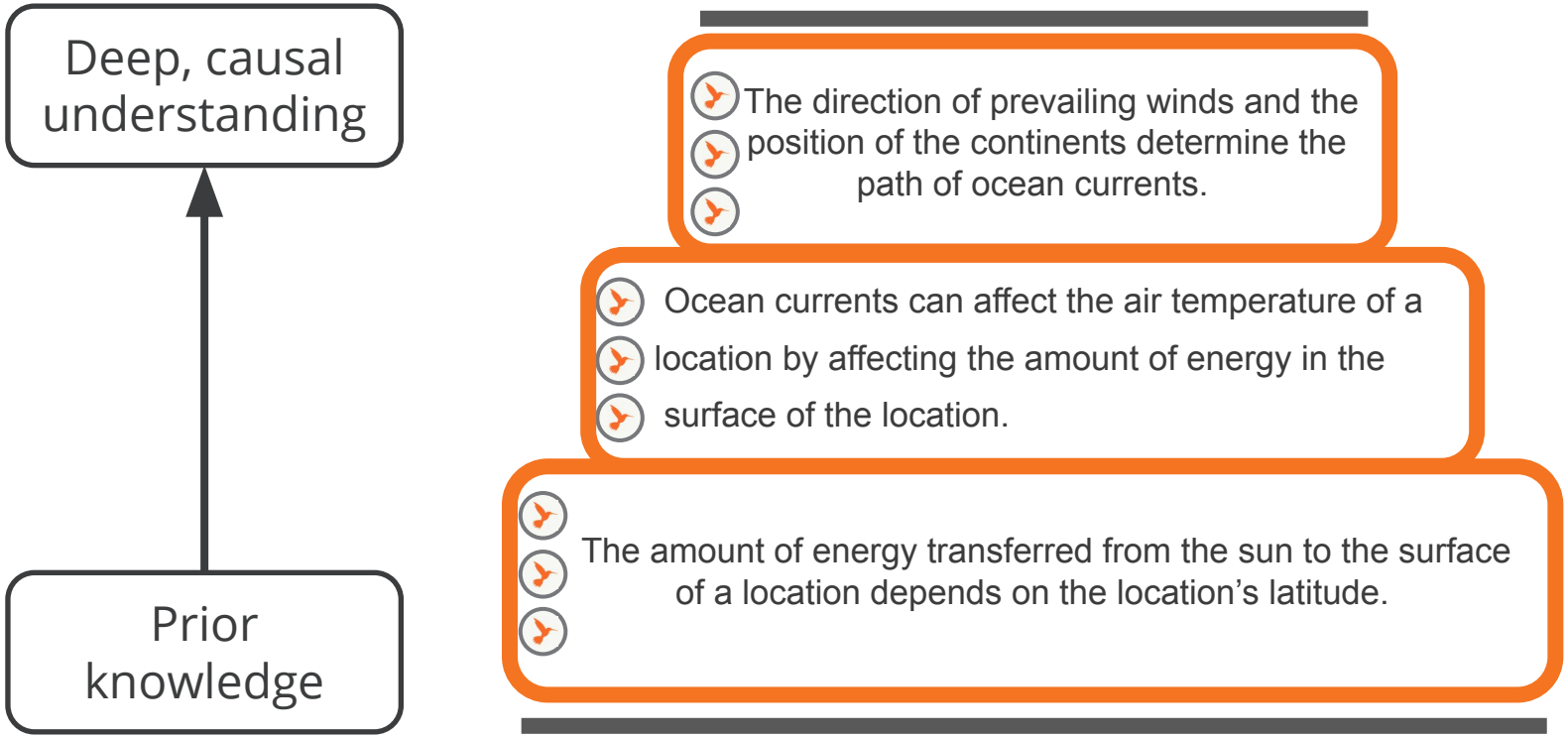
Summative Assessments

Used to measure student learning at the end of instruction

End-of-Unit
Final evaluation of students' understanding of core ideas in the unit.

Assessment System

Pre- and End-of-Unit Assessments

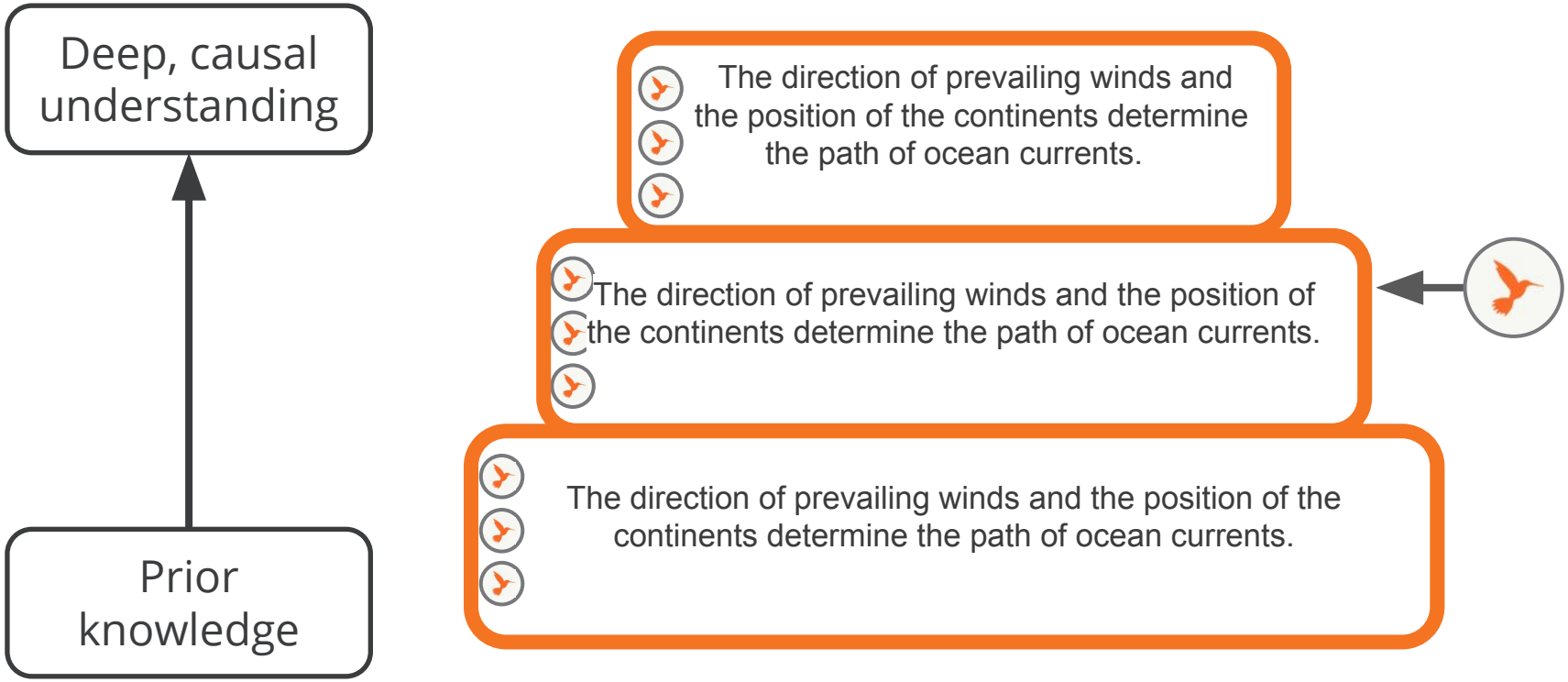


Pre-Unit Assessment

- Reveals preconceptions
- Reveals ideas and experiences students can build on throughout the unit
- Contains multiple choice questions and two written responses
- Multiple choice section is auto-scored
- Contains a Scoring Guide with rubrics for analyzing student responses
- Happens in Lesson 1.1

Assessment System

Critical Juncture Assessment



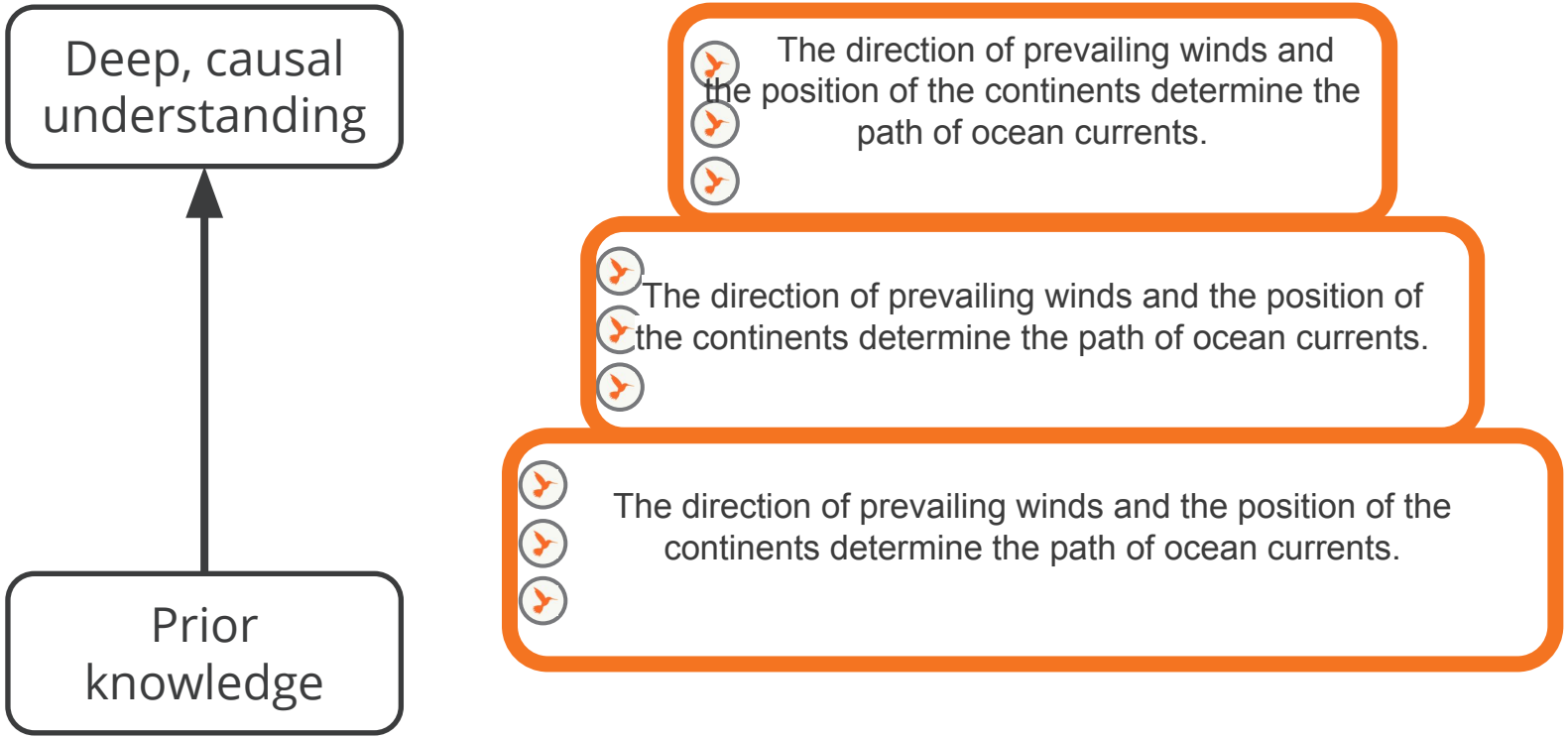
Amplify.

Critical Juncture Assessment

- Occurs at a key point in the unit
- Gauges students' growing understanding about core ideas in the unit
- Contains multiple choice questions and two written responses
- Multiple choice section is auto-scored
- Contains a Scoring Guide with rubrics for analyzing student responses
- Followed by a differentiated lesson based on results

Assessment System

On-the-Fly Assessments



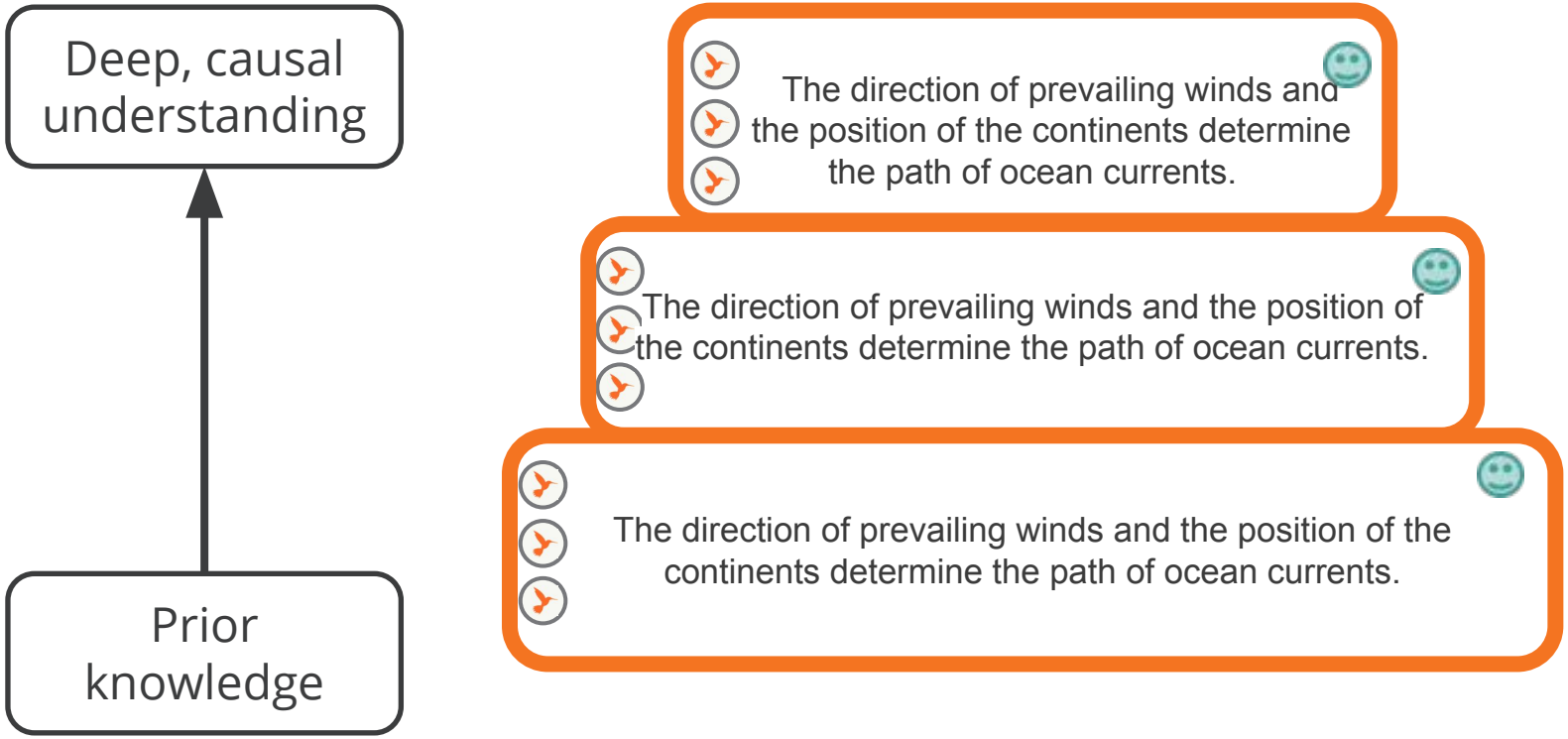
Amplify.

On the Fly Assessment

- Mostly frequently occurring assessment
- Quick check for understanding designed to help monitor and support student progress throughout the unit.
- Provides teachers with an opportunity to adjust instruction to meet student needs
- Contains Look For and Now What evaluation guidance
- Followed by a differentiated lesson based on results

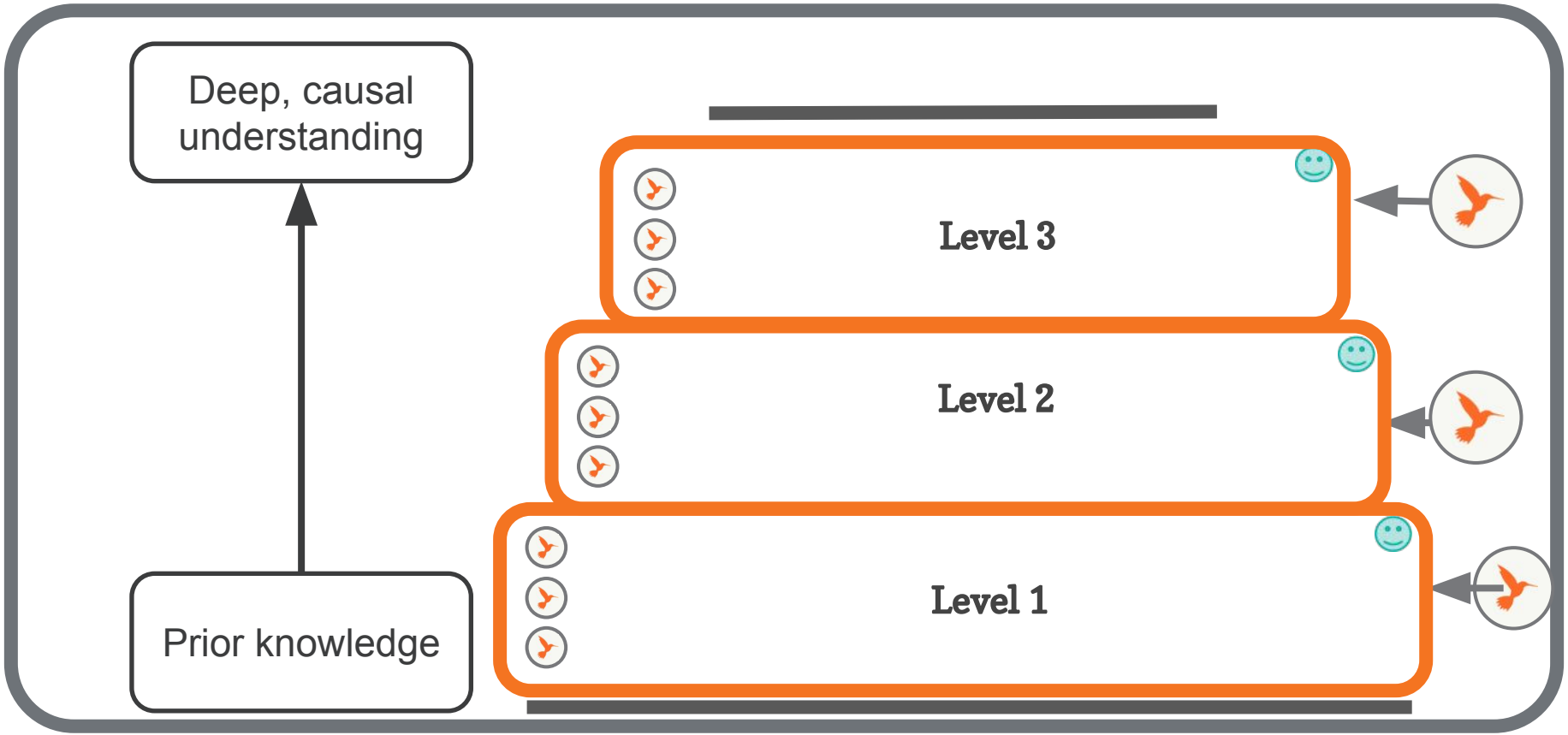
Assessment System

Students Self Assessments



Amplify.

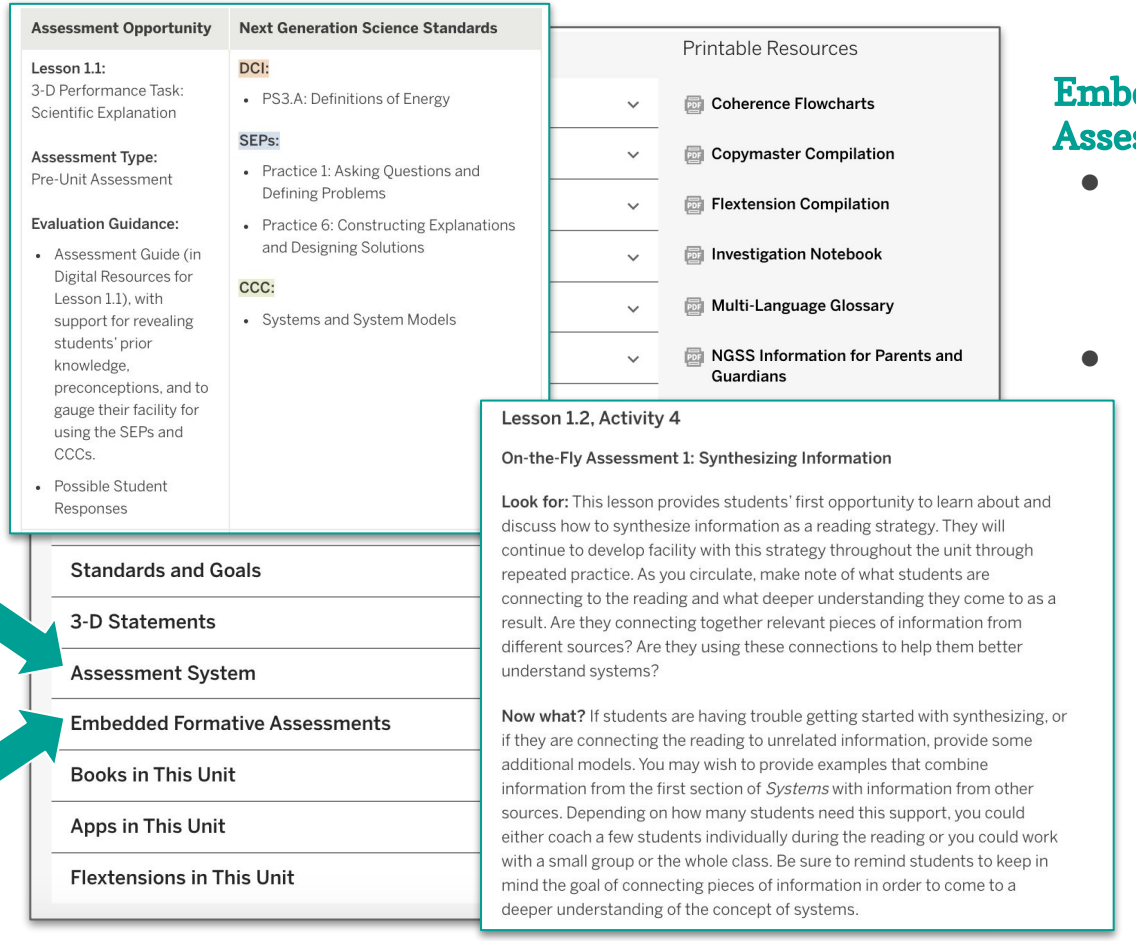
Assessment System



Unit Level Assessment Documents

Assessment System:

- explains the organization of the assessment system
- lists out each assessment in the unit with key information
- goes into an explanation of each type of assessment found in the unit



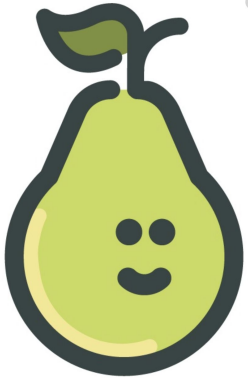
Embedded Formative Assessments:

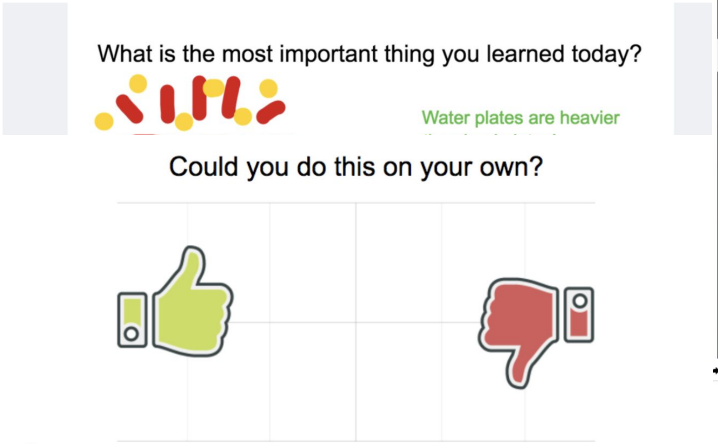
- explains what to look for at each assessment opportunity
- gives guidance for instructional next steps

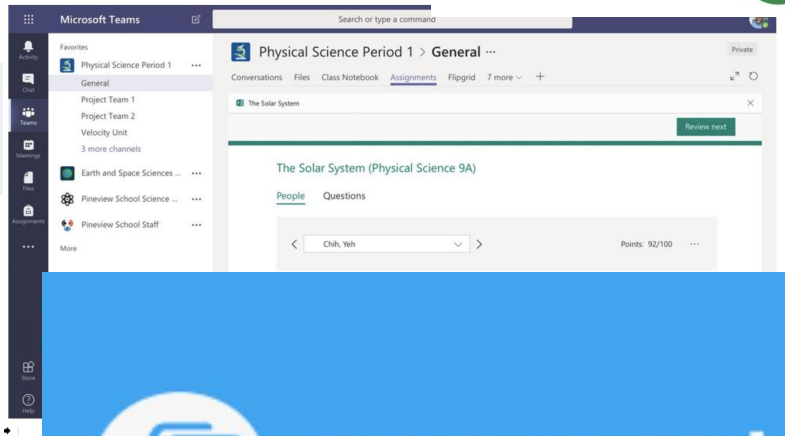
Formatively Assessing during Remote Learning

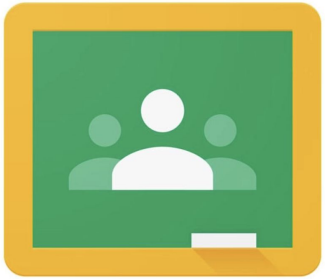
Jamboard

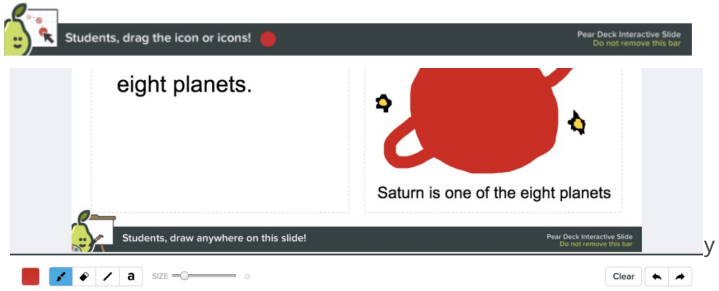
FLIPGRID

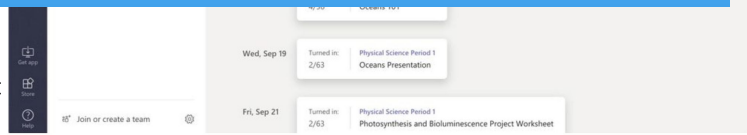




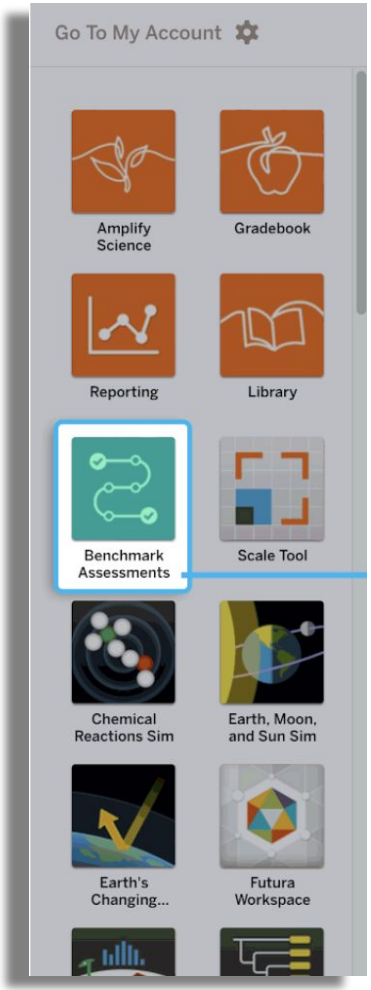


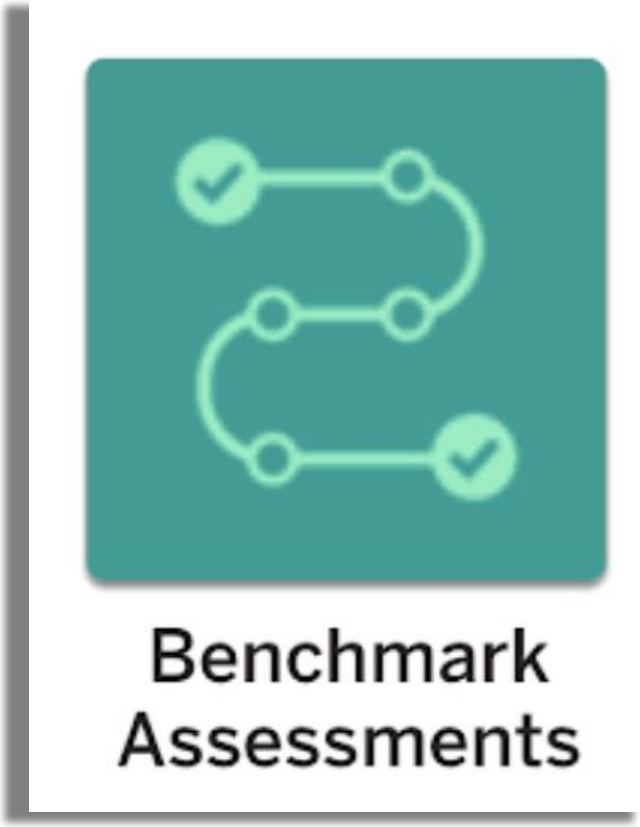






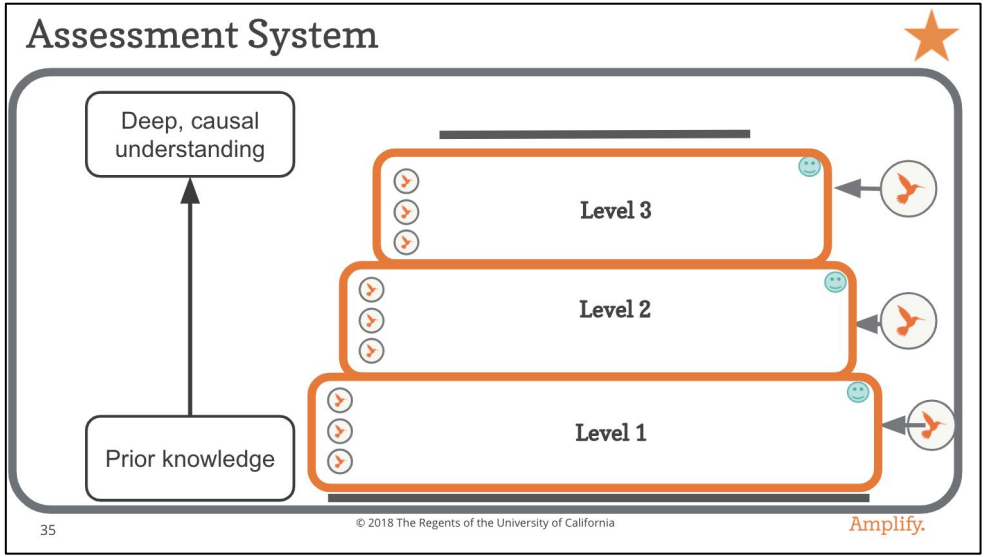
Benchmark Assessments 2020-2021





Assessment Reflection

- There are many assessment opportunities in each Amplify Science unit.
- What does having this quantity of assessment opportunities do for students? For teachers?



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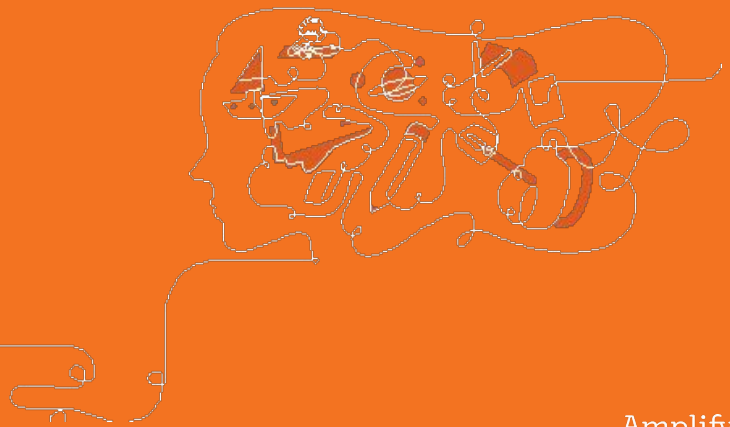
Exemplar Sequence



@Home Lesson 1

Ocean, Atmosphere, and Climate

AmplifyScience

Today, we will begin a new unit called ***Ocean, Atmosphere, and Climate.*** Read the Unit Question on the next slide. This is the question that will guide our work for the rest of the unit.

Unit Question

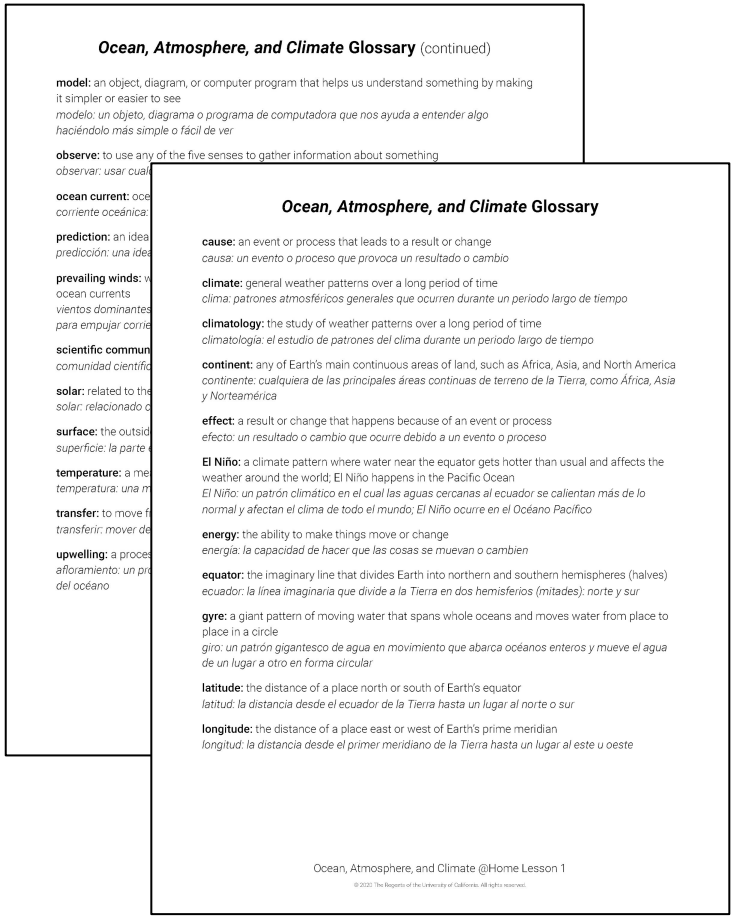
What determines the air temperature of a location on Earth?

You can probably think of a place on Earth that is usually **very warm** or a place that is usually **very cold**. Have you ever thought about what **determines the air temperature** of a place? This is what we will focus on in the ***Ocean, Atmosphere, and Climate*** unit.

Here is an important word you just heard in the video:

climate

general weather patterns over a long period of time



***Ocean, Atmosphere, and Climate* Glossary** (continued)

model: an object, diagram, or computer program that helps us understand something by making it simpler or easier to see
modelo: un objeto, diagrama o programa de computadora que nos ayuda a entender algo haciéndolo más simple o fácil de ver

observe: to use any of the five senses to gather information about something
observar: usar cual

ocean current: oce
corriente oceánica:

prediction: an idea
predicción: una idea

prevailing winds: w
ocean currents
vientos dominantes
para empujar corrie

scientific commun
comunidad científic

solar: related to the
solar: relacionado c

surface: the outsid
superficie: la parte

temperature: a me
temperatura: una m

transfer: to move fi
transferir: mover de

upwelling: a proces
afloramiento: un pr
del océano

***Ocean, Atmosphere, and Climate* Glossary**

cause: an event or process that leads to a result or change
causa: un evento o proceso que provoca un resultado o cambio

climate: general weather patterns over a long period of time
clima: patrones atmosféricos generales que ocurren durante un periodo largo de tiempo

climatology: the study of weather patterns over a long period of time
climatología: el estudio de patrones del clima durante un periodo largo de tiempo

continent: any of Earth's main continuous areas of land, such as Africa, Asia, and North America
continente: cualquiera de las principales áreas continuas de terreno de la Tierra, como África, Asia y Norteamérica

effect: a result or change that happens because of an event or process
efecto: un resultado o cambio que ocurre debido a un evento o proceso

El Niño: a climate pattern where water near the equator gets hotter than usual and affects the weather around the world; El Niño happens in the Pacific Ocean
El Niño: un patrón climático en el cual las aguas cercanas al ecuador se calientan más de lo normal y afectan el clima de todo el mundo; El Niño ocurre en el Océano Pacífico

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

equator: the imaginary line that divides Earth into northern and southern hemispheres (halves)
ecuador: la línea imaginaria que divide a la Tierra en dos hemisferios (mitades): norte y sur

gyre: a giant pattern of moving water that spans whole oceans and moves water from place to place in a circle
giro: un patrón gigantesco de agua en movimiento que abarca océanos enteros y mueve el agua de un lugar a otro en forma circular

latitude: the distance of a place north or south of Earth's equator
latitud: la distancia desde el ecuador de la Tierra hasta un lugar al norte o sur

longitude: the distance of a place east or west of Earth's prime meridian
longitud: la distancia desde el primer meridiano de la Tierra hasta un lugar al este u oeste

Ocean, Atmosphere, and Climate @Home Lesson 1

Throughout the year, 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.

***Ocean, Atmosphere, and Climate* Glossary** pages or Amplify Library

Climate scientists, or climatologists, study weather patterns over time, for example, a location's average temperature over a long time, not the temperature on one particular day.

On the next slide you will read a **message** from Kiri Parata, the Director of the New Zealand Farm Council to learn more about what you will be doing in this unit.

Kiri Parata
To: Student Climatologists
Re: Influences on Christchurch, New Zealand's Air Temperature

New Zealand Farm Council

I am the director of the New Zealand Farm Council. Our organization represents farmers in the area surrounding Christchurch. Every few years, we notice climate changes that affect the crops. During El Niño years, the air temperature is much cooler than usual, and we would like to learn why.

So the farmers are better prepared for these temperature changes, we are asking you—our student climatologists—to conduct some research on what determines Christchurch's air temperature, especially why it decreases during El Niño.

Looking forward to working with you and hearing what you find out!

Kiri

Kiri Parata, Director
New Zealand Farm Council

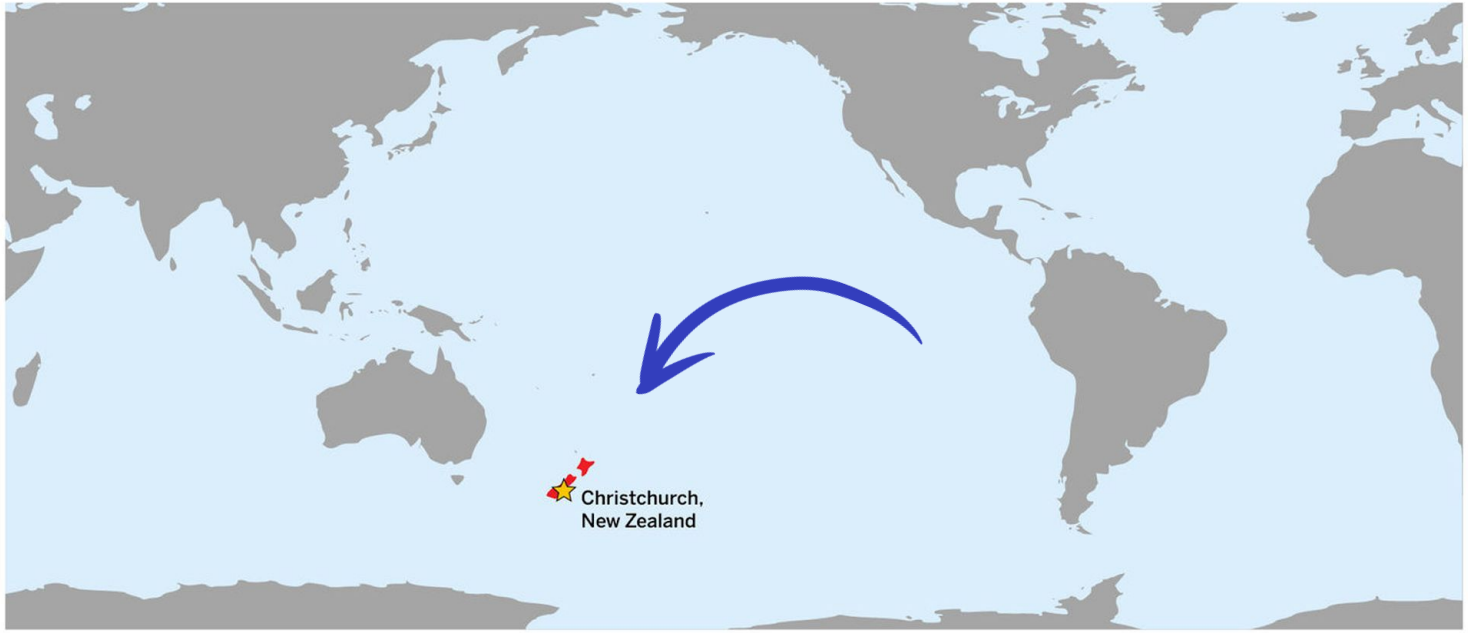
Climatologists expect a particular location's climate to **stay mostly the same**. When they get data outside of the expected pattern, it often leads them to investigate the cause of the unusual data.

In this unit, you will work as **student climatologists** to investigate why Christchurch, New Zealand's air temperature is cooler than usual during El Niño years.

Like the scientists you saw in the video, you will work with **real climate data** to conduct research about El Niño—this is similar in many ways to the work done by professional scientists.

Examine the map of the world on the next slide. New Zealand is a country located in the Southwestern Pacific, near Australia. There are two main islands that make up the country of New Zealand. Christchurch is on South Island. There is a **yellow star** on the map to show where Christchurch, New Zealand is.

During El Niño years, why is Christchurch, New Zealand's air temperature cooler than usual?



In your role as **student climatologists**, you will begin by researching this question:

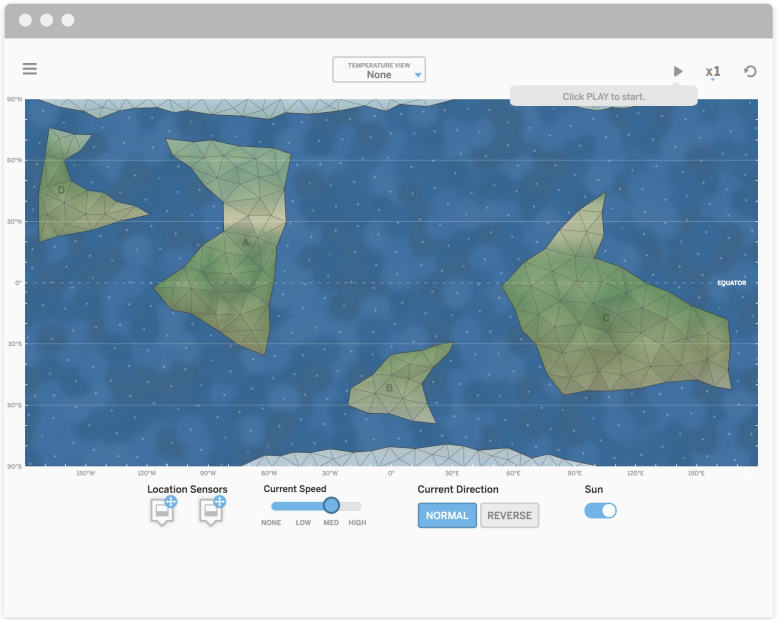
Research Question:
During El Niño years, why is Christchurch, New Zealand's air temperature cooler than usual?

During El Niño years, why is Christchurch, New Zealand's air temperature cooler than usual?

Claim 1: The amount of incoming energy from the sun changes.
Claim 2: Something about Earth's surface (land or water) changes.
Claim 3: Something about the air changes.

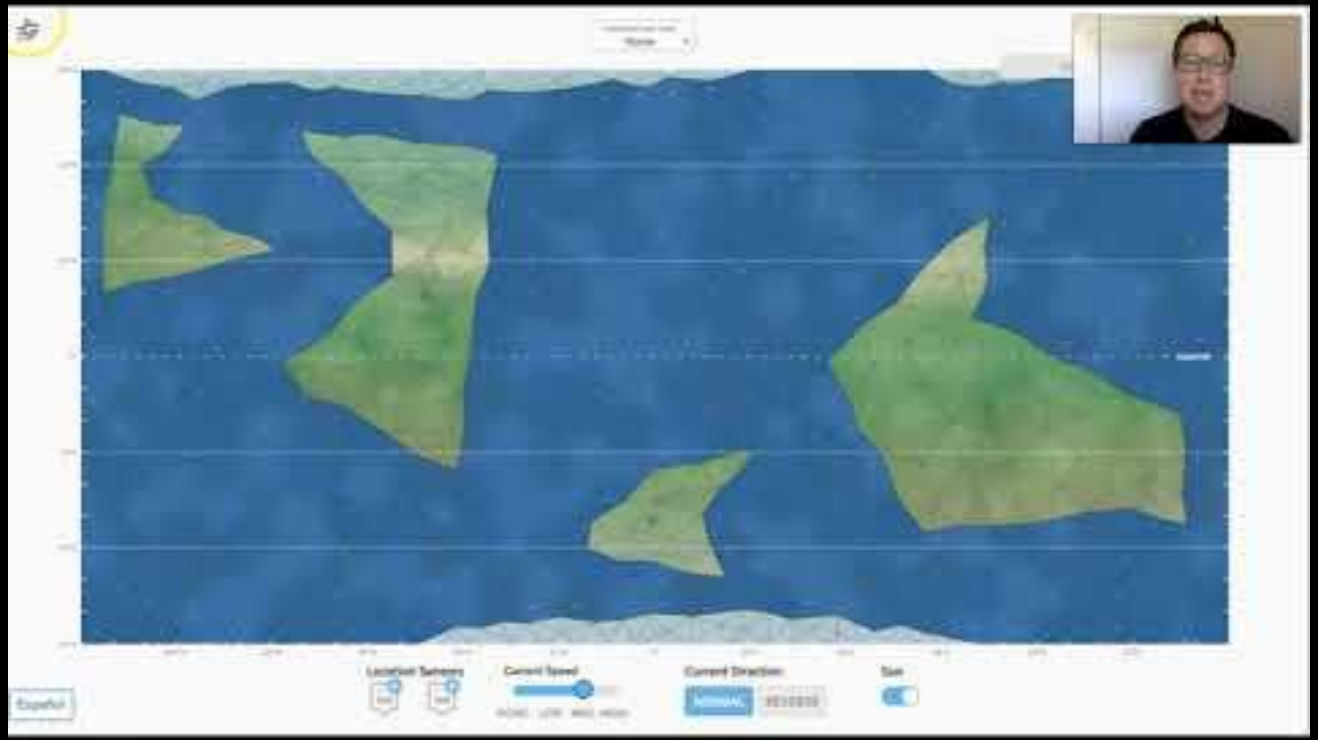
Here are **three claims** that represent possible answers to our Research Question.
When we refer to **Earth's surface**, we're talking about **land and water.**

Next, you will use the *Ocean, Atmosphere, and Climate* Simulation or watch a video of a Sim investigation.
Check with your teacher about how you will access Sims and other digital tools in this @Home Unit.



The ***Ocean, Atmosphere, and Climate*** **Simulation** is a scientific model that will help us investigate climate.

Let's watch a video to learn about some of the features of this Sim.



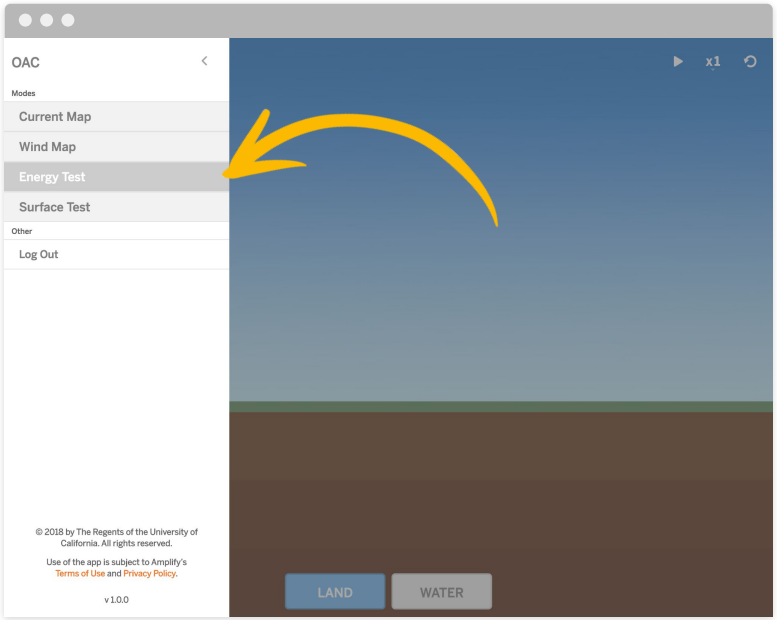
Using the print version? Watch the video at **tinyurl.com/AMPOAC-02**

The Sim and other sources of evidence can help us answer our first Chapter Question:

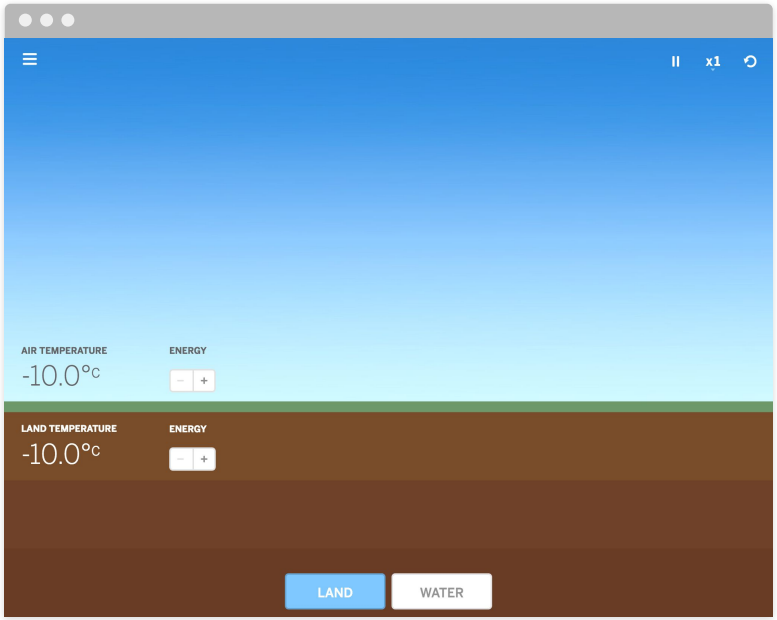
Chapter 1 Question

What determines the air temperature of Christchurch, New Zealand?

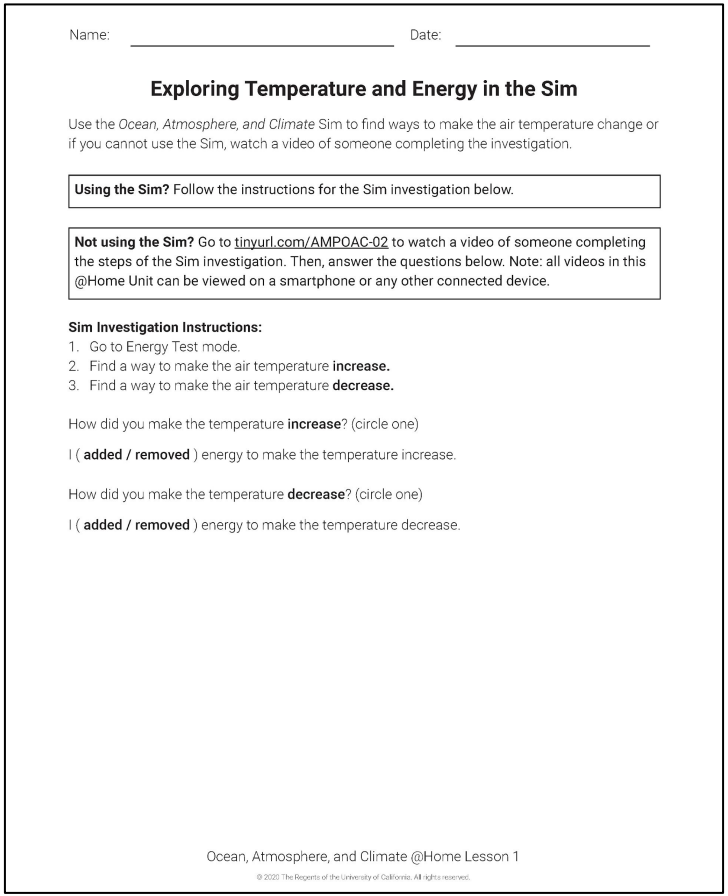
As Kiri Parata explained, we know the temperature in Christchurch changes during El Niño years. To understand **why,** we'll need to figure out what can **cause a temperature change.**



Let's go to the Sim with a **mission** to determine how to change air temperature.
For this mission, we will use **Energy Test** mode.



In the Sim, we will find a way to make the air temperature **increase** and **decrease.**
Then, you will answer the questions.



Name: _____ Date: _____

Exploring Temperature and Energy in the Sim

Use the *Ocean, Atmosphere, and Climate* Sim to find ways to make the air temperature change or 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/AMPOAC-02 to watch a video of someone completing the steps of the Sim investigation. Then, answer the questions below. Note: all videos in this @Home Unit can be viewed on a smartphone or any other connected device.

Sim Investigation Instructions:

1. Go to Energy Test mode.
2. Find a way to make the air temperature **increase.**
3. Find a way to make the air temperature **decrease.**

How did you make the temperature **increase**? (circle one)

I (**added / removed**) energy to make the temperature increase.

How did you make the temperature **decrease**? (circle one)

I (**added / removed**) energy to make the temperature decrease.

Ocean, Atmosphere, and Climate @Home Lesson 1

Find the Exploring Temperature and Energy in the Sim page. Use the Sim or watch a video of this Sim investigation.

Complete the Sim mission by causing the **air temperature to change.**

Energy can take different forms, for example, light energy (such as sunlight) or thermal energy (the energy measured by temperature).

energy

the ability to make things move or change

As we saw in the Sim, for air temperature the higher the temperature, the more energy the air has.

temperature

a measure of how hot or cold something is

End of @Home Lesson

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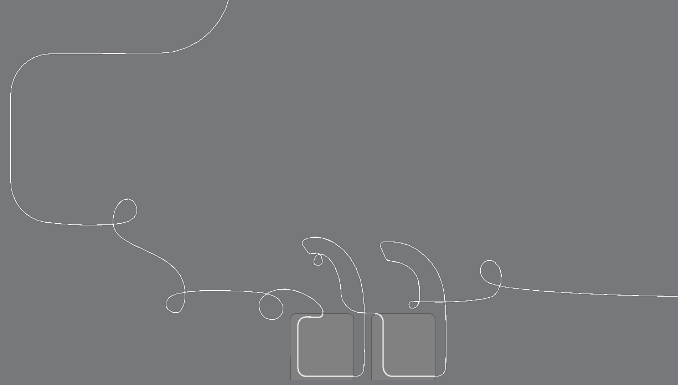
Reflect and Share



1. What are students working towards figuring out in @home lesson 1?

2. What activities did students complete to help in developing their understanding?

Observe and Reflect

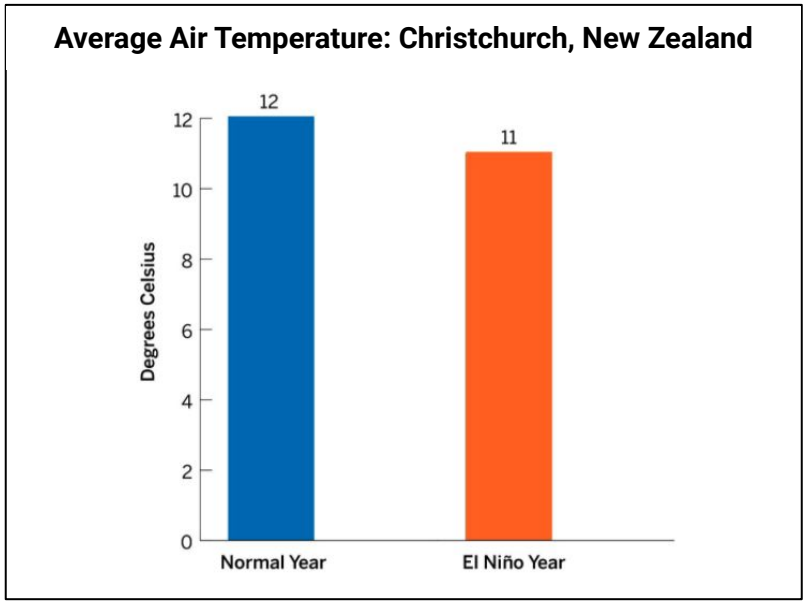
We will now dive into @Home lesson 2.
This lesson has the first On the Fly assessment for the unit. As I walk through the lesson, I want you to think about the following:

1. What information did the students gain in lesson 1 that can be used to build on their understanding in lesson 2?
2. How can teachers use the information from the OTF assessment to form future instruction.

@Home Lesson 2

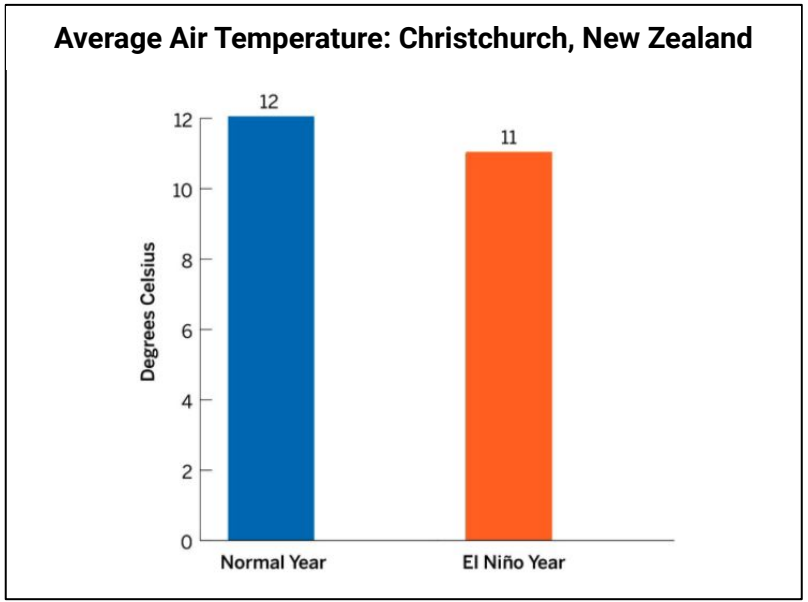
Ocean, Atmosphere, and Climate

AmplifyScience



El Niño events occur every two to seven years. During an El Niño event there is a shift in the climate across the tropical Pacific, which causes some areas to **become cooler** than usual and some areas to **become warmer** than usual.

This graph shows that Christchurch, New Zealand's **air temperature is cooler** than usual during El Niño years.



In the last lesson, you used the Sim to investigate temperature and energy.

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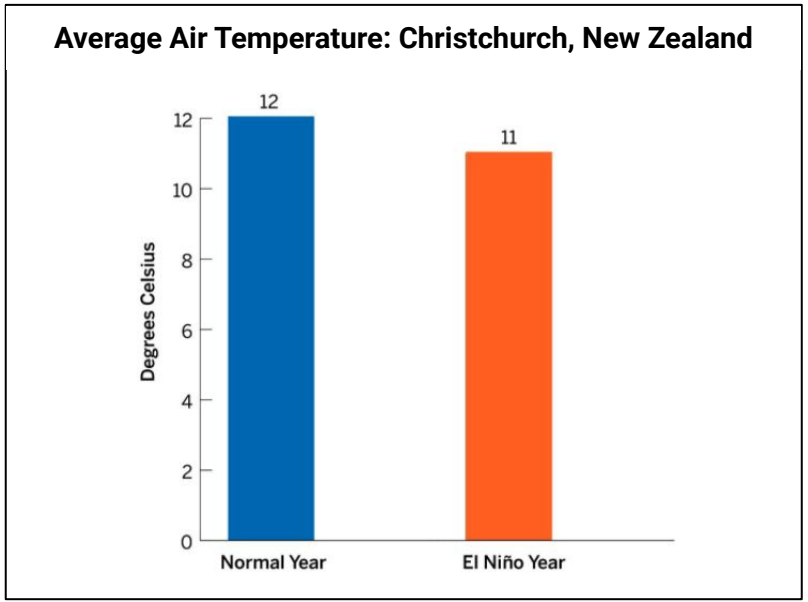
Do you think New Zealand's air has more energy or less energy during El Niño years?



We have learned that temperature is a measure of energy, so air with more energy will have a higher temperature than air with less energy. Christchurch, New Zealand's air temperature is **cooler** than usual during El Niño years, so the air has **less energy.**

In order to think about why the air has less energy in an El Niño year, we will investigate this question:

Investigation Question:
How does air get energy?

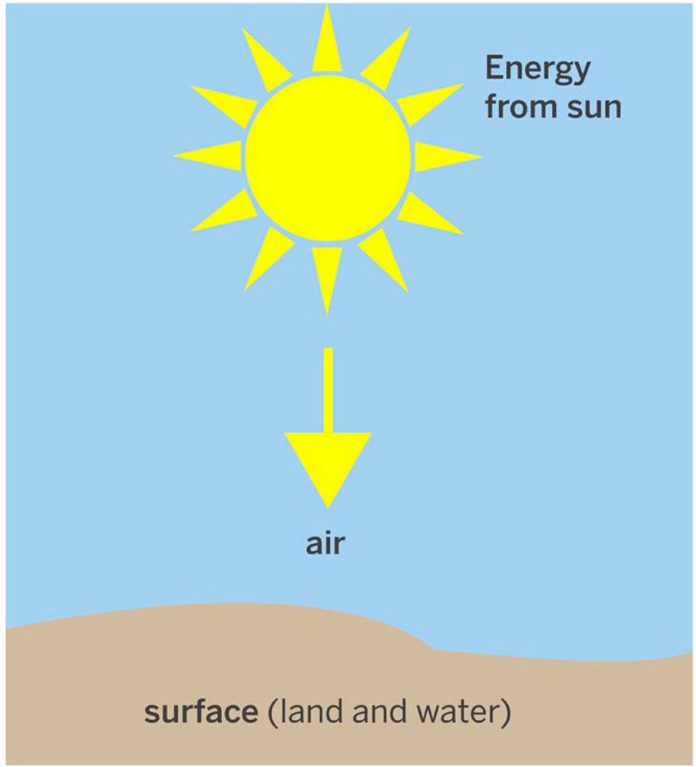
This word will be important today, and for the rest of the unit:

transfer

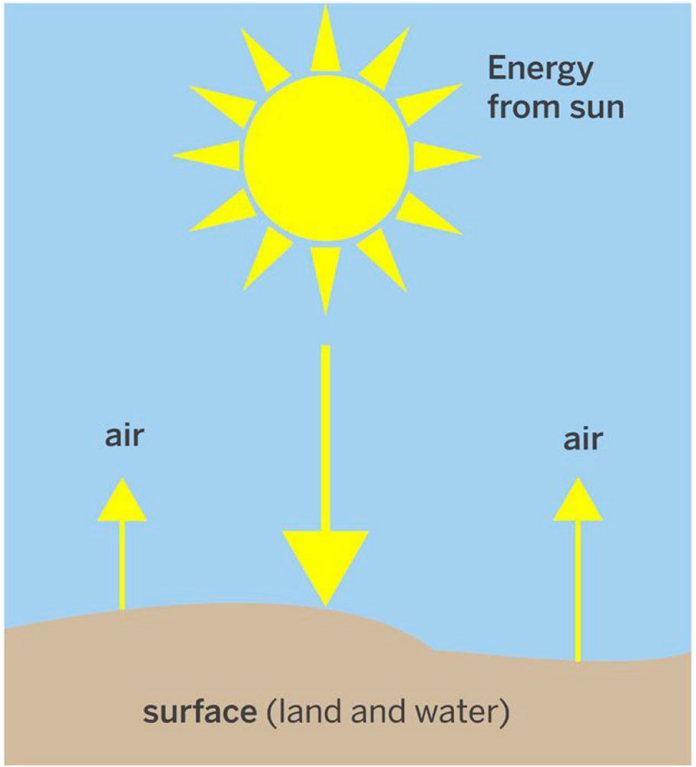
to move from one object to another or one place to another

When we ask how air gets energy, we are really asking about **energy transfer**. We want to know how energy is **transferred to the air.** Today, we'll consider **two claims** about how it happens. **Carefully examine** the two diagrams on the next slide. Each diagram represents one of the two claims we will work with today.

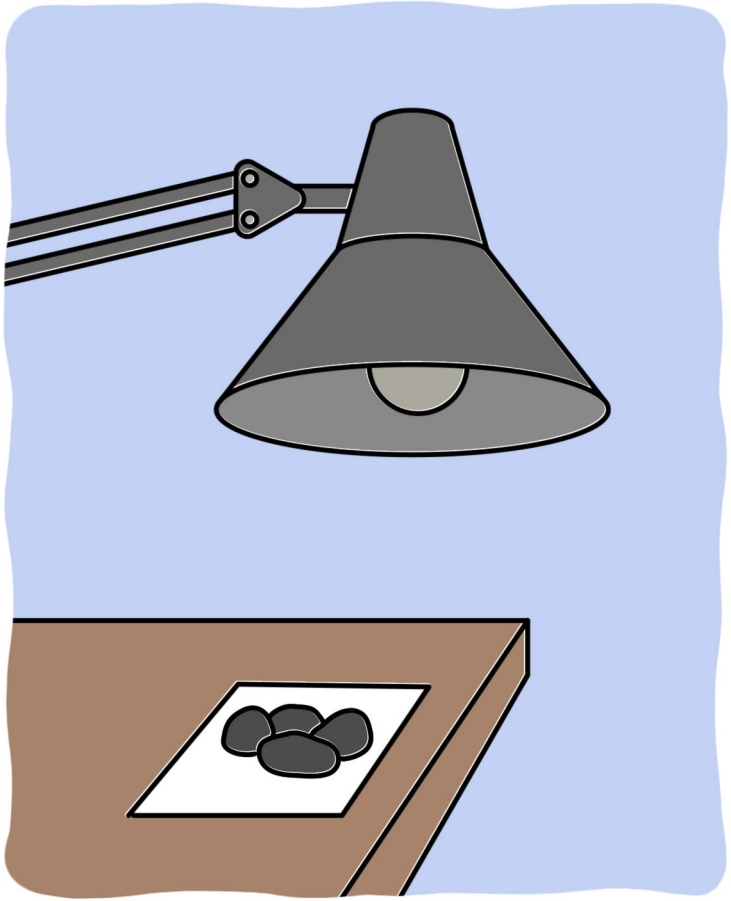
Investigation Question: How does air get energy?



Claim 1: Energy is transferred from the sun to the air.

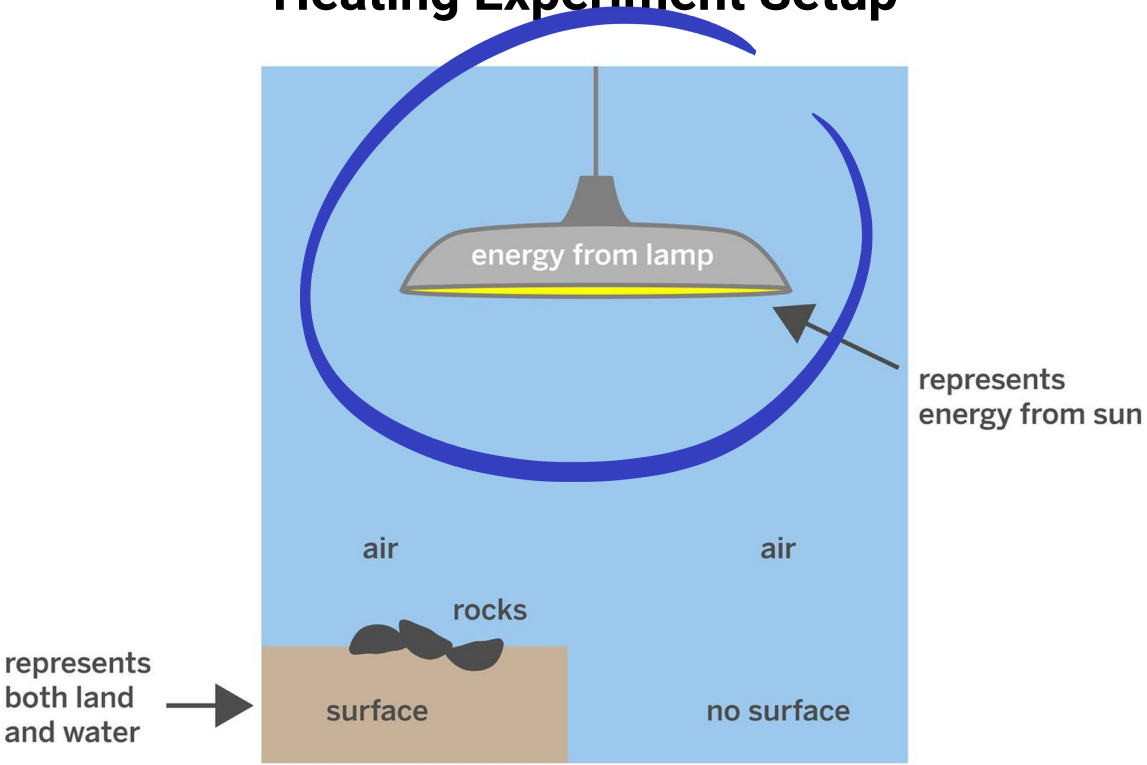


Claim 2: Energy is transferred from the sun to the surface, and then to the air.



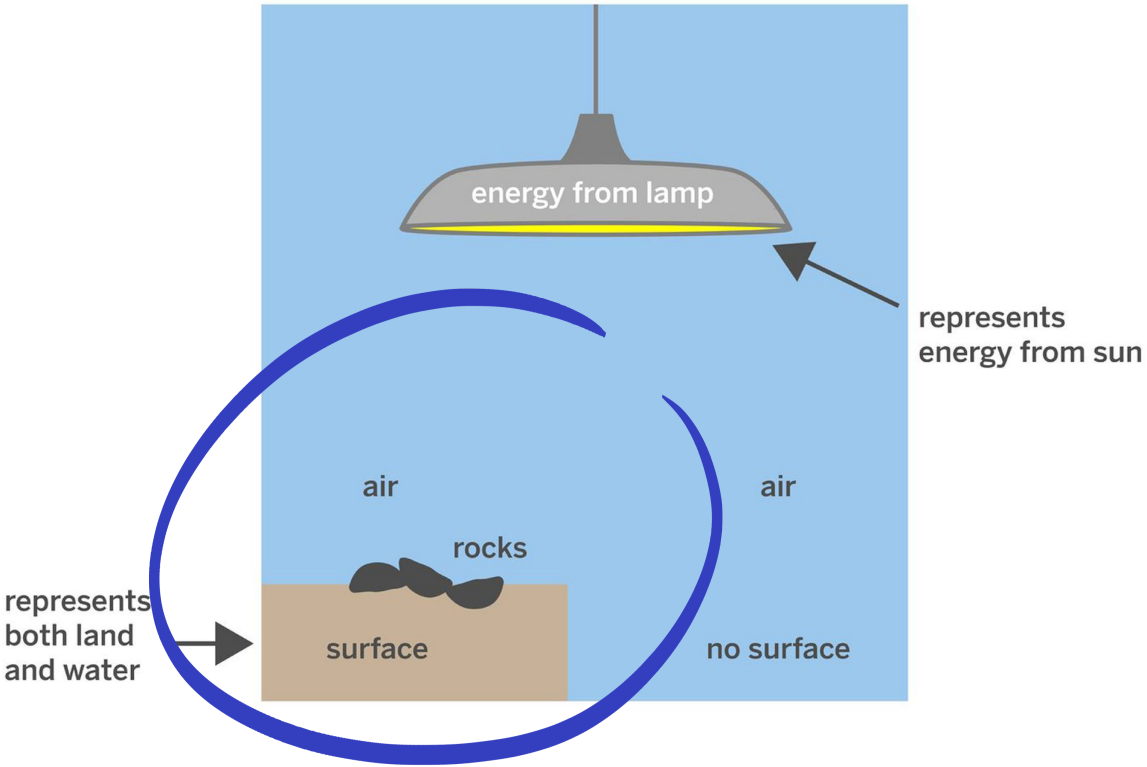
The next series of slides describe an **experiment** that will help us gather evidence to help determine which claim is more convincing.
This experiment models what happens in the real world.

Heating Experiment Setup



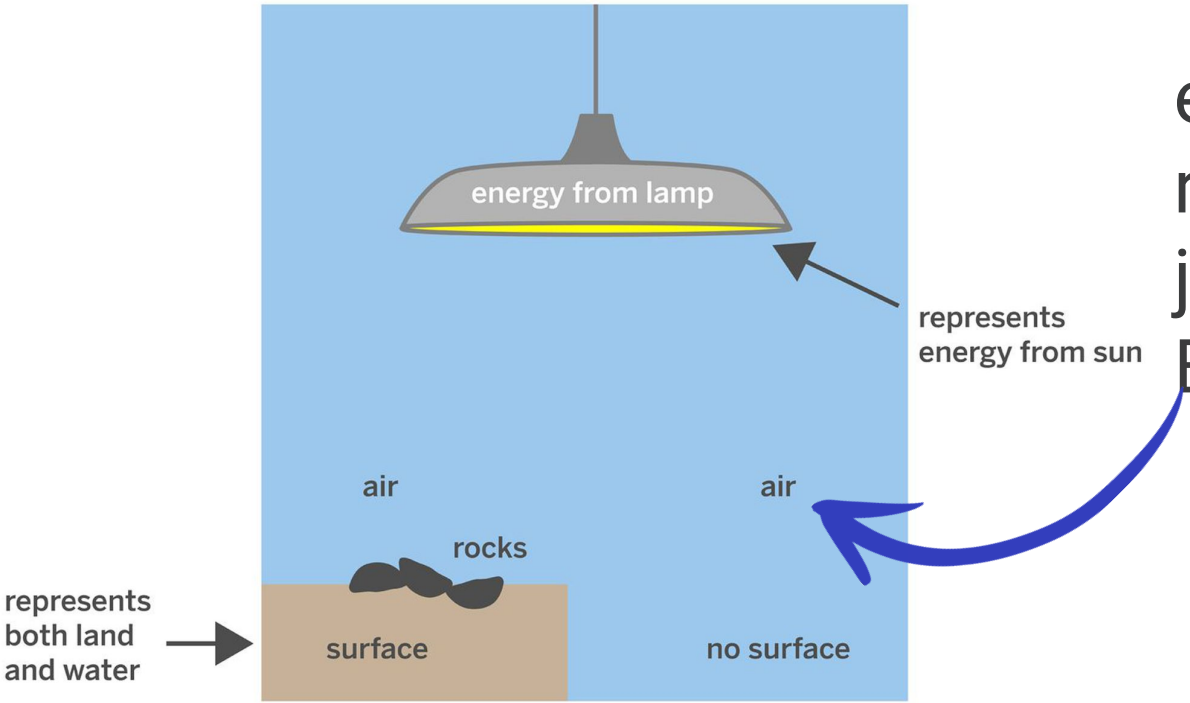
In this experiment, the sun is represented by **the lamp**. The lamp provides energy, just as the sun does.

Heating Experiment Setup

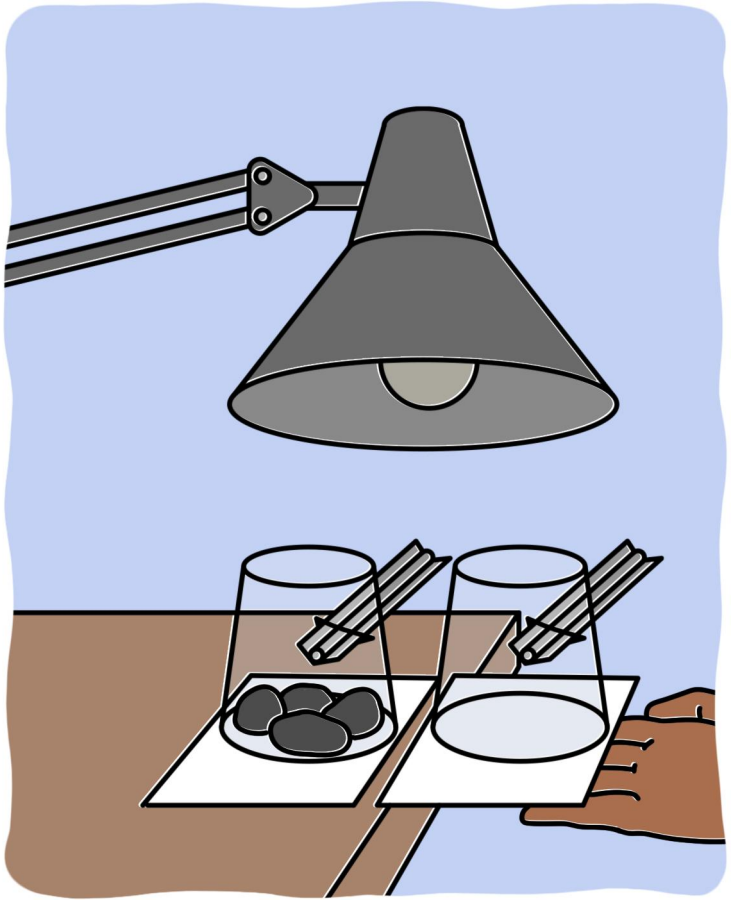


The rocks and the table represent Earth's surface, both land and water.

Heating Experiment Setup

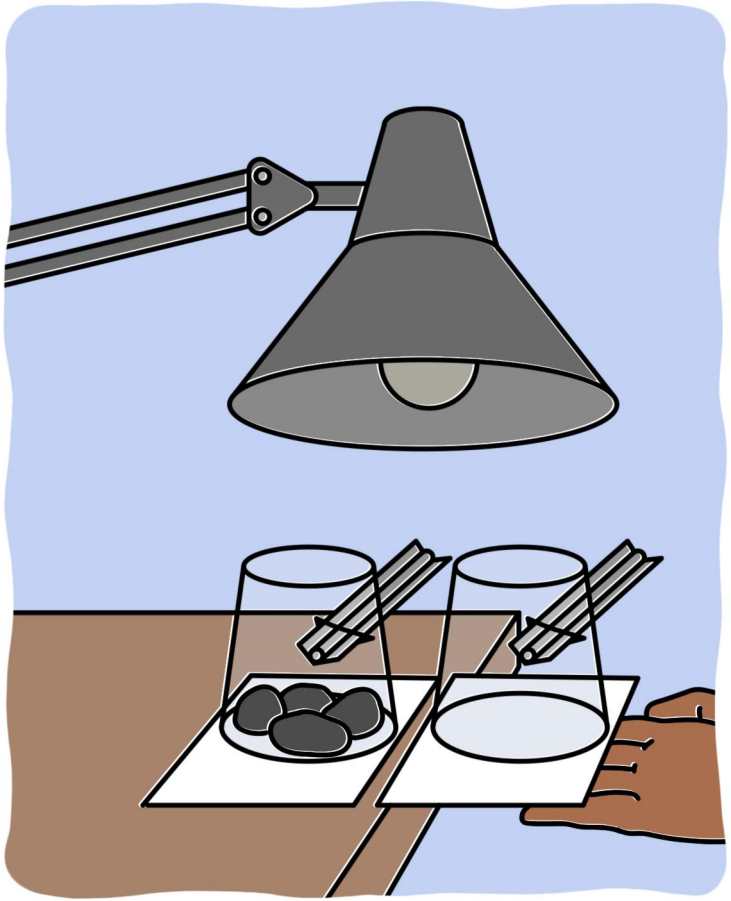


The air in the experiment represents air just above Earth's surface.

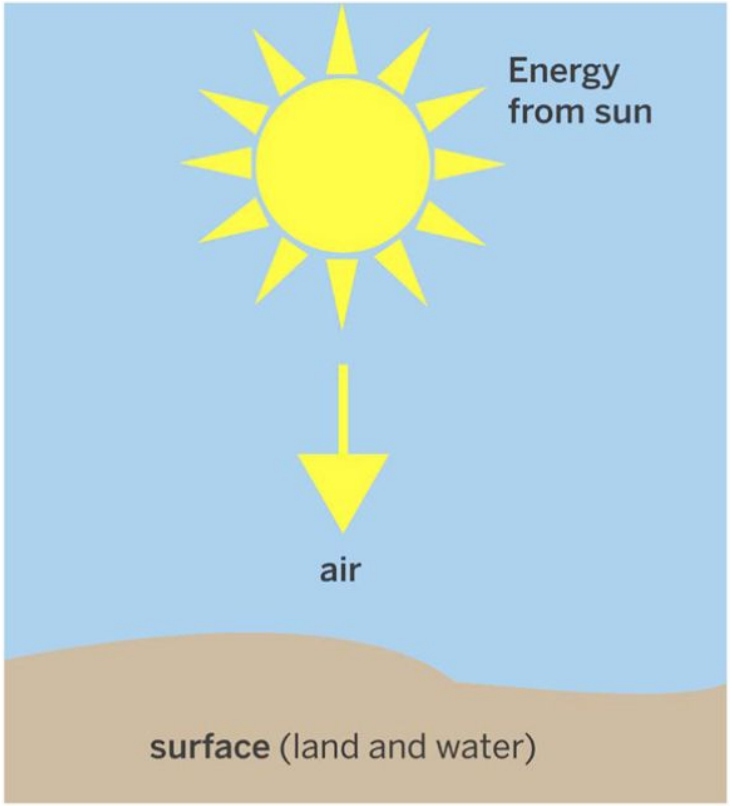


In the experiment, two cups are used to trap a small amount of air in **two locations:** air with no surface underneath and air above some rocks. The temperature will be measured in both places.

The temperature is measured in both locations **two times.**
First, the temperature is measured with the lamp off.
Then, the lamp is turned on. After 20 minutes, the temperature is measured again.

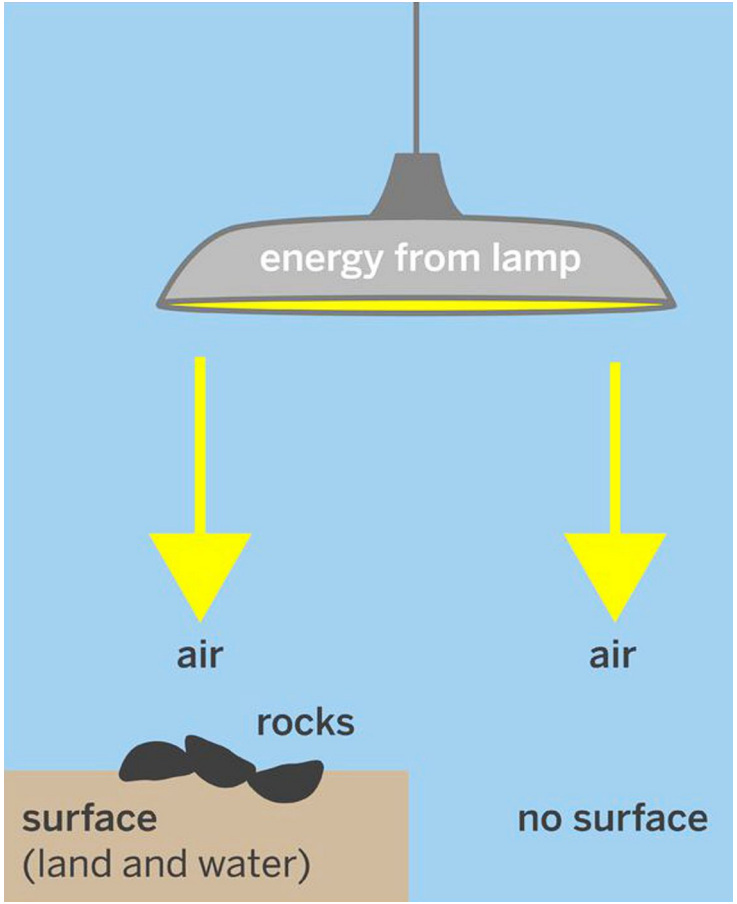


We can try to determine how air gets energy by **comparing** the air temperature before and after the light is turned on in these two locations.

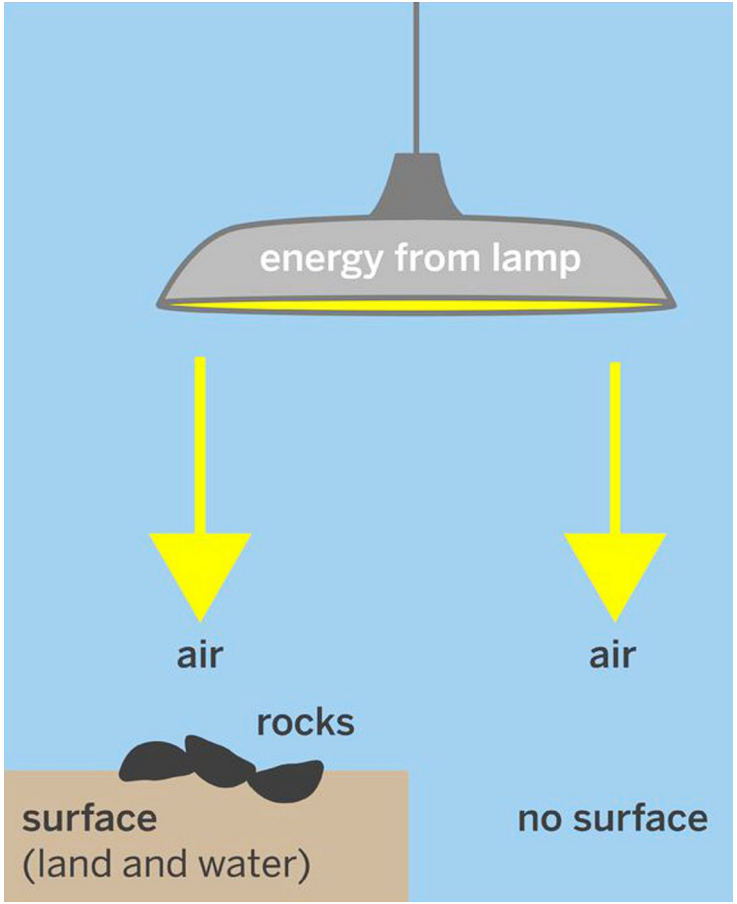


Claim 1: Energy is transferred from the sun to the air.

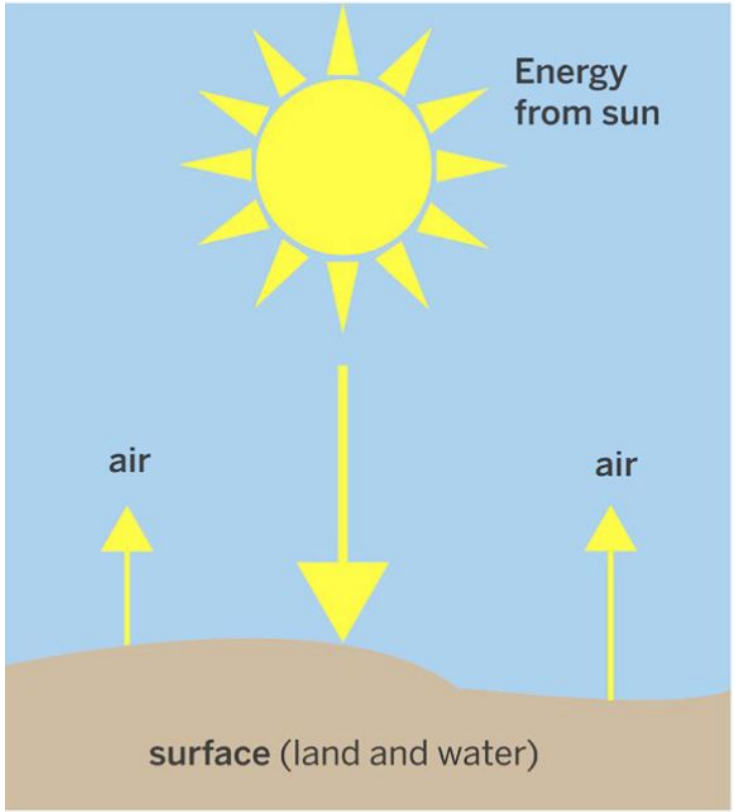
Let’s think about what we would see in the experiment if Claim 1 were true.



If Claim 1 were true, would you expect the air temperature where there is **no surface** underneath to be **higher, lower**, or **the same** as the air above the rocks? Why?

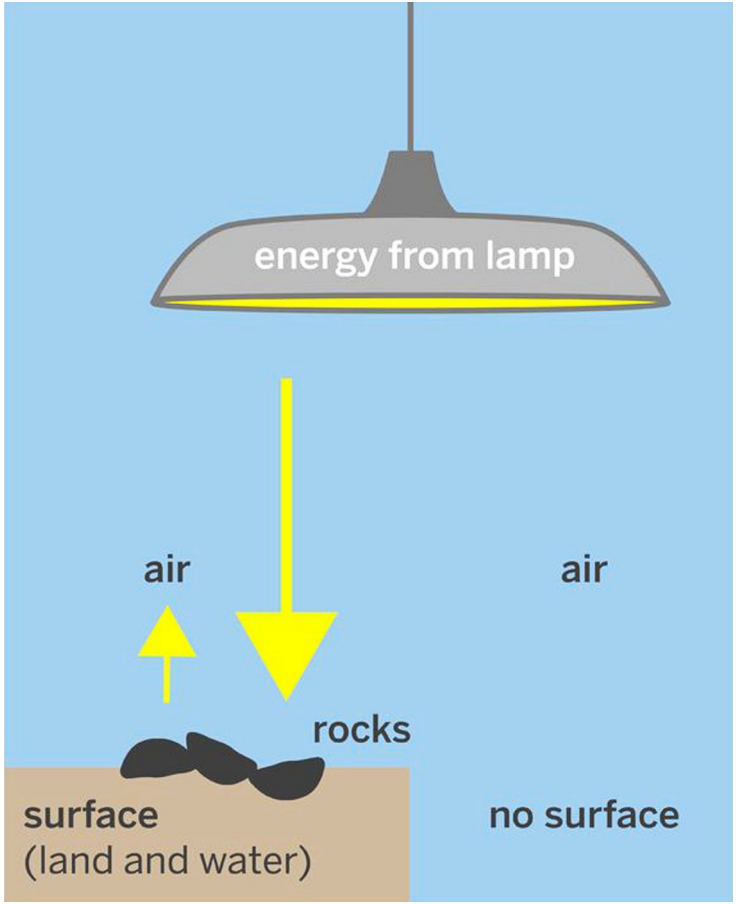


If Claim 1 is true then the air with no surface underneath would have **the same temperature** as the air above the rocks because both areas of air would receive equal energy from the sun.

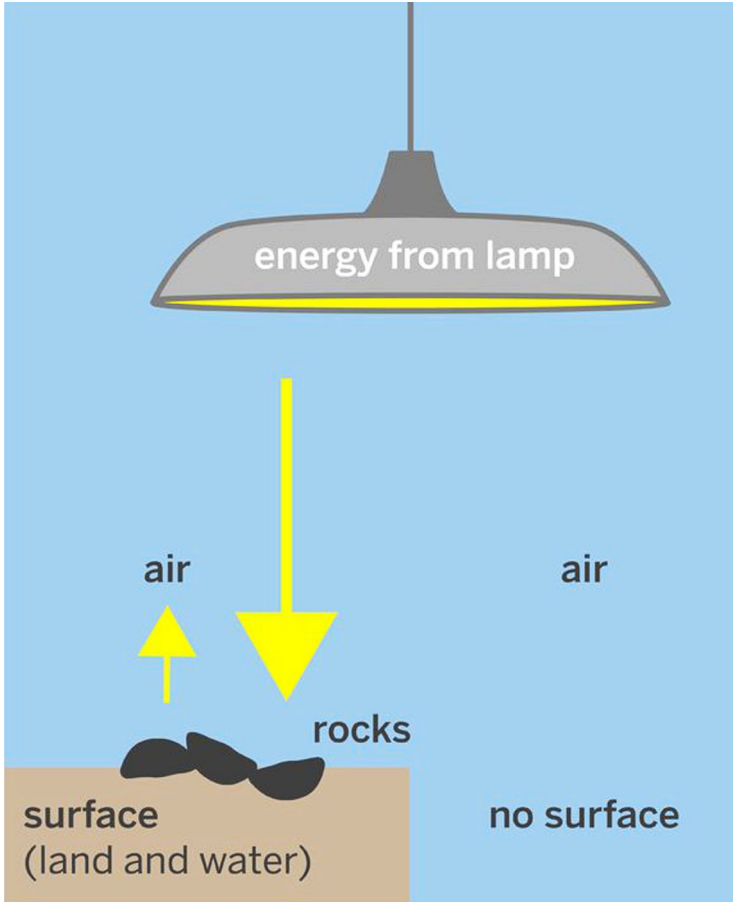


Claim 2: Energy is transferred from the sun to the surface, and then to the air.

Next, let's think about what we would see in the experiment if Claim 2 were true.



If Claim 2 were true, would you expect the air temperature where there is **no surface** underneath to be **higher, lower**, or **the same** as the air above the rocks? Why?

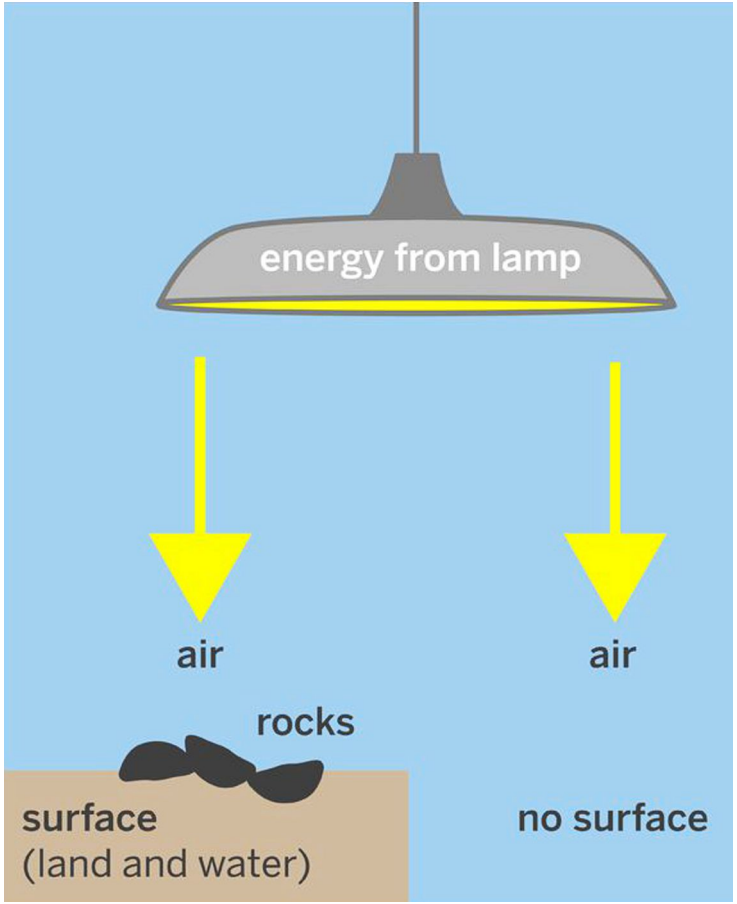


If Claim 2 is true then the temperature of the air where there is **no surface** underneath would be **lower than the air above** the rocks. That's because there's no surface underneath the air to transfer energy to it.

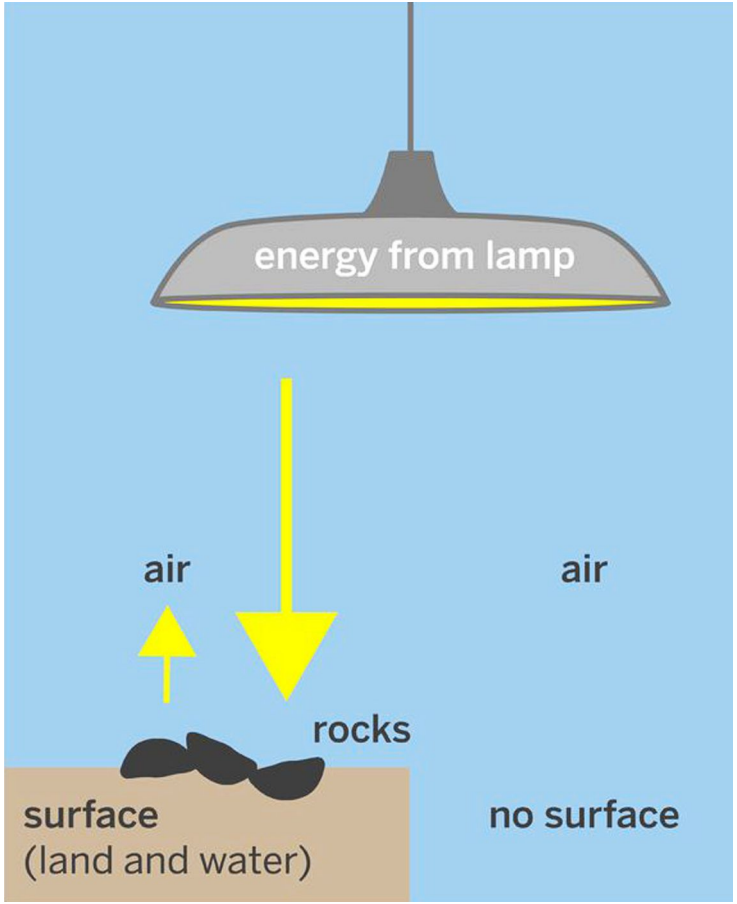
Examine the data on the next slide. This data was collected by someone who did this experiment in a classroom like yours.

Heating Experiment Data Table

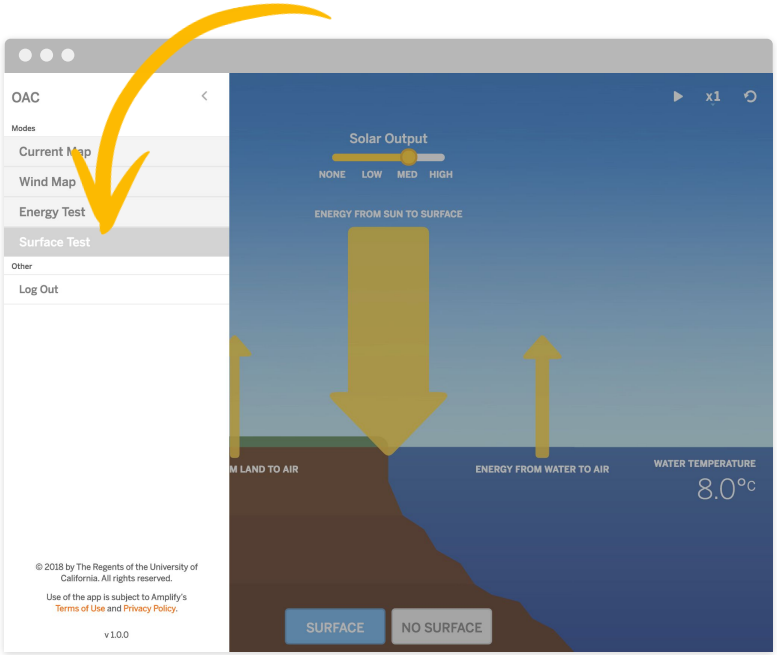
	Starting air temperature (°C) (before lamp is turned on)	**Final air temperature (°C)** (20 minutes after lamp is turned on)	**Change in air temperature (°C)** (final temperature minus starting temperature)
Cup 1 (air above surface)	22°C	52°C	+30°C
Cup 2 (air, no surface underneath)	22°C	25°C	+3°C



After examining the data that was collected, is there evidence to support **Claim 1:** Energy is transferred from the sun to the air?



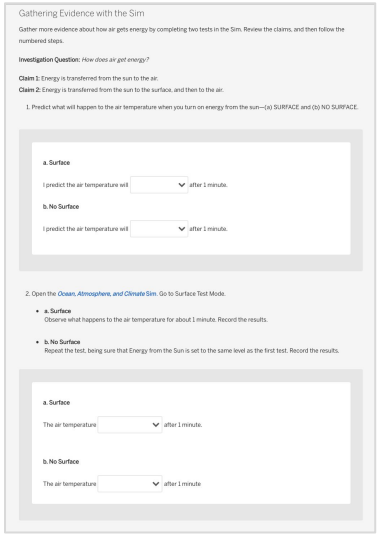
After examining the data that was collected, is there evidence to support **Claim 2:** Energy is transferred from the sun to the surface, and then to the air?



We will come back to the two claims and the Heating Experiment data at the end of the lesson. First, you'll gather more evidence in the Sim to evaluate our claims. This time, we'll open **Surface Test** mode.

In this mode, we'll be able to choose SURFACE or NO SURFACE.
We can run tests to learn more about how energy is transferred to the air.

For the next activity you will complete written work, either on paper or online. Check with your teacher about how you will complete and submit work in this @Home Unit.



Gathering Evidence with the Sim

Gather more evidence about how air gets energy by completing two tests in the Sim. Review the claims, and then follow the numbered steps.

Investigation Question: *How does air get energy?*

Claim 1: Energy is transferred from the sun to the air.
Claim 2: Energy is transferred from the sun to the surface, and then to the air.

1. Predict what will happen to the air temperature when you turn on energy from the sun—(a) SURFACE and (b) NO SURFACE.

a. Surface

I predict the air temperature will ▾ after 1 minute.

b. No Surface

I predict the air temperature will ▾ after 1 minute.

2. Open the *Ocean, Atmosphere, and Climate* Sim. Go to Surface Test Mode.

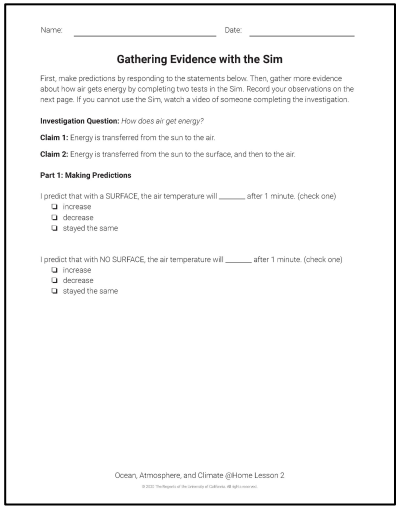
- **a. Surface**
  Observe what happens to the air temperature for about 1 minute. Record the results.
- **b. No Surface**
  Repeat the test, being sure that Energy from the Sun is set to the same level as the first test. Record the results.

a. Surface

The air temperature ▾ after 1 minute.

b. No Surface

The air temperature ▾ after 1 minute.



Name: _____ Date: _____

Gathering Evidence with the Sim

First, make predictions by responding to the statements below. Then, gather more evidence about how air gets energy by completing two tests in the Sim. Record your observations on the next page. If you cannot use the Sim, watch a video of someone completing the investigation.

Investigation Question: *How does air get energy?*

Claim 1: Energy is transferred from the sun to the air.

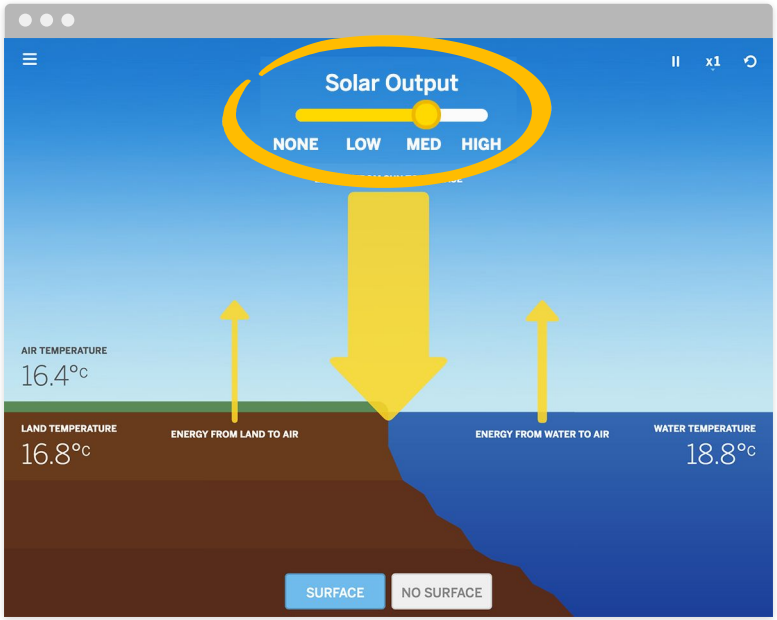
Claim 2: Energy is transferred from the sun to the surface, and then to the air.

Part 1: Making Predictions

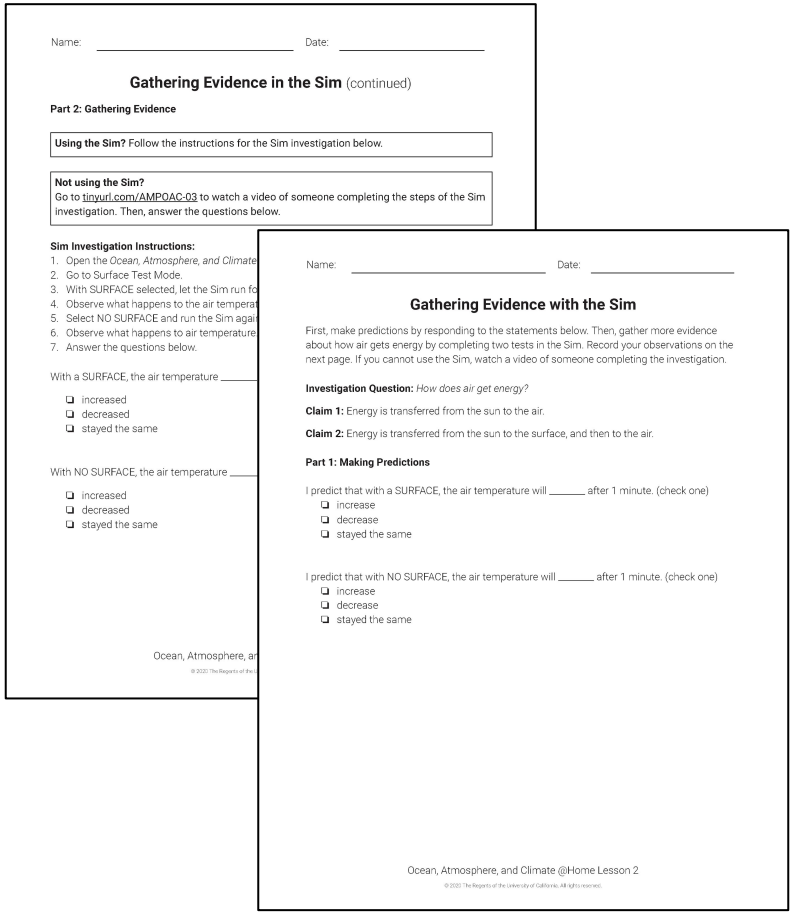
I predict that with a SURFACE, the air temperature will _____ after 1 minute. (check one)
- ❑ increase
- ❑ decrease
- ❑ stayed the same

I predict that with NO SURFACE, the air temperature will _____ after 1 minute. (check one)
- ❑ increase
- ❑ decrease
- ❑ stayed the same

Ocean, Atmosphere, and Climate @Home Lesson 2



The Solar Output is set at Medium.
We will keep output the same for both the SURFACE test and the NO SURFACE test in order to have a fair comparison.



Name: _____ Date: _____

Gathering Evidence in the Sim (continued)

Part 2: Gathering Evidence

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

Not using the Sim?
Go to tinyurl.com/AMPOAC-03 to watch a video of someone completing the steps of the Sim investigation. Then, answer the questions below.

Sim Investigation Instructions:
1. Open the *Ocean, Atmosphere, and Climate*
2. Go to Surface Test Mode.
3. With SURFACE selected, let the Sim run fo
4. Observe what happens to the air temperat
5. Select NO SURFACE and run the Sim agai
6. Observe what happens to air temperature
7. Answer the questions below.

With a SURFACE, the air temperature _____

- ❑ increased
- ❑ decreased
- ❑ stayed the same

With NO SURFACE, the air temperature _____

- ❑ increased
- ❑ decreased
- ❑ stayed the same

Ocean, Atmosphere, ar

Name: _____ Date: _____

Gathering Evidence with the Sim

First, make predictions by responding to the statements below. Then, gather more evidence about how air gets energy by completing two tests in the Sim. Record your observations on the next page. If you cannot use the Sim, watch a video of someone completing the investigation.

Investigation Question: *How does air get energy?*

Claim 1: Energy is transferred from the sun to the air.

Claim 2: Energy is transferred from the sun to the surface, and then to the air.

Part 1: Making Predictions

I predict that with a SURFACE, the air temperature will _____ after 1 minute. (check one)
- ❑ increase
- ❑ decrease
- ❑ stayed the same

I predict that with NO SURFACE, the air temperature will _____ after 1 minute. (check one)
- ❑ increase
- ❑ decrease
- ❑ stayed the same

Ocean, Atmosphere, and Climate @Home Lesson 2

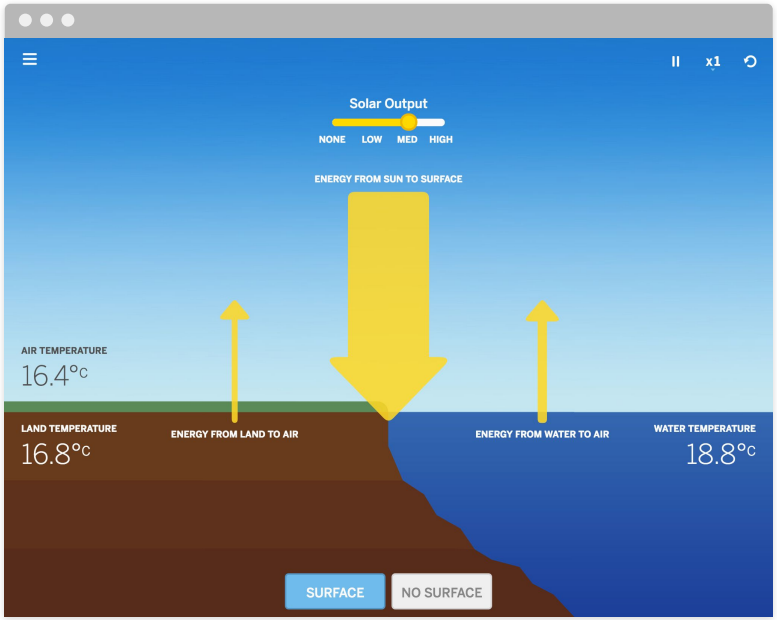
Go to the **Gathering Evidence in the Sim** activity. Use the **Sim** or watch a video of this Sim investigation.

Make predictions and then **gather evidence** in the Sim.

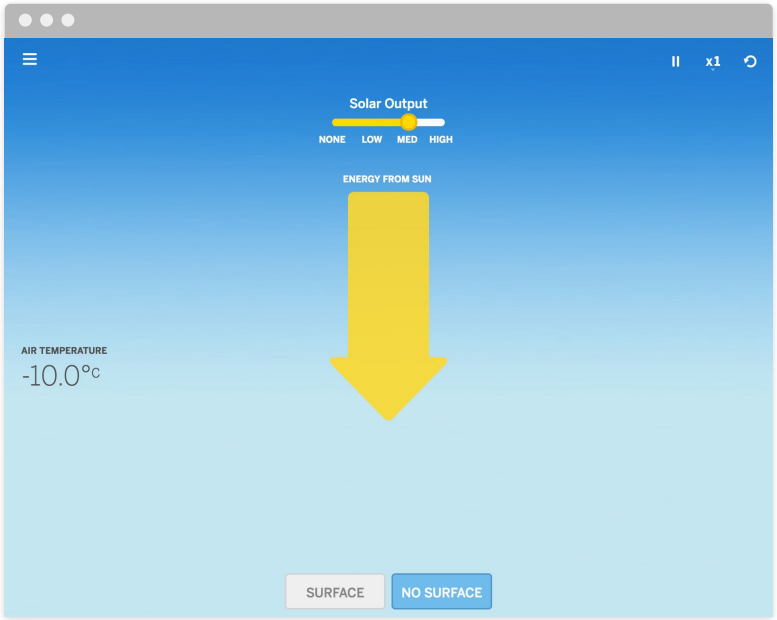
Gathering Evidence in the Sim pages or **Lesson 1.3, Activity 3**

In this lesson, and many others in the *Ocean, Atmosphere, and Climate* @Home unit, you will need to **talk with a partner.** Check with your teacher about how you will work with partners in this @Home Unit.

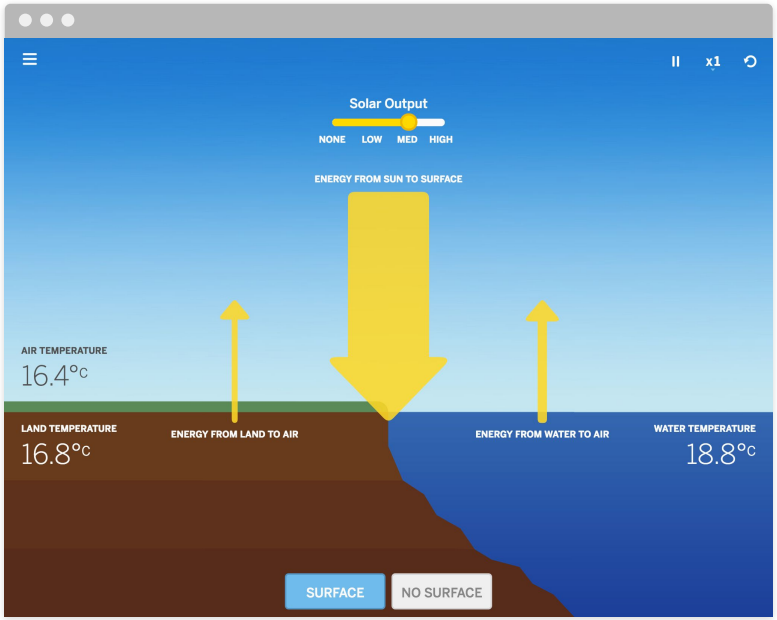
Your partner could be a classmate on the phone or someone at home with you.



Discuss the evidence you gathered in the Sim. Did your results support or disprove either of the claims?

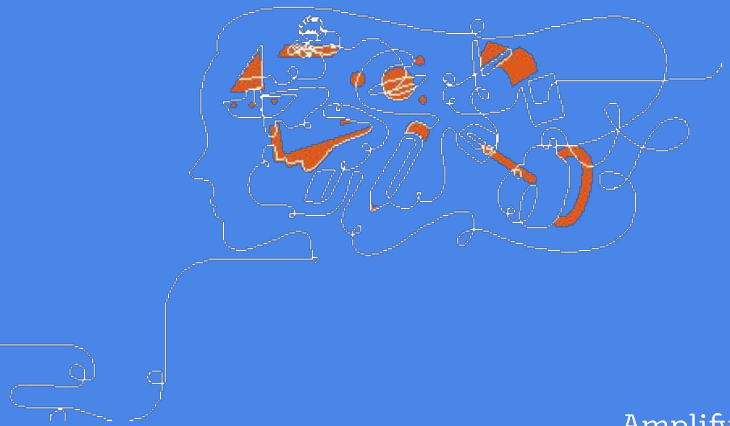


When NO SURFACE is selected, the air temperature **does not change.**
That shows that energy is not transferred to air.



When SURFACE is selected, the surface temperature **increases,** and then air temperature **increases**. Also, arrows show that energy transfers from the surface to the air.

Embedded Formative Assessment



On The Fly Assessment #1: Lesson 1.3 Act 4… @Home Lesson 2

ON THE FLY ASSESSMENT

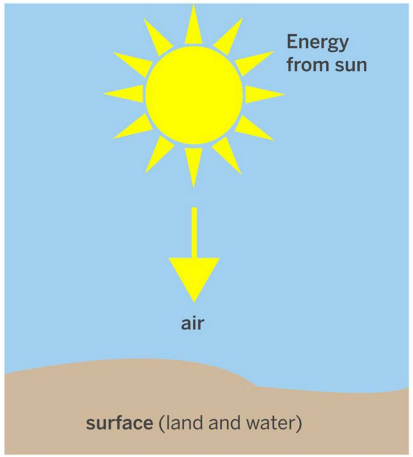
On-the-Fly Assessment 1: Discussing Evidence for How Energy Gets into Air

Look for: While students discuss evidence for their claims, listen for whether they conclude that Claim 2 (energy is transferred from the sun to the surface and then to the air) is correct. While the results of the heating experiment and Sim mission provide strong evidence for this claim, students are likely to have begun this lesson thinking that the sun transfers energy directly to the air. This idea (energy in the air is transferred from the surface) is built on throughout the unit, and it is crucial for students to connect the evidence from this lesson to this important concept.

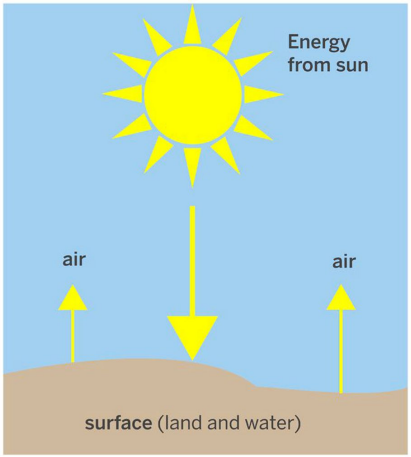
Now what? Students who are arguing that energy from the sun is transferred directly to the air may be having trouble connecting the evidence to the claims. Ask them what they would expect in the Sim if energy were transferred directly to the air, and then ask them to compare this to their results. You can do the same with the demonstration results. When students model this concept in Lesson 1.4, you can provide extra support by helping them refer to the experimental results and to the key concept as they create their

Next, we will revisit the claims and think about both the data collected during the Heating Experiment and the information you gathered from the Sim.

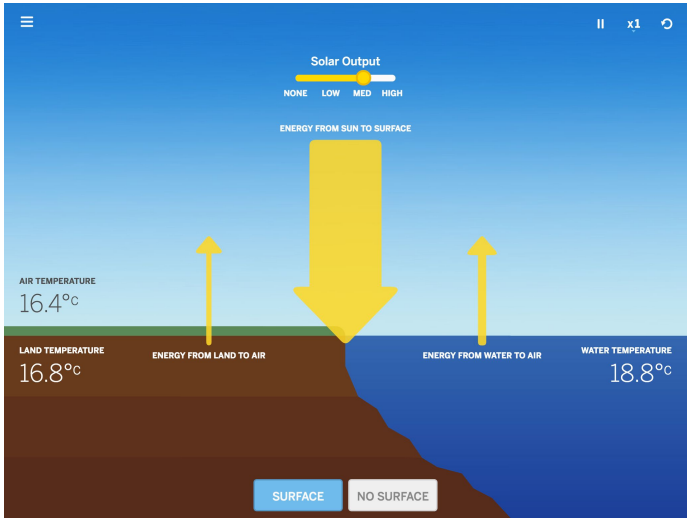
Investigation Question: How does air get energy?



Claim 1: Energy is transferred from the sun to the air.



Claim 2: Energy is transferred from the sun to the surface, and then to the air.



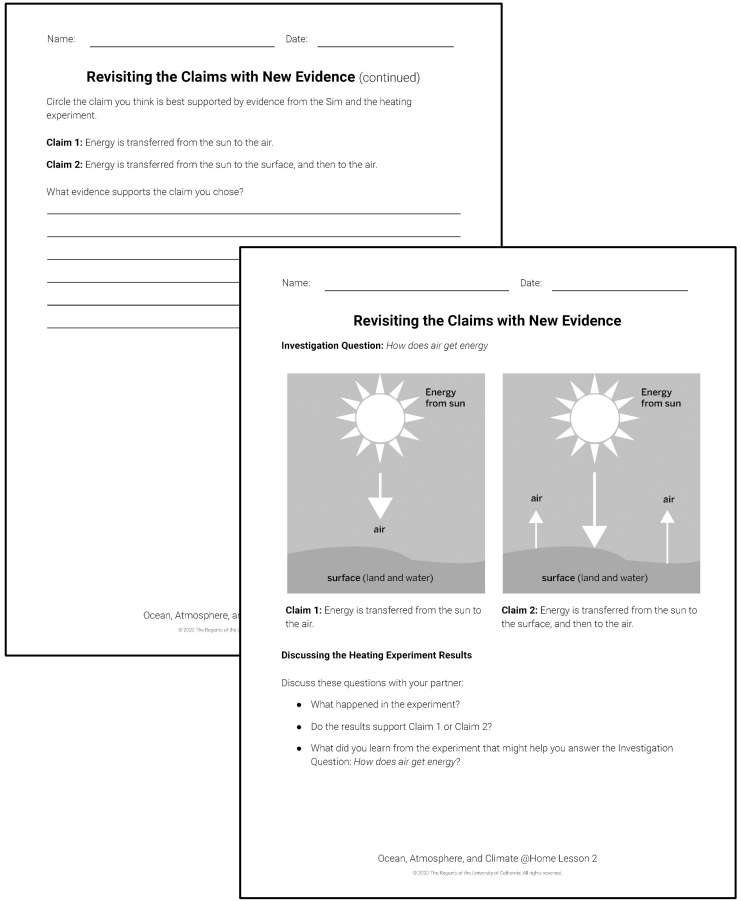
Argumentation Sentence Starters

- 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?

You can use these Argumentation Sentence Starters when you discuss the claims and supporting evidence with your partner.

Discussion Questions

1. What happened in the experiment?
2. Do the results support Claim 1 or Claim 2?
3. What did you learn from the experiment that might help you answer the question, *How does air get energy?*



Name: _____ Date: _____

Revisiting the Claims with New Evidence (continued)

Circle the claim you think is best supported by evidence from the Sim and the heating experiment.

Claim 1: Energy is transferred from the sun to the air.

Claim 2: Energy is transferred from the sun to the surface, and then to the air.

What evidence supports the claim you chose?

Name: _____ Date: _____

Revisiting the Claims with New Evidence

Investigation Question: *How does air get energy*

Claim 1: Energy is transferred from the sun to the air.

Claim 2: Energy is transferred from the sun to the surface, and then to the air.

Discussing the Heating Experiment Results

Discuss these questions with your partner:

- What happened in the experiment?
- Do the results support Claim 1 or Claim 2?
- What did you learn from the experiment that might help you answer the Investigation Question: *How does air get energy?*

Ocean, Atmosphere, and Climate @Home Lesson 2

Go to the **Revisiting Claims with New Evidence** activity.

Discuss the evidence and claims with your partner.
When you are finished with your discussion, circle the claim that is best supported and write your evidence.

Revisiting Claims with New Evidence page or [Lesson 1.3, Activity 4]

Amplify.

The work we did today focused on what happens to energy from the sun when it reaches Earth.
The key concept on the next slide provides a summary of these ideas.

Key Concept

1. Energy from the sun is transferred to Earth's surface. Some of that energy is then transferred to the air above the surface.

End of @Home Lesson

THE LAWRENCE HALL OF SCIENCE
UNIVERSITY OF CALIFORNIA, BERKELEY

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Embedded Formative Assessment Review:

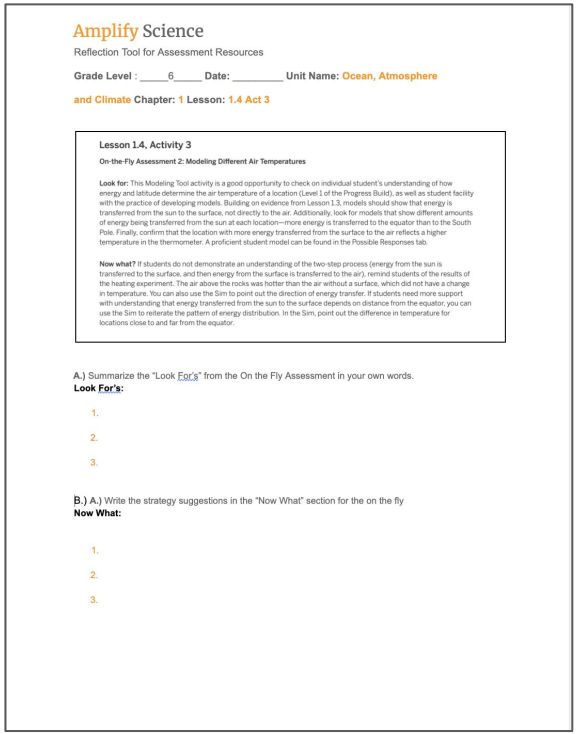
- Summarize look-fors in your own words in the template
- Summarize “Now What” in your own words in the template

Lesson 1.4, Activity 3

On-the-Fly Assessment 2: Modeling Different Air Temperatures

Look for: This Modeling Tool activity is a good opportunity to check on individual student’s understanding of how energy and latitude determine the air temperature of a location (Level 1 of the Progress Build), as well as student facility with the practice of developing models. Building on evidence from Lesson 1.3, models should show that energy is transferred from the sun to the surface, not directly to the air. Additionally, look for models that show different amounts of energy being transferred from the sun at each location—more energy is transferred to the equator than to the South Pole. Finally, confirm that the location with more energy transferred from the surface to the air reflects a higher temperature in the thermometer. A proficient student model can be found in the Possible Responses tab.

Now what? If students do not demonstrate an understanding of the two-step process (energy from the sun is transferred to the surface, and then energy from the surface is transferred to the air), remind students of the results of the heating experiment. The air above the rocks was hotter than the air without a surface, which did not have a change in temperature. You can also use the Sim to point out the direction of energy transfer. If students need more support with understanding that energy transferred from the sun to the surface depends on distance from the equator, you can use the Sim to reiterate the pattern of energy distribution. In the Sim, point out the difference in temperature for locations close to and far from the equator.



Amplify Science

Reflection Tool for Assessment Resources

Grade Level : ____6____ Date: _____ Unit Name: Ocean, Atmosphere and Climate Chapter: 1 Lesson: 1.4 Act 3

Lesson 1.4, Activity 3

On-the-Fly Assessment 2: Modeling Different Air Temperatures

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A.) Summarize the “Look For’s” from the On the Fly Assessment in your own words.

Look For’s:

1.
2.
3.

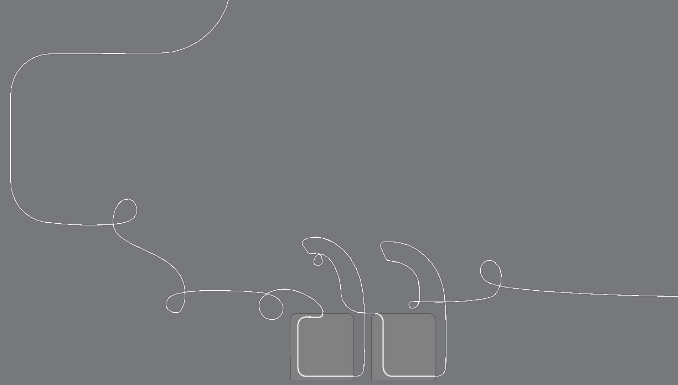
B.) A.) Write the strategy suggestions in the “Now What” section for the on the fly

Now What:

1.
2.
3.

1. **What does the “Look for” section ask teachers pay attention to?**
2. **What does the “Now What” suggest for adjusting instruction?**

Reflect and Share

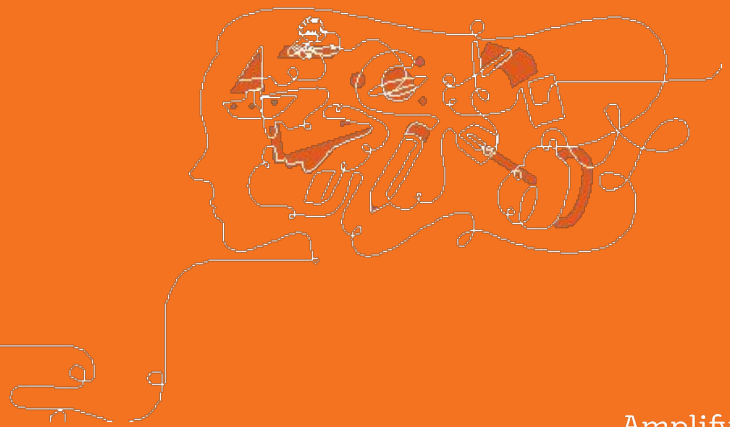


How does reviewing and organizing the “Look For’s” and “Now What” information before administering the assessment help teachers better prepare for the assessment?

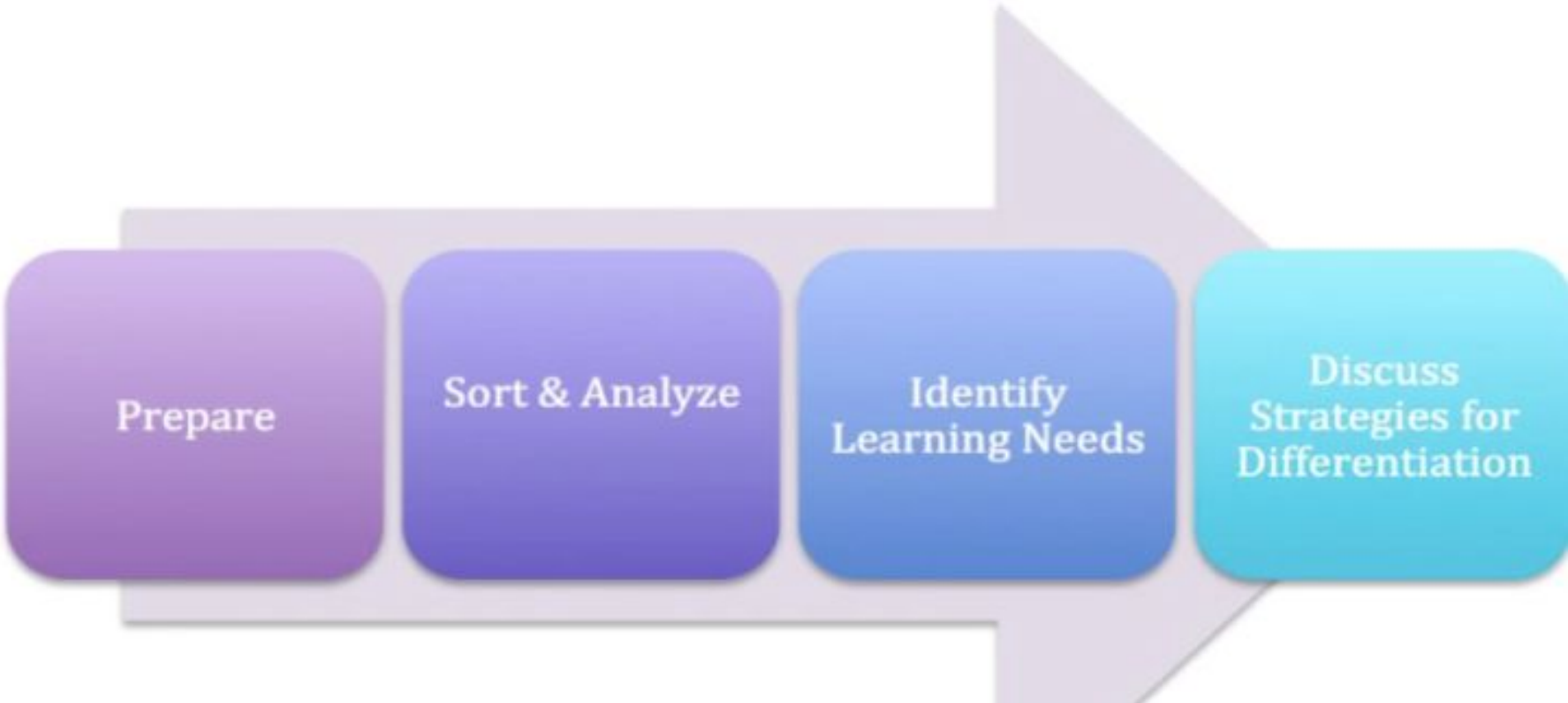
Plan for the day

- **Framing the day**
  - Welcome and introductions
  - Anticipatory Activity
- **Amplify Science Assessment System**
  - Credible, Actionable, Timely
  - Progress Build
  - Embedded Formative Assessments
- **Amplify Science Formative Assessment**
  - Exemplar Sequence
- **Strategies for Analyzing Student Work**
  - Prepare, Analyze, Identify, Discuss
  - Discourse routines
  - Assessment Data
- **Tailoring Instruction/Differentiation**
  - Resources for tailoring instruction
  - Differentiation for diverse learners
- **Closing**
  - Reflection/Survey

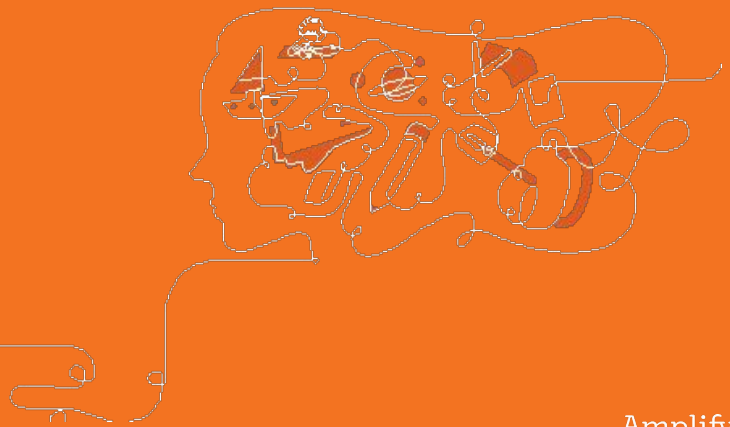
Strategies for Analyzing Student Work



The Process of Analyzing Work



(Prepare)
Monitoring Student Progress



How can you prepare to analyze student work?

- **Collect/record data** through the implementation of multimodal instruction (Do, Talk, Read, Write, Visualize)
- **Use Embedded Formative Assessments**

  (Pre/End of unit, On-the-Fly, Critical Juncture,etc)

- **Observe** by listening to student conversations
- **Evaluate work** submitted on the Amplify Science platform

Suggestions for Collecting data

What ideas do you have for collecting student data?

Synchronous

Formative assessments
Summative assessments
Observations
Classwork
Homework
Simulations
Modeling Tools
Student Talk

Asynchronous

Formative assessments
Summative assessments
Observations
Classwork
Homework
Simulations
Modeling Tools
Student Talk

Suggestions for Recording Data

What ideas do you have for collecting student data from assessments?

Synchronous

Amplify Platform

Note - taking

Graphic Organizer

Google doc/forms

Google Classroom

Asynchronous

Amplify Platform

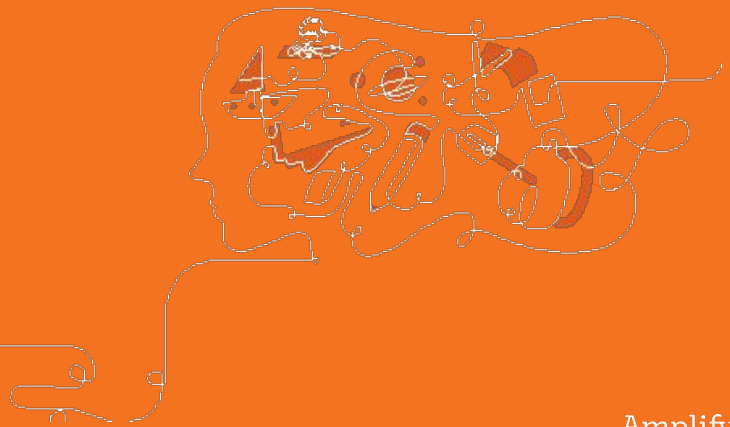
Google Classroom

Google Forms

Google Doc

Third Party Apps

Sort/Analyze &
Identify Learning Needs

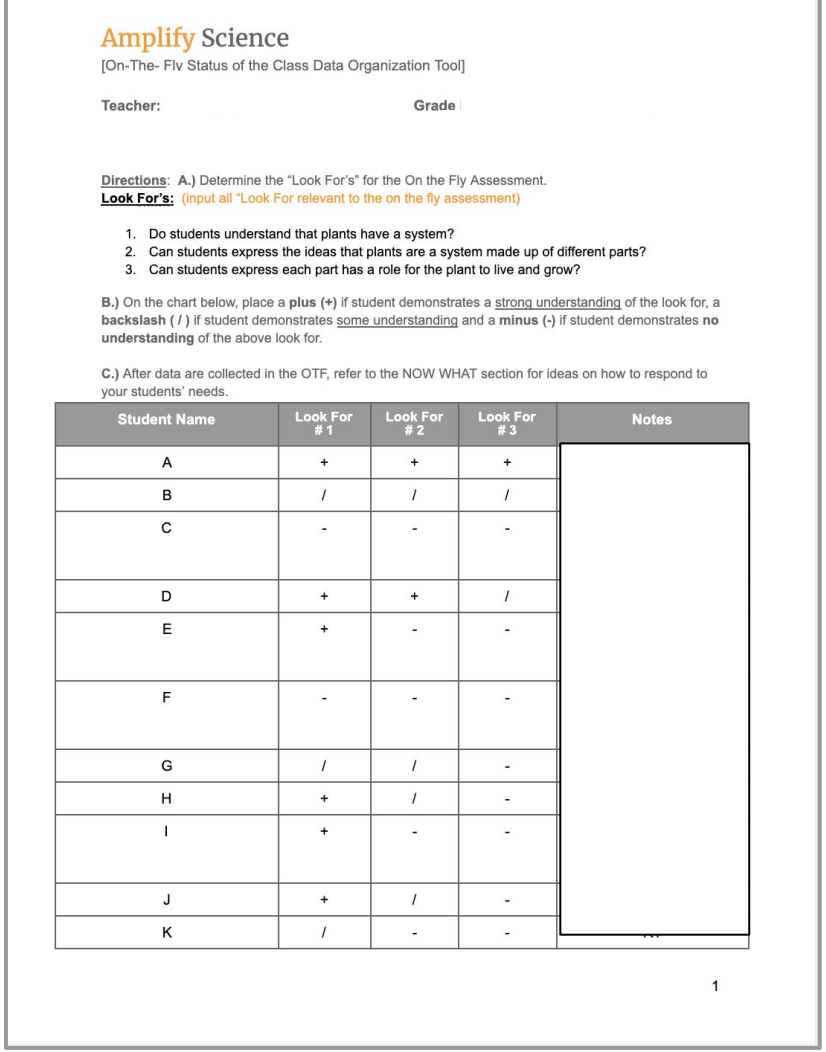


Sort and Analyze Embedded Formative Assessment Data

Look at the class data and place students into groups.

Analyze: Once you have placed students into groups determine the support you think each group needs in order to push their understanding further.

Example: Reteach, lesson extension, etc



Amplify Science

[On-The- Flv Status of the Class Data Organization Tool]

Teacher: **Grade**

Directions: **A.)** Determine the "Look For's" for the On the Fly Assessment.
Look For's: (input all "Look For relevant to the on the fly assessment)

1. Do students understand that plants have a system?
2. Can students express the ideas that plants are a system made up of different parts?
3. Can students express each part has a role for the plant to live and grow?

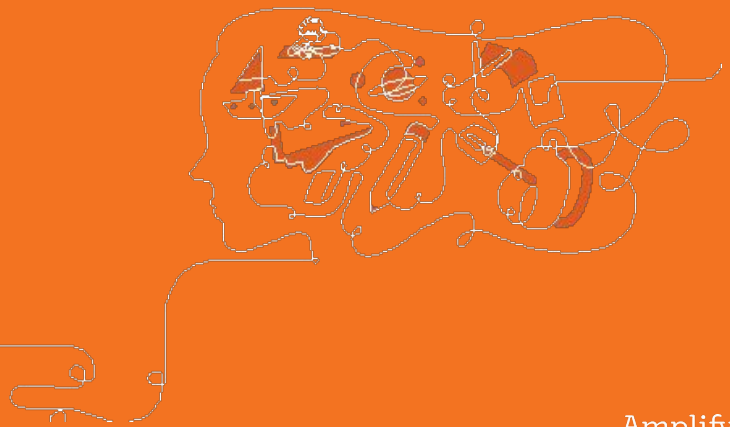
B.) On the chart below, place a **plus (+)** if student demonstrates a strong understanding of the look for, a **backslash (/)** if student demonstrates some understanding and a **minus (-)** if student demonstrates **no understanding** of the above look for.

C.) After data are collected in the OTF, refer to the NOW WHAT section for ideas on how to respond to your students' needs.

Student Name	Look For # 1	Look For # 2	Look For # 3	Notes
A	+	+	+	
B	/	/	/	
C	-	-	-	
D	+	+	/	
E	+	-	-	
F	-	-	-	
G	/	/	-	
H	+	/	-	
I	+	-	-	
J	+	/	-	
K	/	-	-	

1

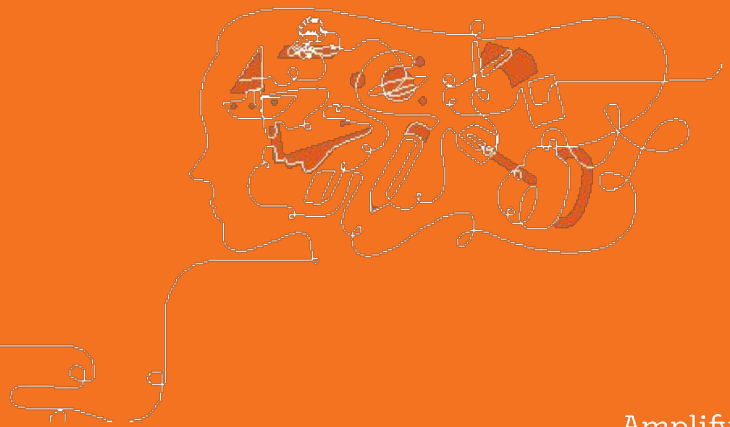
Discuss Strategies for Differentiation



What resources can I use to differentiate instruction?

- Lesson level differentiation briefs
- Amplify Science program guide (Access and Equity)
- Universal Design for Learning (UDL)
- @Home resources (videos)
- Program hub additional resources
- Discourse routines

Discourse Routines



Amplify Science discourse routines

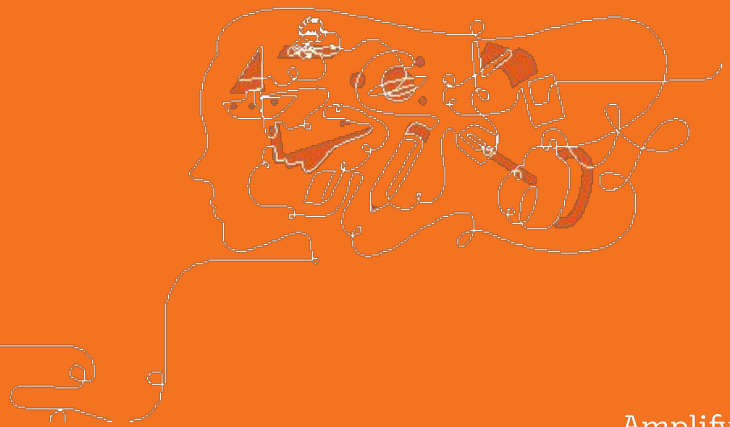
- Oral Composition and/or Drawings as teacher captures words (K-1)
- Explanation Language Frames
- Shared Listening
- Partner Reading
- Thought Swap
- Think-Pair-Share
- Word Relationships
- Questioning Strategies [K-8]
    - Do you agree/disagree?

Additional support considerations

Modifying the instructional suggestions for my students

- Additional practice time
- Strategic grouping
- Additional resources (multilingual glossary, word banks, other environmental print)
- Increased support for gradual release of responsibility
- Alternative response options

Assessment Data

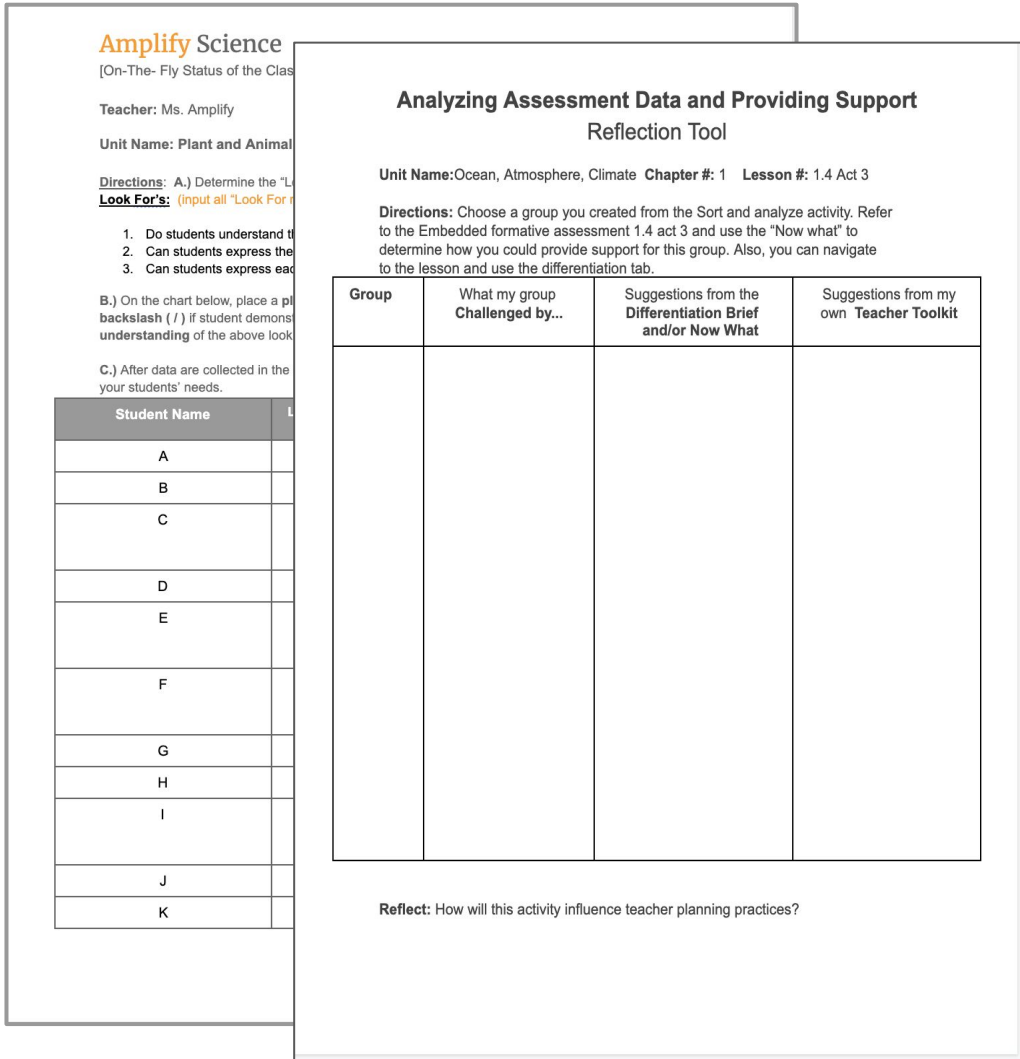


Analyze Data and Provide Support

Choose a group you created from the **Sort and Analyze** activity.

Refer to the Embedded formative assessment in Lesson 1.4 act 3 and use the **"Now what"** to determine how you could provide support for this group.

Also, you can navigate to the lesson and use the **differentiation tab.**


Amplify Science

[On-The- Fly Status of the Clas

Teacher: Ms. Amplify

Unit Name: Plant and Animal

Directions: **A.)** Determine the "L
Look For's: (input all "Look For

1. Do students understand t
2. Can students express the
3. Can students express eac

B.) On the chart below, place a **pl**
backslash (/) if student demonst
understanding of the above look

C.) After data are collected in the
your students' needs.

Student Name	L
A	
B	
C	
D	
E	
F	
G	
H	
I	
J	
K	

Analyzing Assessment Data and Providing Support

Reflection Tool

Unit Name: Ocean, Atmosphere, Climate **Chapter #:** 1 **Lesson #:** 1.4 Act 3

Directions: Choose a group you created from the Sort and analyze activity. Refer to the Embedded formative assessment 1.4 act 3 and use the "Now what" to determine how you could provide support for this group. Also, you can navigate to the lesson and use the differentiation tab.

Group	What my group **Challenged by...**	Suggestions from the **Differentiation Brief and/or Now What**	Suggestions from my own **Teacher Toolkit**

Reflect: How will this activity influence teacher planning practices?

Plan for the day

- **Framing the day**
  - Welcome and introductions
  - Anticipatory Activity
- **Amplify Science Assessment System**
  - Credible, Actionable, Timely
  - Progress Build
  - Embedded Formative Assessments
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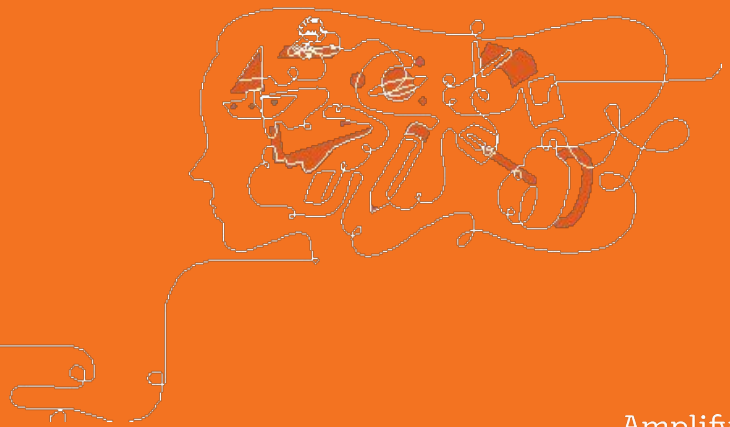
  - Assessment Data
- **Tailoring Instruction/Differentiation**
  - Resources for tailoring instruction
  - Differentiation for diverse learners
- **Closing**
  - Reflection/Survey

Resources for Tailoring Instruction



How do I tailor instruction for my classroom?

- Group students according to ability level
- Use the “Look For” and “Now what” tools to provide support based on formative assessment data
- Use the differentiation brief within each lesson
- Pull intervention suggestions from the student online component

Differentiation briefs

Categories of differentiation briefs

- Embedded supports for diverse learners
- Potential challenges in this lesson
- Specific differentiation strategies for English learners
- Specific differentiation strategies for students who need more support
- Specific differentiation strategies for students who need more challenge

Lesson Level Specific Differentiation

Differentiation

Embedded Supports for Diverse Learners

Reflection time. Students have two important opportunities to take stock of what they learned and show their thinking in this lesson. First, revising their initial Sorting Tool activity showing the air temperature of different locations on Earth provides an opportunity for students to integrate their initial ideas about what determines a location's air temperature with what they learn about latitude in this lesson. Second, using the Modeling Tool to show why two different locations have different air temperatures allows students to generalize what they have learned about what determines Christchurch, New Zealand's air temperature.

Potential Challenges in This Lesson

Interpretation of visuals. A lot of this lesson depends on students' abilities to make observations and interpret maps. If you have students who may have trouble making such observations, consider ways to adjust the lesson to support their participation.

Complex cognitive activities. Activity 2, which asks students to use evidence from maps to answer the Investigation Question, might be challenging for students who are new to argumentation. Additionally, the concept of using maps as evidence is likely to be new for most students. Consider working with students in small groups or making more time for this activity.

Specific Differentiation Strategies for English Learners

Leveraging primary languages. In Activity 2, students interpret maps with a partner. If you think that language barriers might hinder the discussion for some of your English learners, pair them with another student who speaks the same primary language, if possible, and invite them to share ideas about what the maps show in their primary languages.

Increase wait-time for student responses. This lesson includes extended discussions. To help English learners engage fully in the discussions, provide at least 6–8 seconds of wait-time after asking a question. Many students need this extra time to process the language of the question and to formulate their own responses. You can also support English learners' comprehension by having students summarize central ideas during the discussion in both English and the English learners' primary languages, if possible.

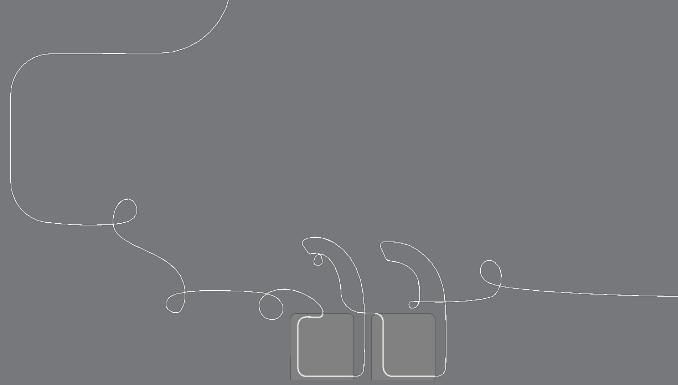
Specific Differentiation Strategies for Students Who Need More Support

More support for writing. In this lesson, students record their responses to the Investigation Question individually. Consider working with small groups or having students work in pairs if you think they might benefit from more support during this activity.

Specific Differentiation Strategies for Students Who Need More Challenge

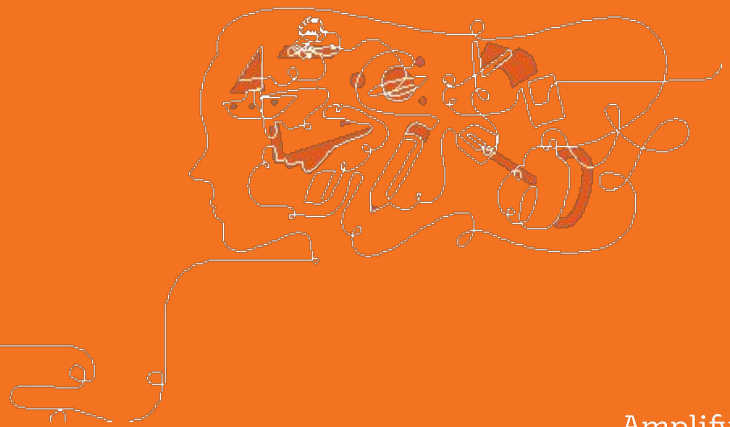
Predict air temperatures for additional locations. Students who need more challenge can choose three additional locations and use the Incoming Energy from the Sun map to predict which one has the highest, middle, and lowest average temperature.

Reflect and Share



What are some recommendations you can provide to teachers for tailoring instruction?

Differentiation for diverse learners

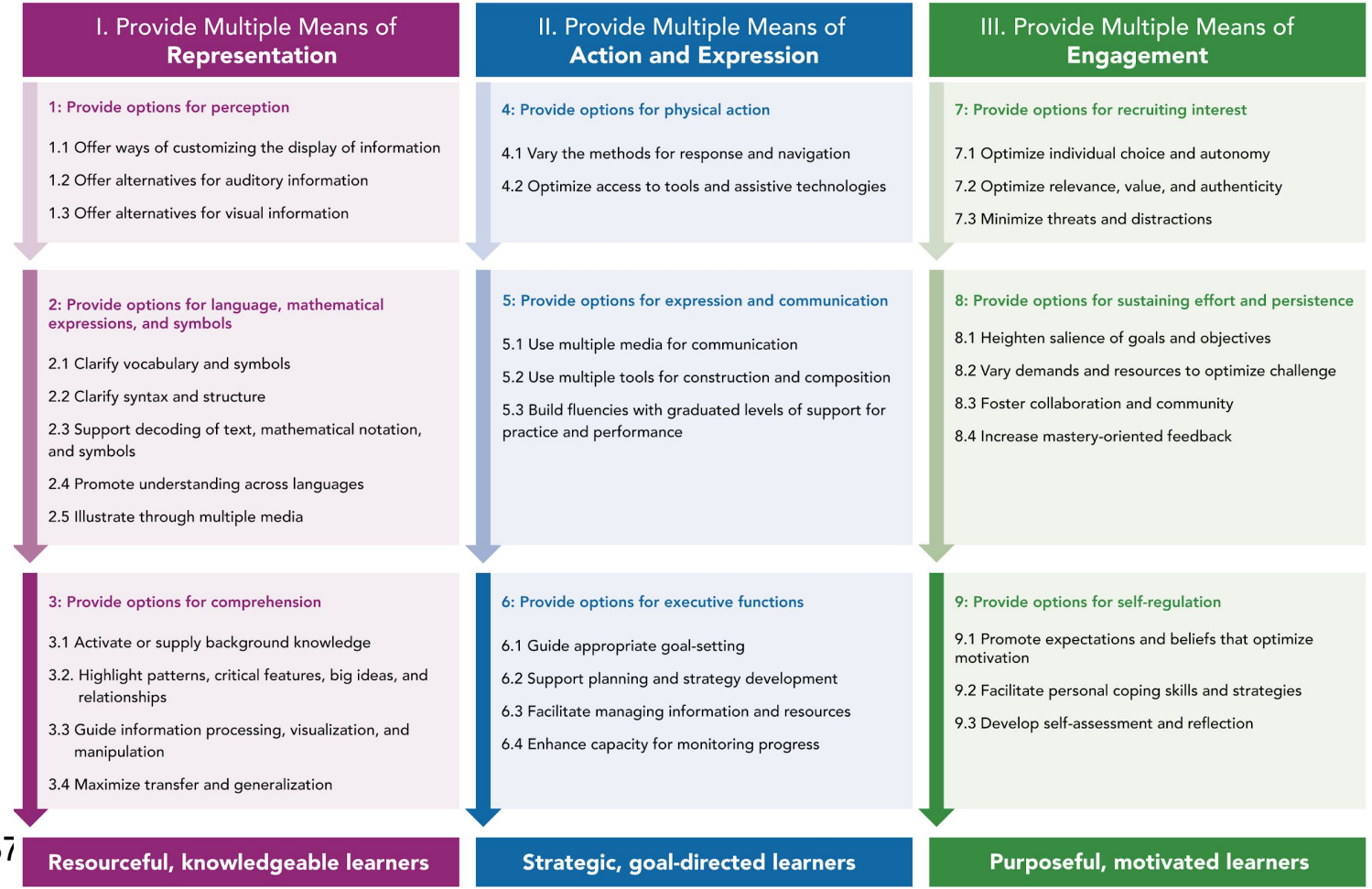


Who are our Diverse Learners?

"Diverse learning is not based on race or dependent on a deficit model. Students who are considered gifted are also diverse learners. All students are diverse and unique, in their own right. Let's agree that diverse learning recognizes that all students have unique learning needs and we educators must be prepared to provide multiple entry points for all learners to access the rigor of the goals and standards."

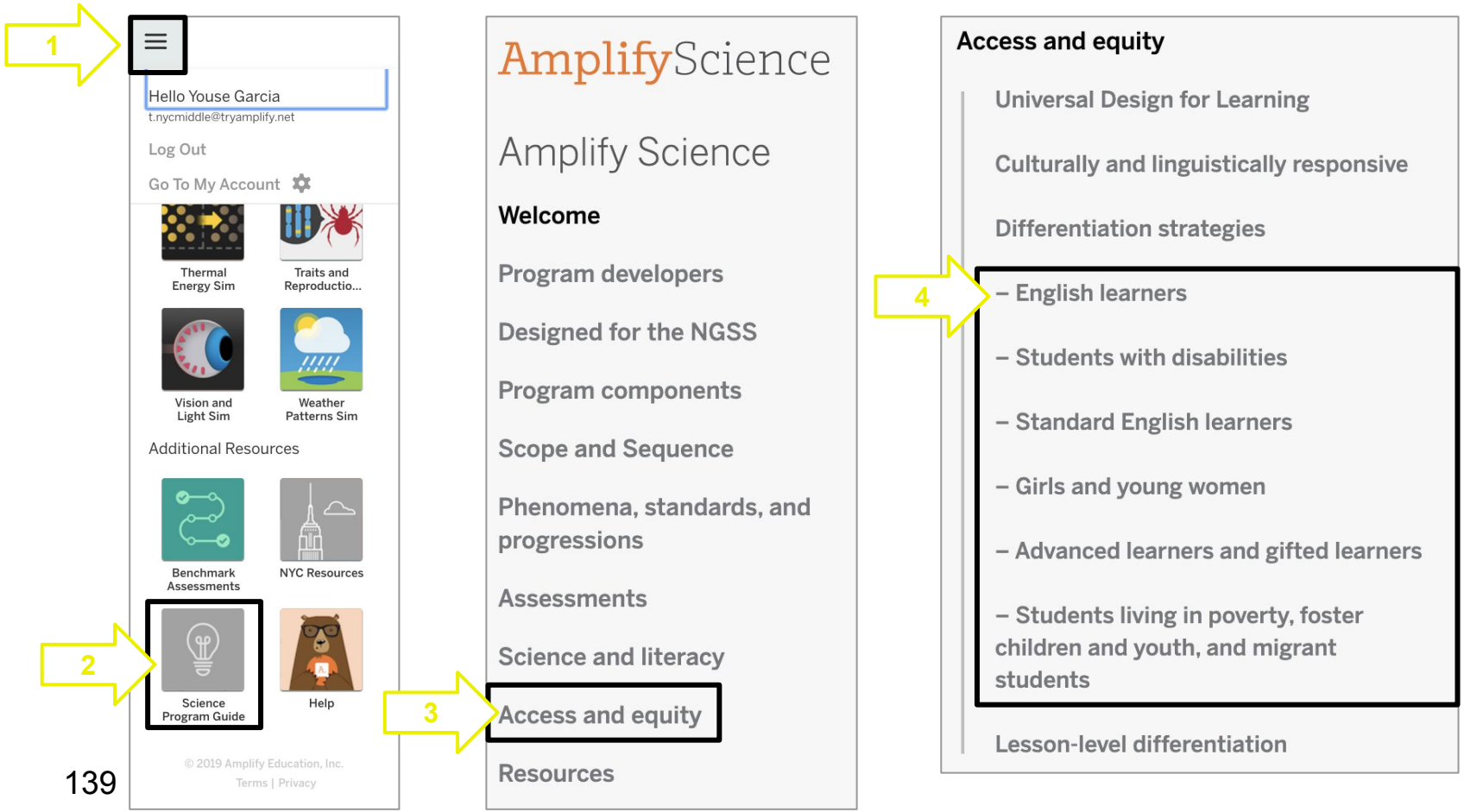
Anonymous Educator

Universal Design for Learning Guidelines



Culturally and linguistically responsive teaching (CLRT) principles **emphasize validating and valuing students' cultural and linguistic heritage** and **creating positive and nurturing learning environments** so that learning is more effective.

Differentiation Strategies



Lesson Level Differentiation Briefs

- Embedded supports for diverse learners
- Potential challenges in this lesson
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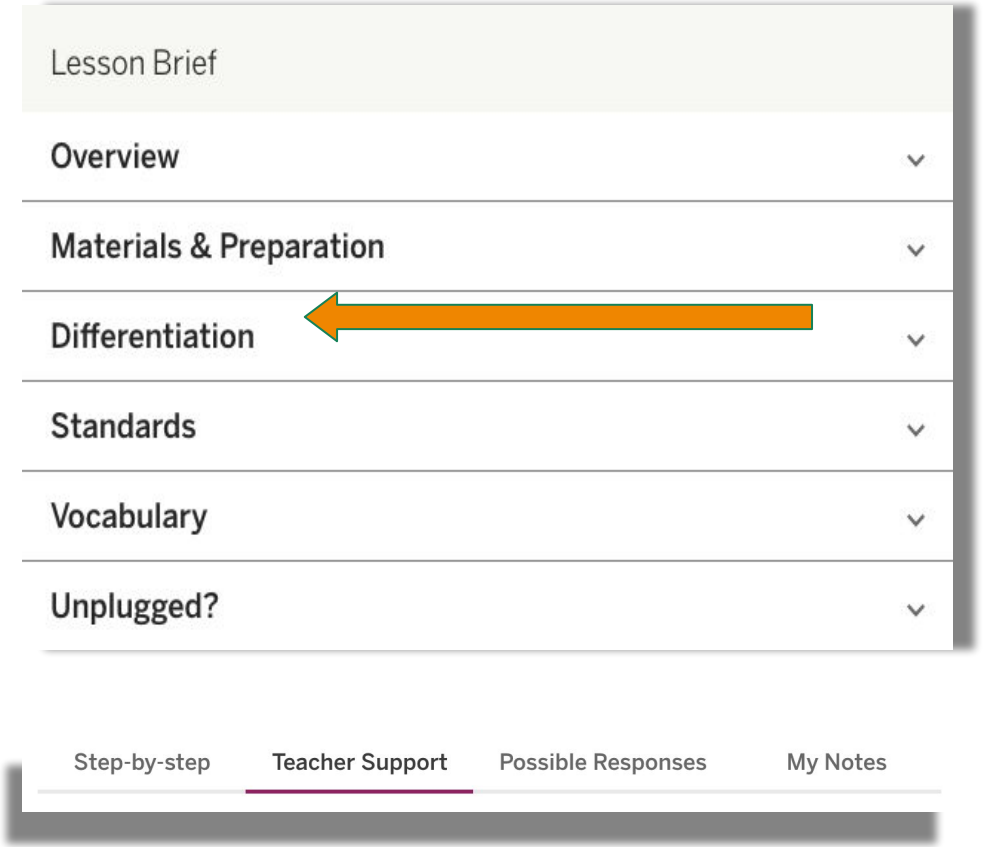
- Specific differentiation strategies for students who need more support
- Specific differentiation strategies for students who need more challenge



Differentiation briefs

Categories of differentiation briefs

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Lesson Level Specific Differentiation

Differentiation

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More support for writing. In this lesson, students record their responses to the Investigation Question individually. Consider working with small groups or having students work in pairs if you think they might benefit from more support during this activity.

Specific Differentiation Strategies for Students Who Need More Challenge

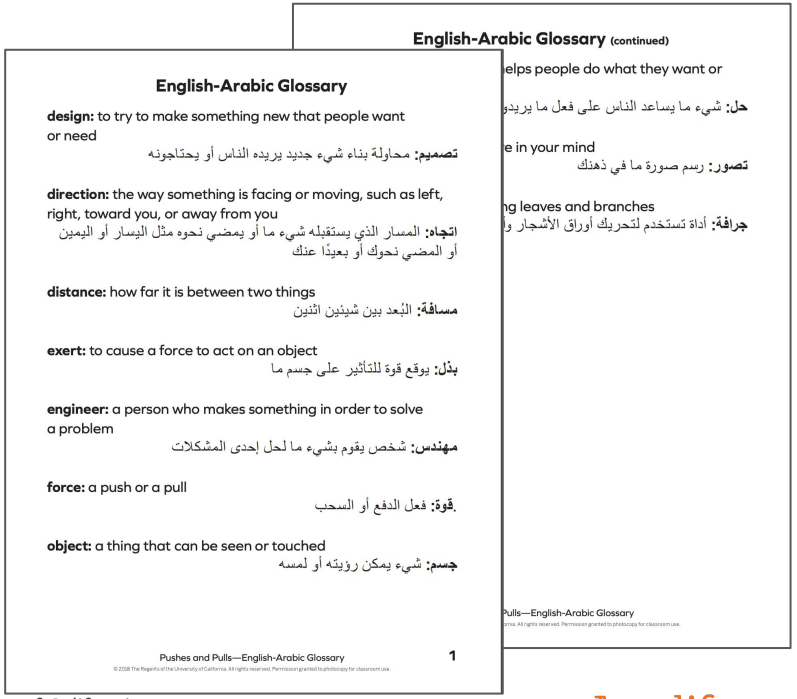
Predict air temperatures for additional locations. Students who need more challenge can choose three additional locations and use the Incoming Energy from the Sun map to predict which one has the highest, middle, and lowest average temperature.

Embedded instructional design

- Modeling Active Reading/ Active Reading
- Anticipation Guides
- Science/ Everyday Word Chart
- Word Relationships Activities
- Graphic Organizers
- Reflective writing with language frames/ sentence starters
- Practice Tools
- Physical and digital models

Additional supports

- Cognates
- Multilingual Glossary
- Word Banks
- Multiple-Meaning Words
- Extended Modeling
- Additional Visual Representations
- Optional Graphic Organizers
- Response Option



English-Arabic Glossary

design: to try to make something new that people want or need
تصميم: محاولة بناء شيء جديد يريده الناس أو يحتاجونه

direction: the way something is facing or moving, such as left, right, toward you, or away from you
اتجاه: المسار الذي يستقبله شيء ما أو يمضي نحوه مثل اليسار أو اليمين أو المضي نحوك أو بعيدًا عنك

distance: how far it is between two things
مسافة: البُعد بين شيئين اثنين

exert: to cause a force to act on an object
بذل: يوقع قوة للتأثير على جسم ما

engineer: a person who makes something in order to solve a problem
مهندس: شخص يقوم بشيء ما لحل إحدى المشكلات

force: a push or a pull
قوة: فعل الدفع أو السحب.

object: a thing that can be seen or touched
جسم: شيء يمكن رؤيته أو لمسه

Pushes and Pulls—English-Arabic Glossary 1

English-Arabic Glossary (continued)

elps people do what they want or

حل: شيء ما يساعد الناس على فعل ما يريدو

e in your mind

تصور: رسم صورة ما في ذهنك

g leaves and branches

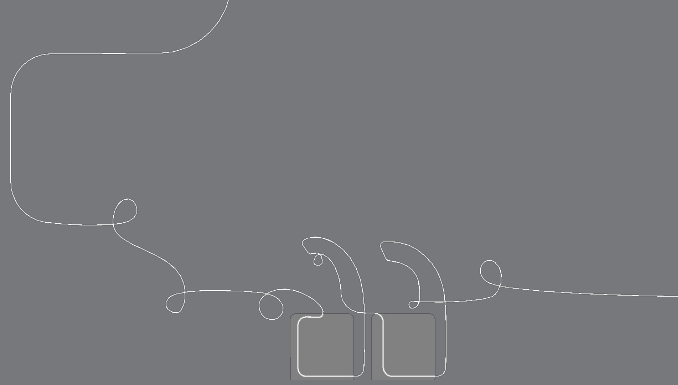
جرافة: أداة تستخدم لتحريك أوراق الأشجار و

ulls—English-Arabic Glossary

Resources for Diverse Learners

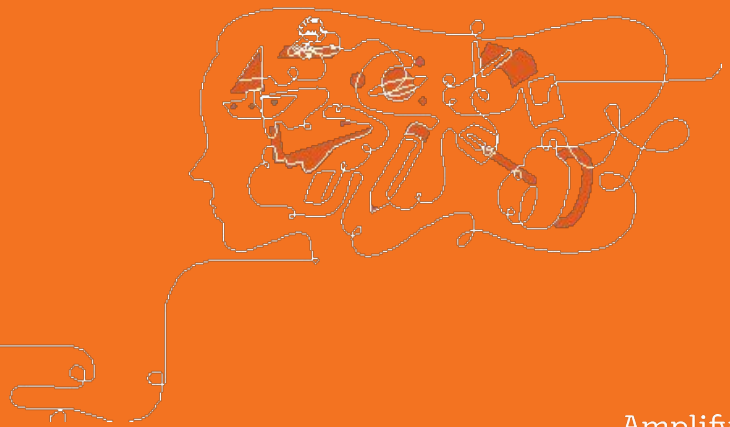
- Optional investigation notebook pages
- Digital copy of vocabulary words
- Access to lesson level powerpoints (editable)
- Remote learning access for students (via Program Hub)
  - Student readers (English/Spanish)
  - Modeling tools/Sims/Practice tools
  - Videos with calls to action (English/Spanish)
  - Student slides, packets, and sheets (editable)

Reflect and Share



What is an embedded differentiation strategy you would recommend teacher's implement immediately to support students?

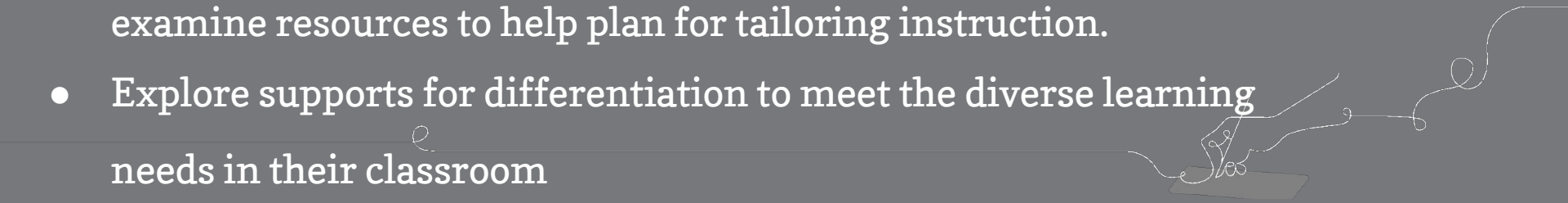
Closing/ Reflection



Revisiting Objectives:

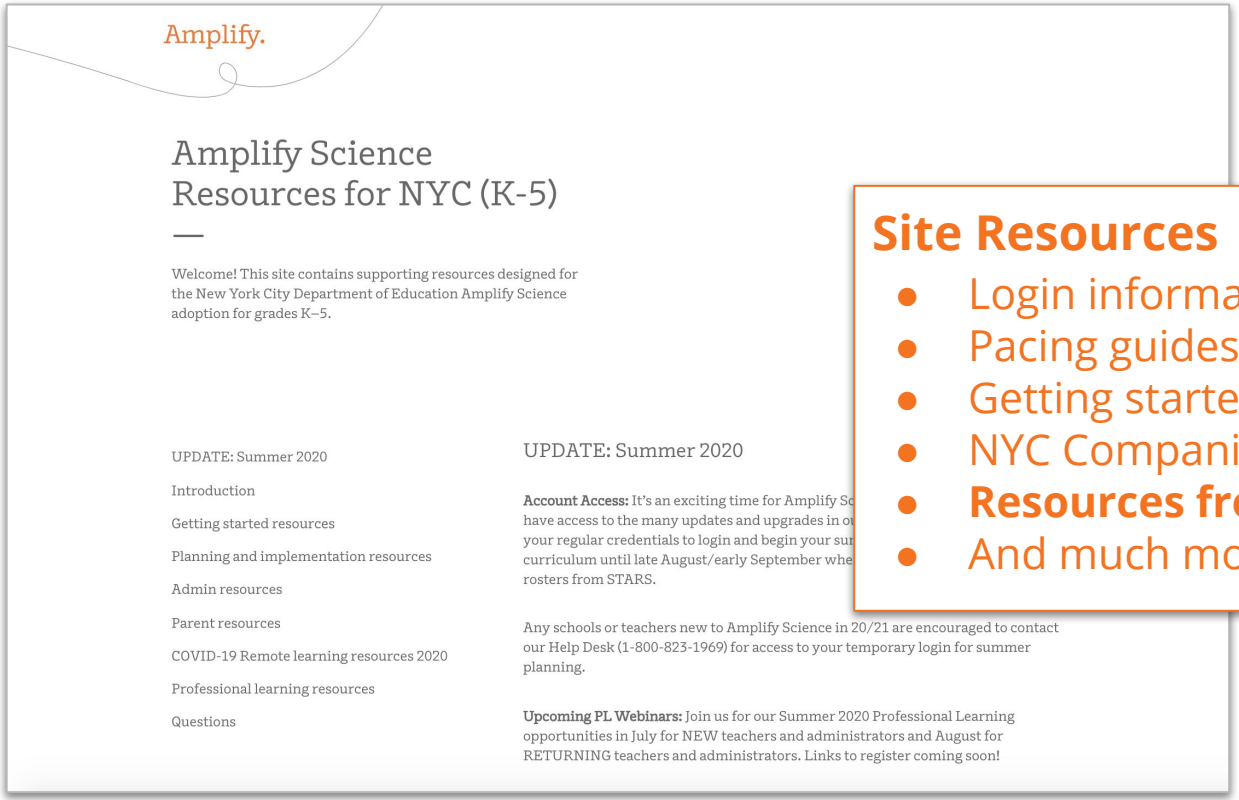
By the end of this 1-hour workshop, you will be able to…

- Explore the Amplify Science Formative Assessment system.
- Explore how to use Embedded Formative Assessments to gain access to credible, actionable, and timely diagnostic information about students progress toward learning the unit goals.
- Learn strategies for analyzing student's work & assessment data, examine resources to help plan for tailoring instruction.
- Explore supports for differentiation to meet the diverse learning needs in their classroom



New York City Resources Site

https://amplify.com/resources-page-for-nyc-k-5/



Site Resources

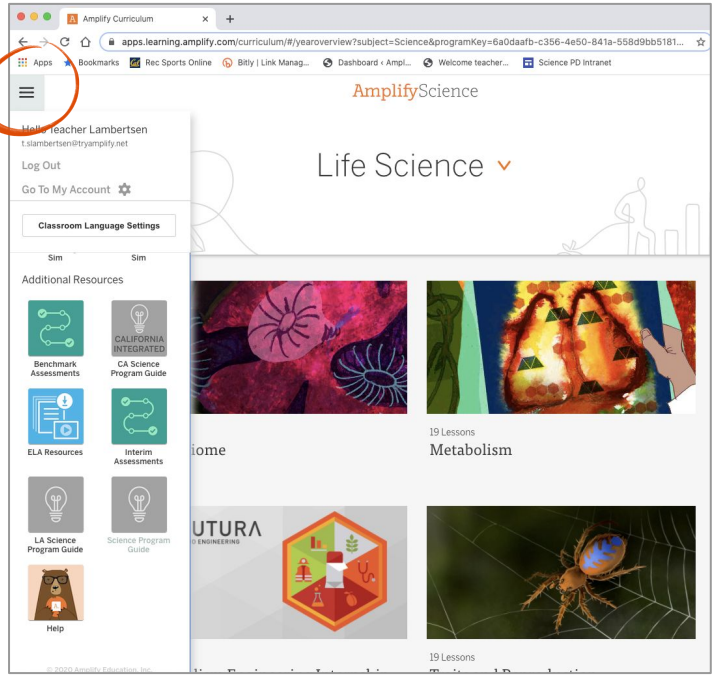
- Login information
- Pacing guides
- Getting started guide
- NYC Companion Lessons
- **Resources from PD sessions**
- And much more!

Amplify Science Program Hub

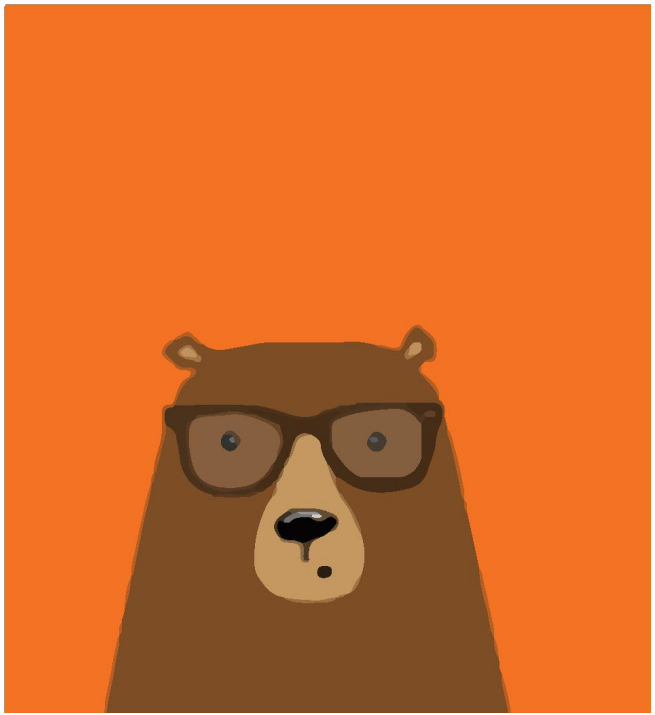
A new hub for Amplify Science resources

- **Videos and resources to prepare for instruction**
- **Amplify@Home resources**
- **Self study resource and much more!**

***Check back often to stay update to date with Amplify Science ***



Additional Amplify resources



Program Guide

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

https://my.amplify.com/programguide/content/national/welcome/science/

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.

Upcoming Amplify Science Sessions

Date	Grade	Session	Audience	Time
March 4th	4	**Unit 4:** Focusing on Evidence of Learning	New Teachers	3:00-4:30
March 9th	4	**Unit 4:** Focusing on Evidence of Learning	Returning Teachers	3:00-4:30
March 9th	6	Guided Planning	All Teachers	3:00-5:00
March 9th	8	Guided Planning	All Teachers	3:00-5:00
March 9th	7	Unpacking the Engineering Internship	All Teachers	3:00-5:00
March 11th	5	**Unit 4:** Focusing on Evidence of Learning	New Teachers	3:00-4:30
March 16th	5	**Unit 4:** Focusing on Evidence of Learning	Returning Teachers	3:00-4:30

Please provide us feedback!

URL: https://www.surveymonkey.com/r/BY56SBR

Presenter name: XXX