Amplify Science
CALIFORNIA

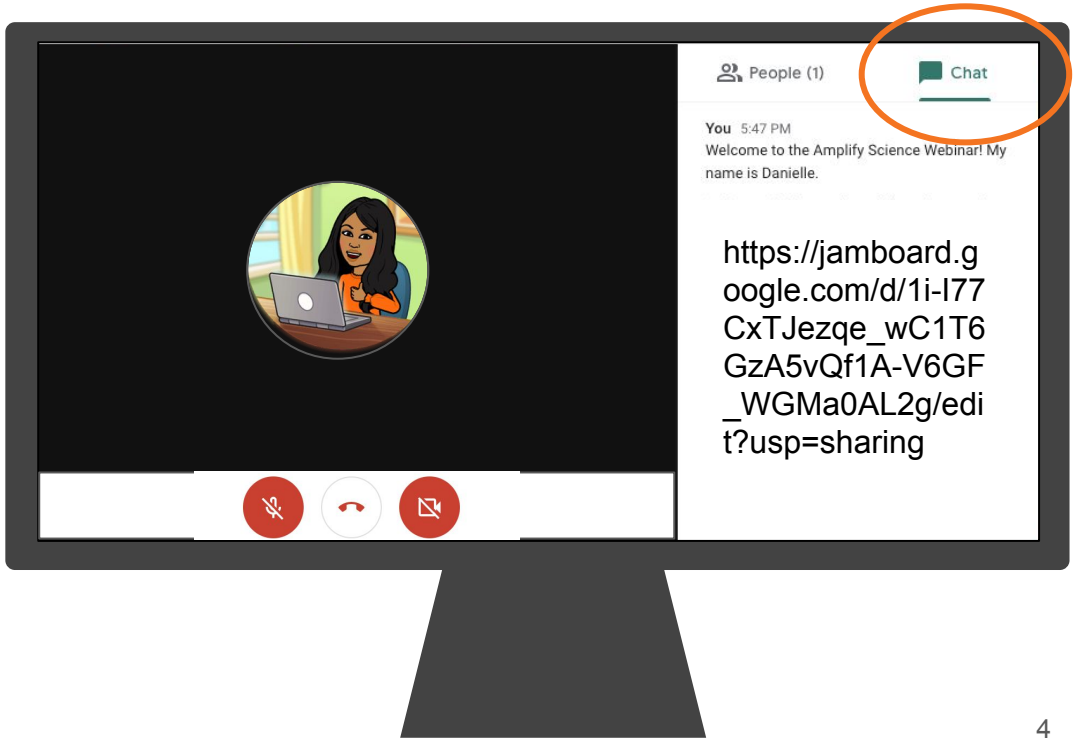
Navigating Program Essentials

Grade 4

Introductions!

Who do we have in the room today?

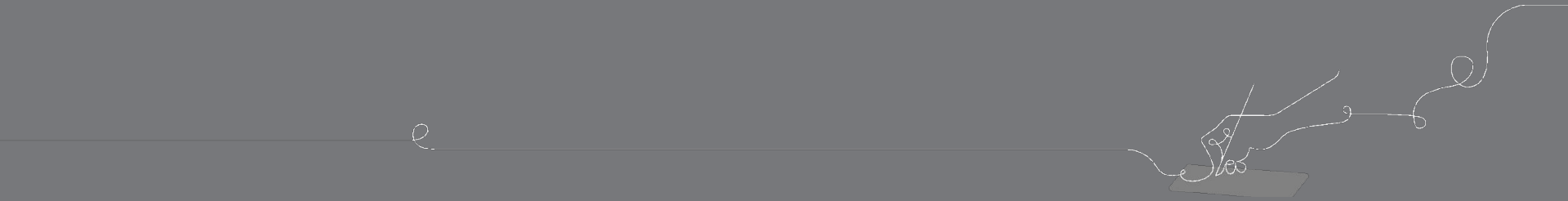
- **Question 1:** Which aspects of adopting a new science curriculum are you most excited or hopeful about?
- **Question 2:** What about adopting a new science curriculum to do you feel most hesitant about?

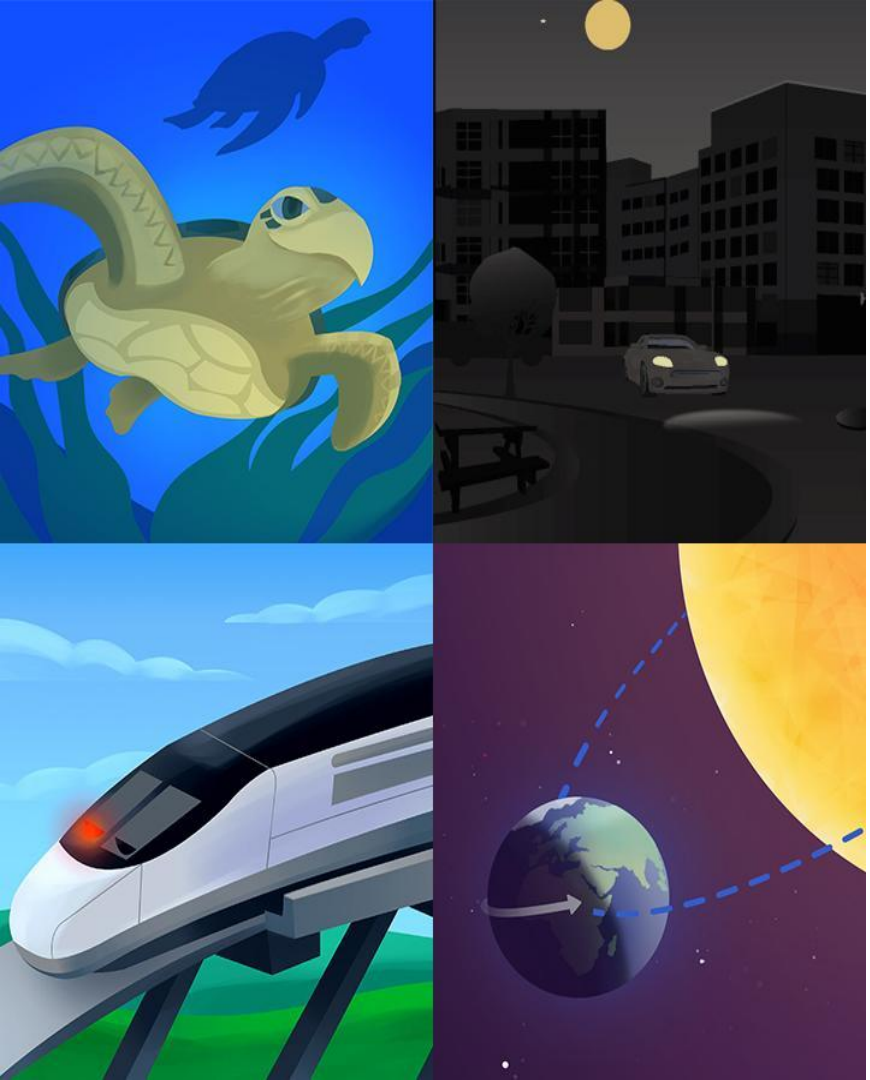


Objectives

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

- Navigate the Amplify Science curriculum
- Navigate the Program Hub





Plan for the day

- Introducing Amplify Science
- Navigation essentials
- Assessments
- Remote & Hybrid Learning Resources
- Reflection and closing

Remote Professional Learning Norms

Take some time to orient yourself to the platform

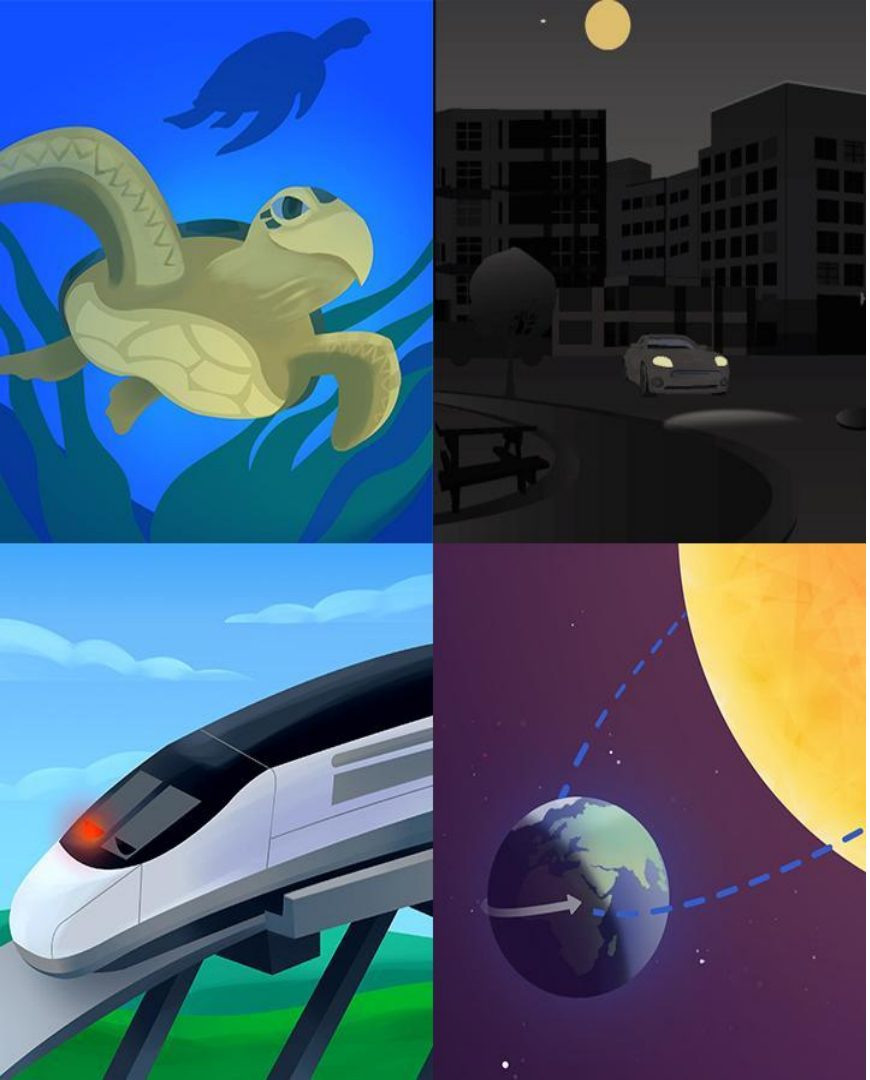
- *"Where's the chat box? What are these squares at the top of my screen?, where's the mute button?"*

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

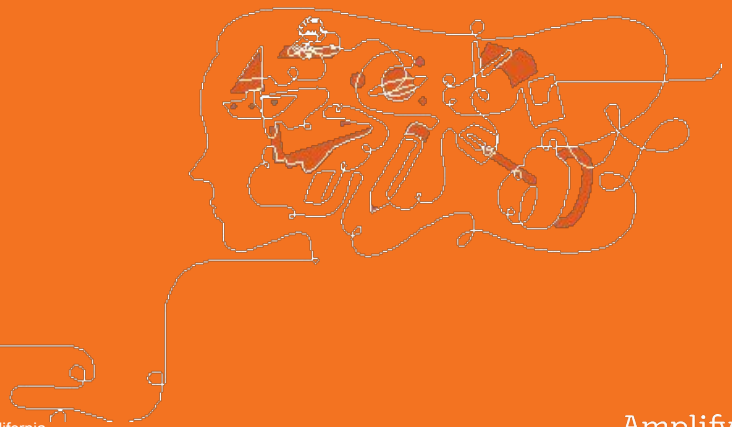
Engage at your comfort level - chat, ask questions, discuss, share!



Plan for the day

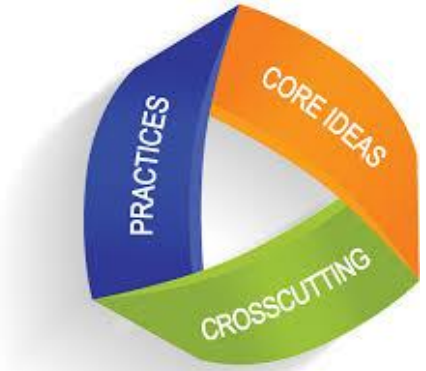
- **Introducing Amplify Science**
- Navigation Essentials
- Assessments
- Remote & Hybrid Learning Resources
- Reflection and closing

What is Amplify Science?



AmplifyScience

A new phenomena-based core curriculum for grades K-8



TOP RATED BY EDREPORTS

THE LAWRENCE HALL OF SCIENCE
UNIVERSITY OF CALIFORNIA, BERKELEY

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Year at a Glance: Grade 4

Energy Conversions

Domains: Physical Science, Earth and Space Science, Engineering Design

Unit type: Engineering design

Student role: System engineers

Phenomenon: The fictional town of Ergstown experiences frequent blackouts.

Vision and Light

Domain: Physical Science, Life Science, Engineering Design

Unit type: Investigation

Student role: Conservation biologists

Phenomenon: The population of Tokay geckos in a rain forest in the Philippines has decreased since the installation of new highway lights.

Earth's Features

Domain: Earth and Space Science

Unit type: Argumentation

Student role: Geologists

Phenomenon: A mysterious fossil is discovered in a canyon within the fictional Desert Rocks National Park.

Waves, Energy, and Information

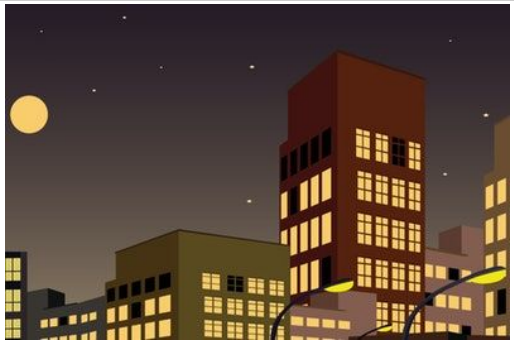
Domains: Physical Science, Life Science, Earth and Space Science, Engineering Design

Unit type: Modeling

Student role: Marine scientists

Phenomenon: Mother dolphins in the fictional Blue Bay National Park seem to be communicating with their calves when they are separated at a distance underwater.

Unit at a Glance: Energy Conversions



Energy Conversions

20 lessons
60 minutes each
2 assessment days

Domain: Physical Science, Earth and Space Science, Engineering Design

Unit type: Engineering Design

Student role: System engineers

Phenomenon: The fictional town of Ergstown experiences frequent blackouts.

We're systems engineers.

Why does Ergstown keep having blackouts?

Grade 4

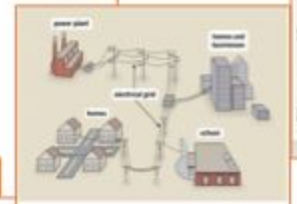
22 Lessons

Energy Conversions

AmplifyScience

Energy Conversions:
Blackout in Ergstown

Investigation Notebook



Simple Electrical System

Part	sun	solar panel	wire	motor with fan
Function	to provide energy to the system	to send electrical energy throughout the system	to move electrical energy from one place to another	to use electrical energy to run

Electrical Energy System

Part	?	power plant	wires (the grid)	devices in homes, etc.
Function		to send electrical energy throughout the system	to move electrical energy from one place to another	to use electrical energy to run

Function of both systems: to provide electricity to power devices

Blackout!

Energy Past and Present

It's All Energy

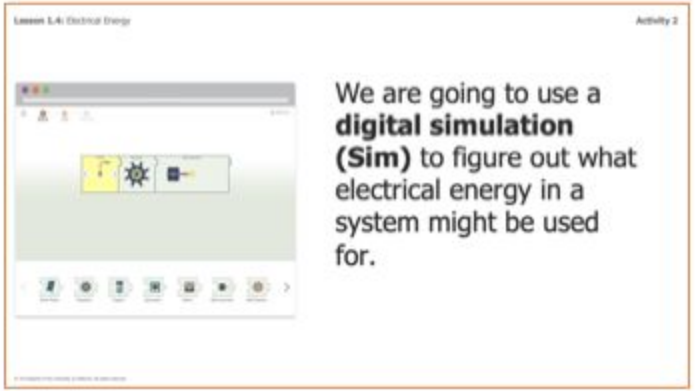
Sunlight and Showers

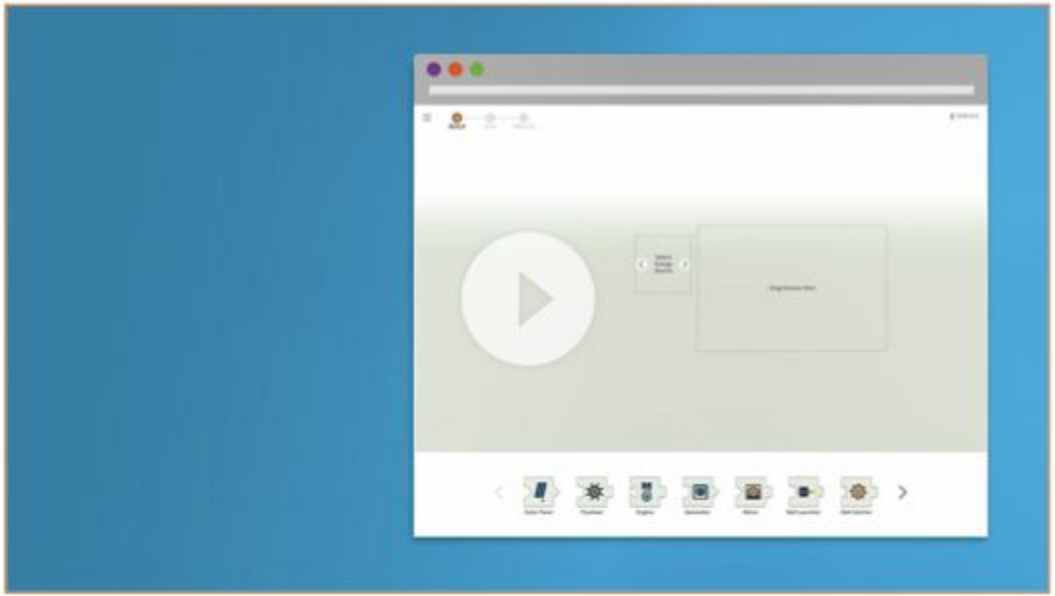
Systems

Who Thinks About Systems

22 Lessons

Energy Conversions





22 Lessons

Energy Conversions

What Is a Design Argument?

1. It answers a question with a claim about which solution best meets the criteria.
2. It connects evidence to each of the criteria. Evidence can be:
   - information from testing.
   - ideas from texts and experiences.
3. It describes any limitations.
4. It is written for an audience.
5. It uses scientific language.

Criteria for Ergstown System Improvements

- They aren't too expensive.
- They are safe for the environment.
- They save energy or convert more energy.
- They are reliable—they will work most of the time.
- They won't bother the people of Ergstown.

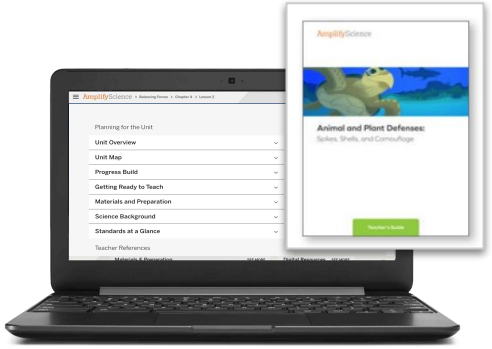
Town Hall Meeting Guidelines

1. Students will take turns sharing their solutions and their evidence.
2. When it's your turn to speak:
   - State a claim about a solution.
   - Share your evidence and explain how it meets the criteria.
3. When it's your turn to listen:
   - Listen actively.
   - Once the speaker is finished, you may agree or disagree.
   - If you agree, you must add evidence.
   - If you disagree, you must present a different improvement and your evidence for it.
4. All students are free to change their ideas if they hear strong evidence from a peer.

Elementary school components

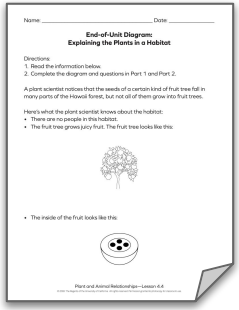
Hands-on materials

Student books

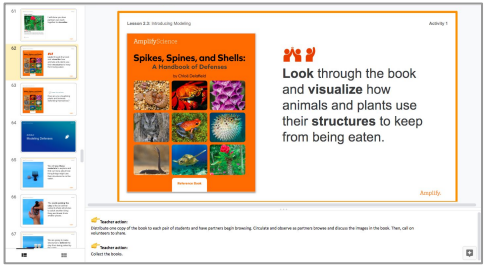


Teacher's Guide (Digital + Print)

Investigation Notebooks



Assessments



Classroom Slides

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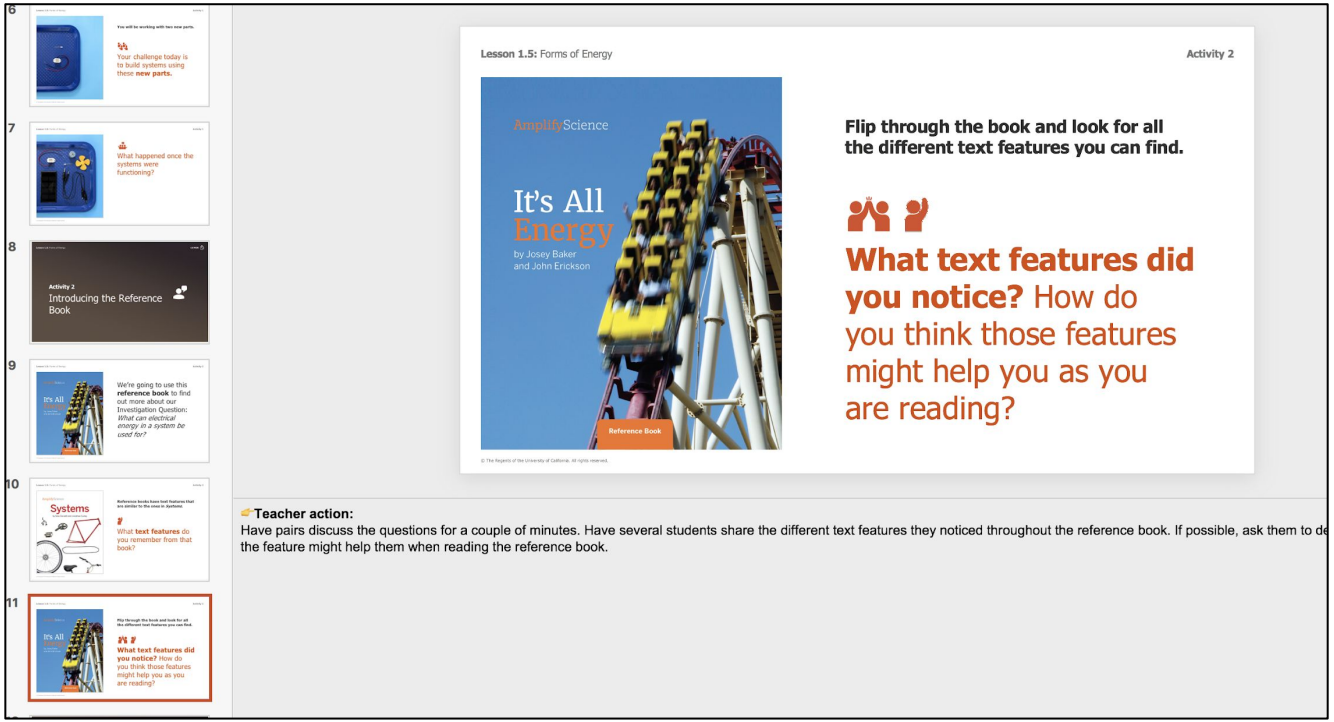
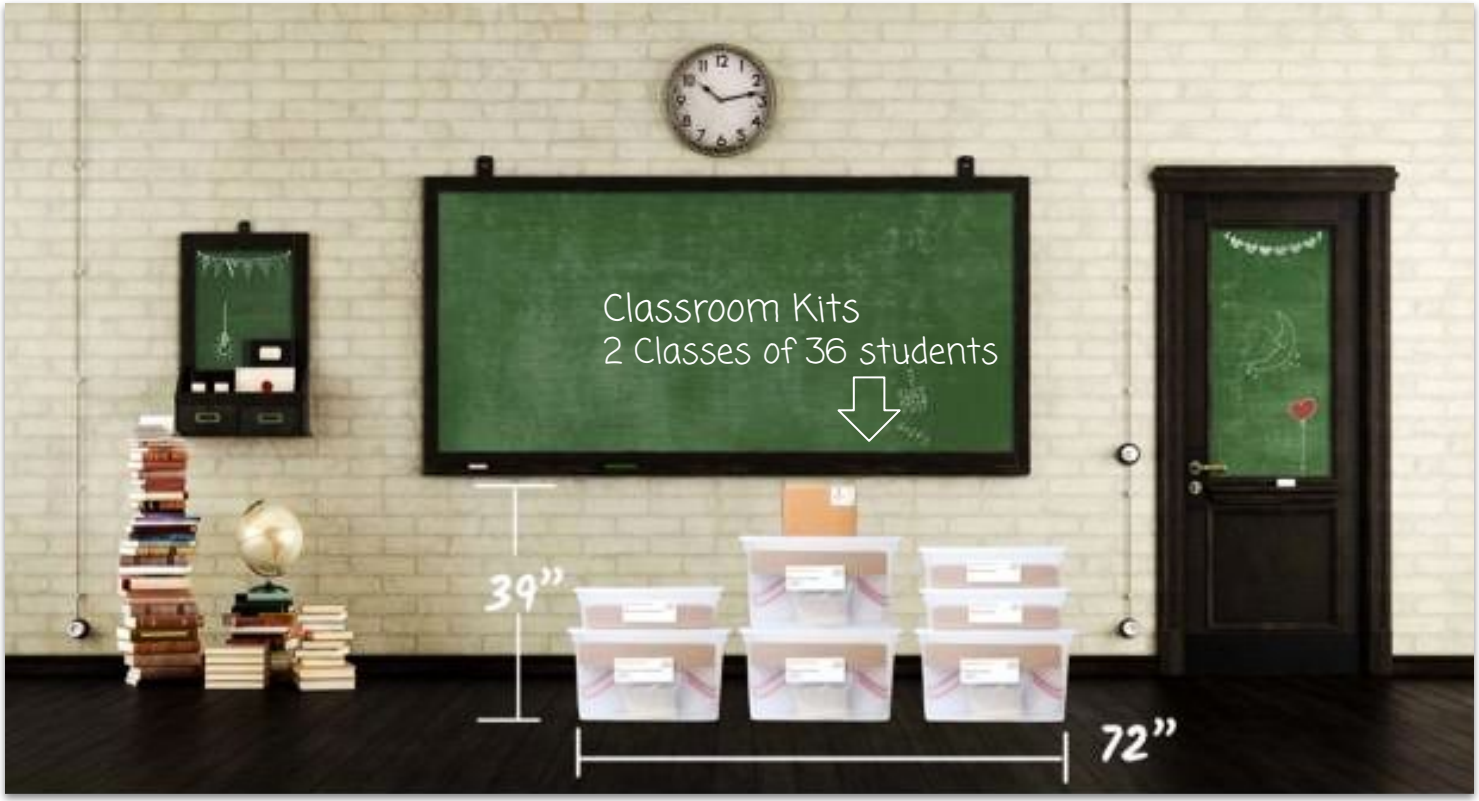
Classroom Slides

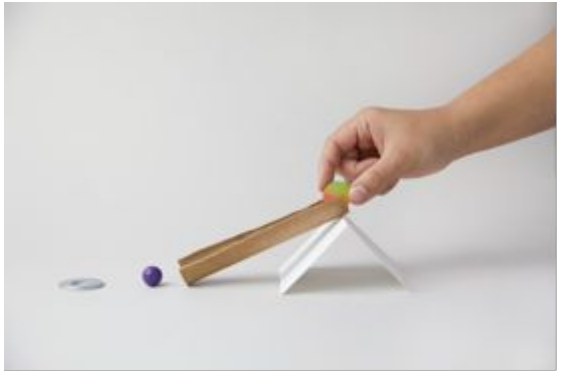
Each lesson will have a downloadable and editable PowerPoint file to help guide teachers and their students through the lesson.



Classroom Kits



Hands On Learning Materials



Classroom Wall Print Materials

Unit Question
How does the electrical system work?

Chapter 1 Question
What happened to the electrical system the night of the blackout?

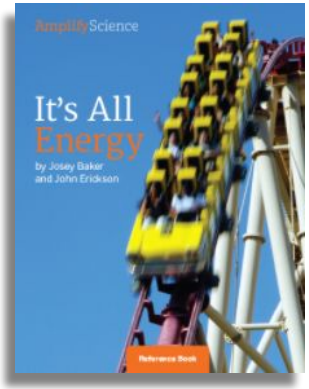
Key Concepts

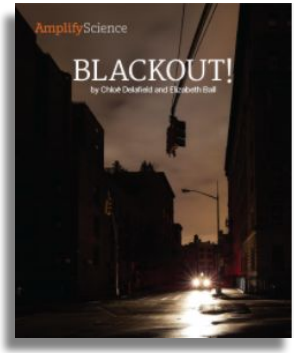
Key Concept: A system is a collection of interacting parts that work together. Each part in the system plays a role to perform a function.

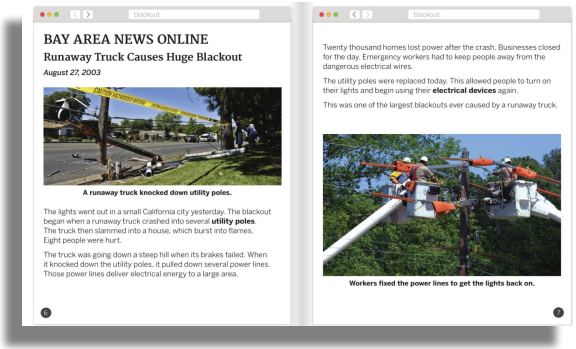
Vocabulary

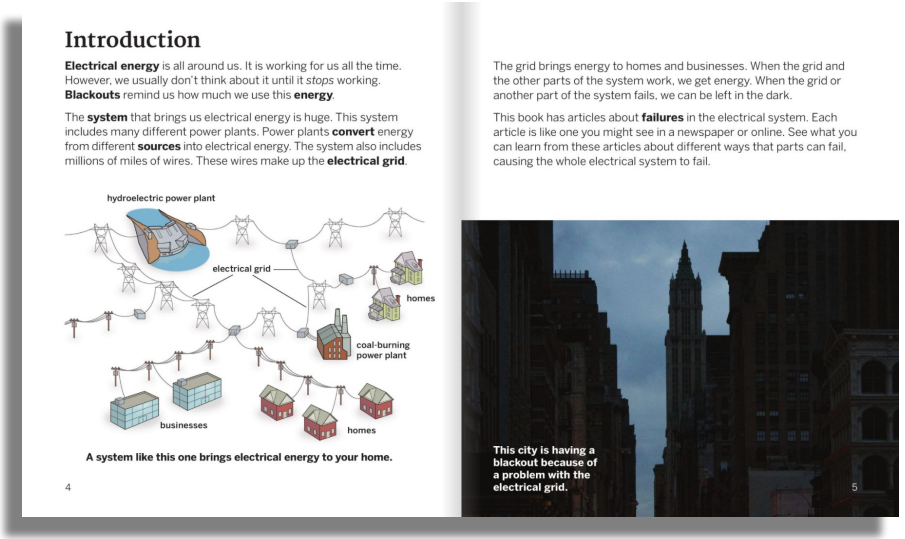
- **engineer**
- **function**
- **synthesize**
- **system**

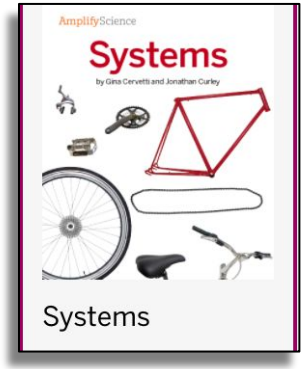
Literacy Integration

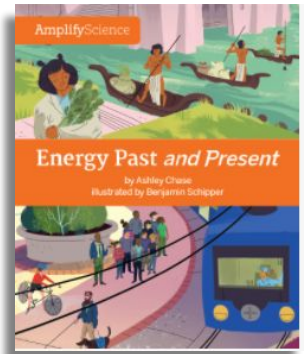


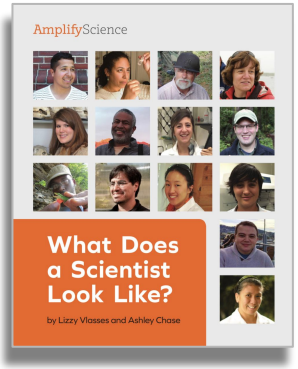












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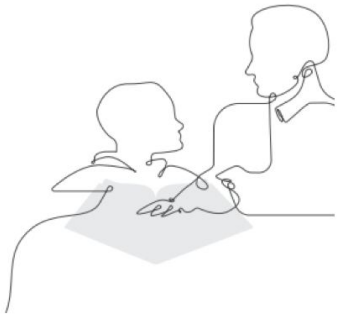
Content connections

Amplify Science CALIFORNIA

Grades K–5

Amplify Science and Benchmark Advance crosswalk

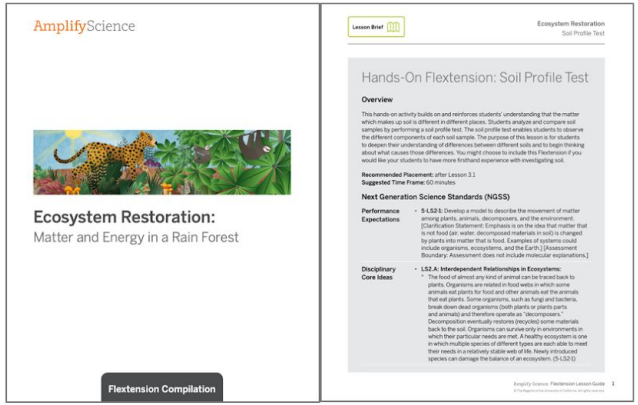
authored by THE LAWRENCE HALL OF SCIENCE



Grade K

	Benchmark unit 10	Amplify Science
Unit title	**The Power of Electricity: Where Do Scientific Discoveries Lead Us?**	**Energy Conversions: Blackout in Ergstown** Students play the role of systems engineers for Ergstown, a fictional town that experiences frequent blackouts. They explore reasons why an electrical system can fail, choose new energy sources and energy converters for the town, and use evidence to explain why their choices will make the town's electrical system more reliable.
Next Generation Science Standards	4-PS3-2: Energy can be Transferred 4-PS3-4: Design an Energy Converter 4-ESS3-1: Energy and Fuels	4-PS3-1: Relationship Between Speed and Energy 4-PS3-2: Energy can be Transferred 4-PS3-3: Collisions 4-PS3-4: Design an Energy Converter 4-ESS3-1: Energy and Fuels 3-5-ETS1-1: Defining the Problem 3-5-ETS1-2: Developing Possible Solutions Crosscutting Concepts: Systems and Systems Models; Energy and Matter; Structure and Function; Cause and Effect
ELA reading standards	• **Reading Informational Text:** RI.4.1; RI.4.2; RI.4.6; RI.4.7; RI.4.8; RI.4.9; RI.4.10 • **Writing:** W.4.1; W.4.1.A; W.4.1.B; W.4.1.C; W.4.1.D; W.4.4; W.4.5; W.4.6; W.4.7; W.4.8; W.4.9.B; W.4.10 • **Speaking and Listening:** SL.4.1; SL.4.2; SL.4.3; SL.4.4; SL.4.5; SL.4.6 • **Language:** L.4.4.A; L.4.4.C; L.4.6	• **Reading Informational Text:** RI.4.1; 4.2; 4.3; 4.4; 4.6; 4.7; 4.10 • **Writing:** W.4.1; 4.2; 4.4; 4.8; 4.9; 4.10 • **Speaking and Listening:** SL.4.1; 4.4; 4.6 • **Language:** L.4.6
Math standards		• **Math Practices:** MP1; 2; 4; 5 • **Math Content:** 4.OA.3; 4.NBT.2; 4.NBT.4; 4.MD.5.A; 4.MD.6
Foundational reading standards	• RF.4.3.A	

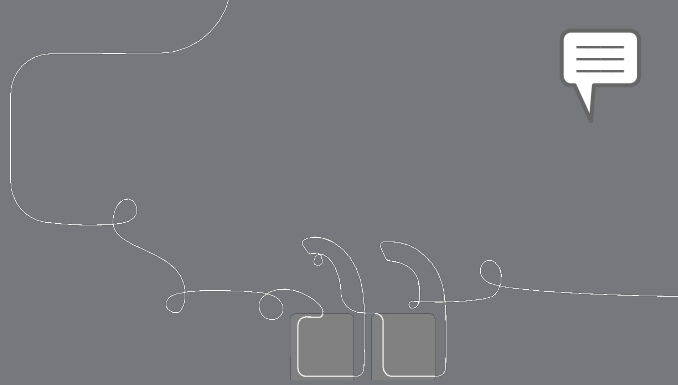
Amplify Science: Additional Resources



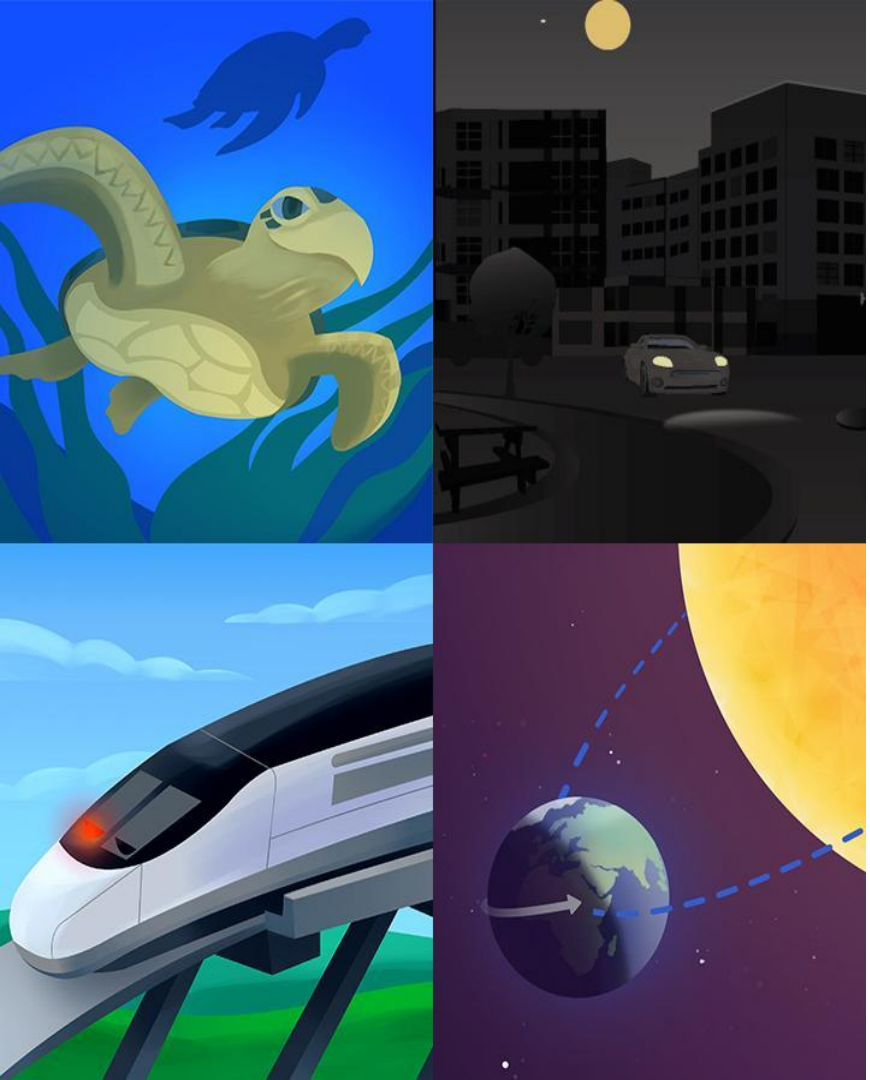
Hands-on Flextensions

New digital K–5 Student Books

MYSTERY science



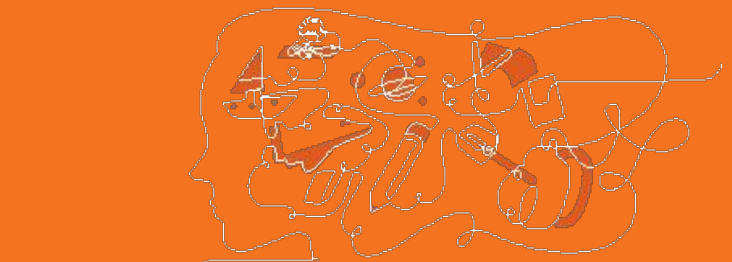
Questions?



Plan for the day

- Introducing Amplify Science
- **Navigation Essentials**
- Assessments
- Remote & Hybrid Learning Resources
- Reflection and closing

Navigation Essentials



Schoology Apps

You should have these 2 apps in schoology

1. **ES School Student Edition** - downloading this app pushes the content to students (**students DO NOT need to download anything**)

2. **Teacher Edition** - downloading this app gives full teacher access - **this is the app that teachers will ACTUALLY USE**

Schoology Apps

To join Amplify ES Group:

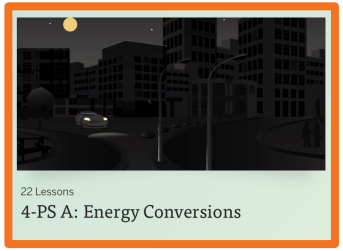
W4PK-W466-63F5B

Unit

Chapters

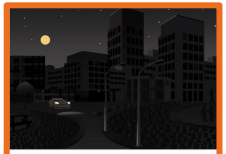
Lessons

Activities



22 Lessons

4-PS A: Energy Conversions



Chapter 1: What happened to the electrical system the night of the...

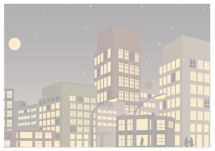
6 Lessons

Chapter 2: What makes the devices in Ergstown output or fail to output...

4 Lessons

Chapter 3: Where does the electrical energy for the devices in Ergstow...

6 Lessons



Chapter 4: How does energy get to the devices all over Ergstown?

6 Lessons

Lesson 1.1: Pre-Unit Assessment

Lesson 1.2: Introducing Systems

Lesson 1.3: Exploring Systems

Lesson 1.4: Electrical Energy

Lesson 1.5: Forms of Energy

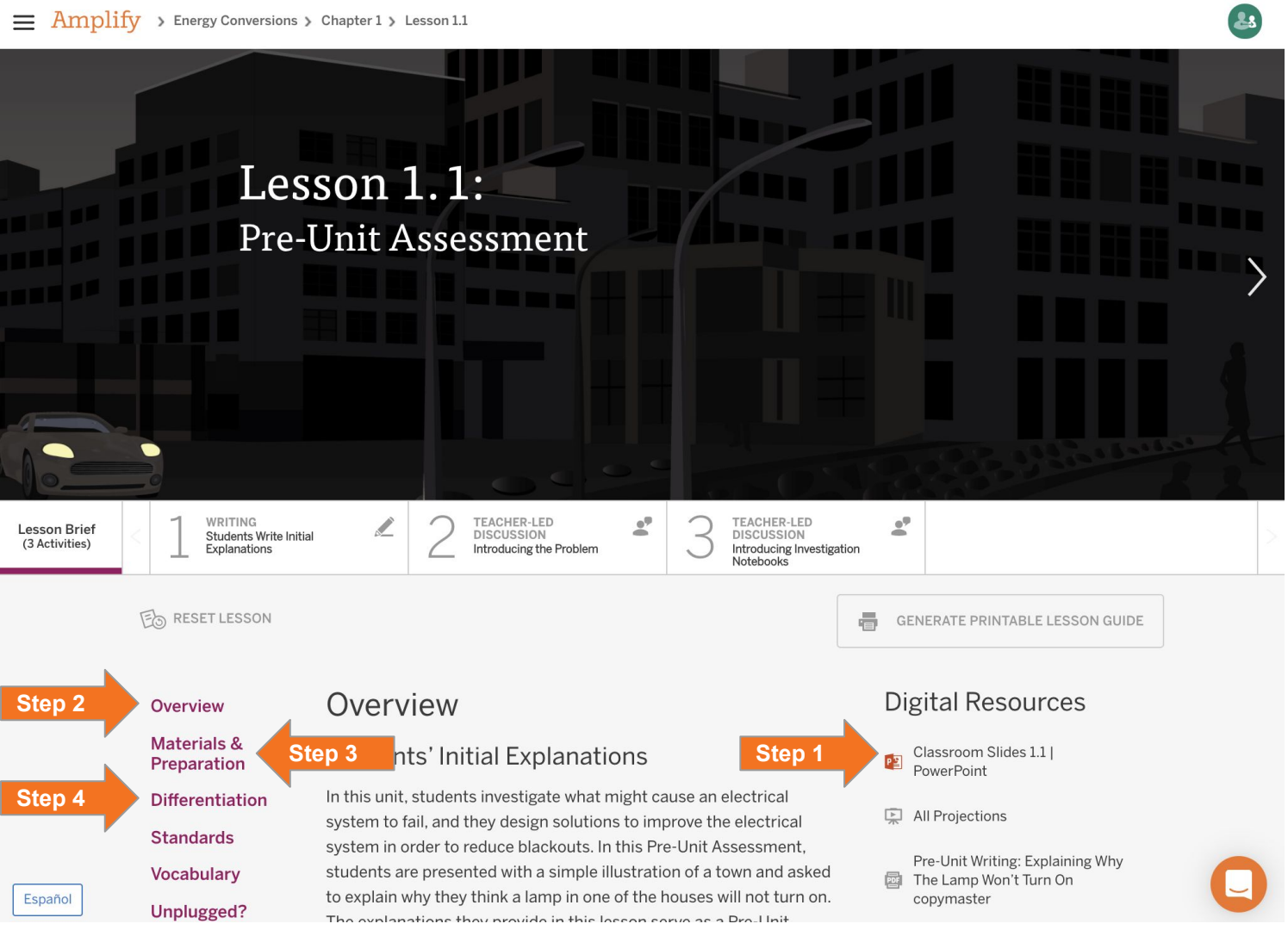
Lesson 1.6: Writing an Argument About the Blackout

Lesson Brief (3 Activities)

1 HANDS-ON Building a Simple Electrical System

2 TEACHER-LED DISCUSSION Parts of a Simple Electrical System

3 STUDENT-TO-STUDENT DISCUSSION Parts and Functions



4 Steps for Preparing to Teach

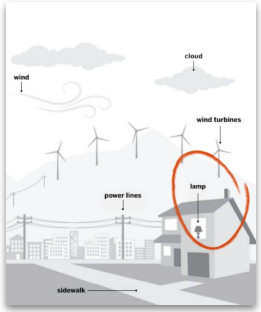
Step 1:
Download Classroom Slides
Step 2:
Read the Lesson Overview
Step 3:
Read the Materials and Preparation section
Step 4:
Read the Differentiation

Amplify.

Chapter 1: What happened to the electrical system the night of the Ergstown blackout?

Investigation Question:
What is a system?

Multiple sources of evidence



Have you ever been in a blackout?

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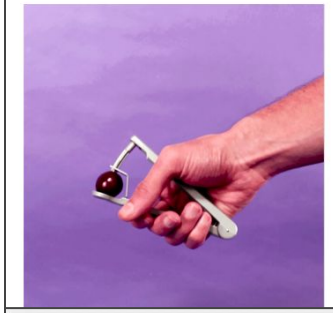


Observe the system carefully to see how it works.

It will be your job to figure out a way to put these materials together into a functioning system.

Investigation Question:
What is a system?

Cherry Pitter System

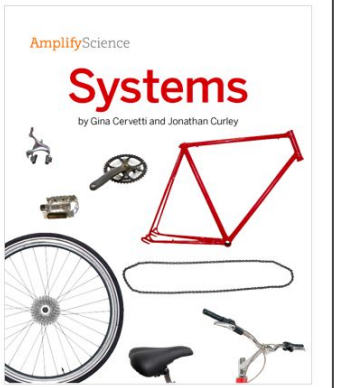
Part	handle	cherry cup	poker	spring
Function	to hold and squeeze	to hold the cherry in place	to push the pit out of the cherry	to open the handle after you squeeze it closed

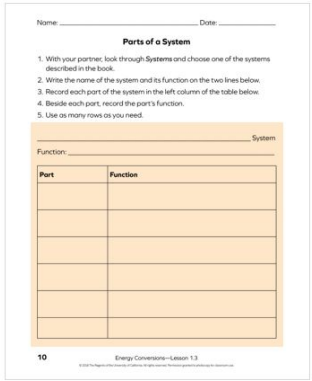
System function: To take the pits out of the cherries.

Vocabulary

function

what something can do





Name: _____ Date: _____

Parts of a System

1. With your partner, look through **Systems** and choose one of the systems described in the book.
2. Write the name of the system and its function on the two lines below.
3. Record each part of the system in the left column of the table below.
4. Beside each part, record the part's function.
5. Use as many rows as you need.

_____ System

Function: _____

Part	Function

10 Energy Conversions—Lesson 1.3

Turn to page 10, Parts of a System, in your notebooks.

Choose a system from the book *Systems* and **record its parts and functions**.

ON-THE-FLY

Key Concept

A system is a collection of interacting parts that work together. Each part in the system plays a role to perform a function.

Classroom Wall Print Materials

Unit Question
How does the electrical system work?

Chapter 1 Question
What happened to the electrical system the night of the blackout?

What is a system? (1.2,1.3)

Key Concepts

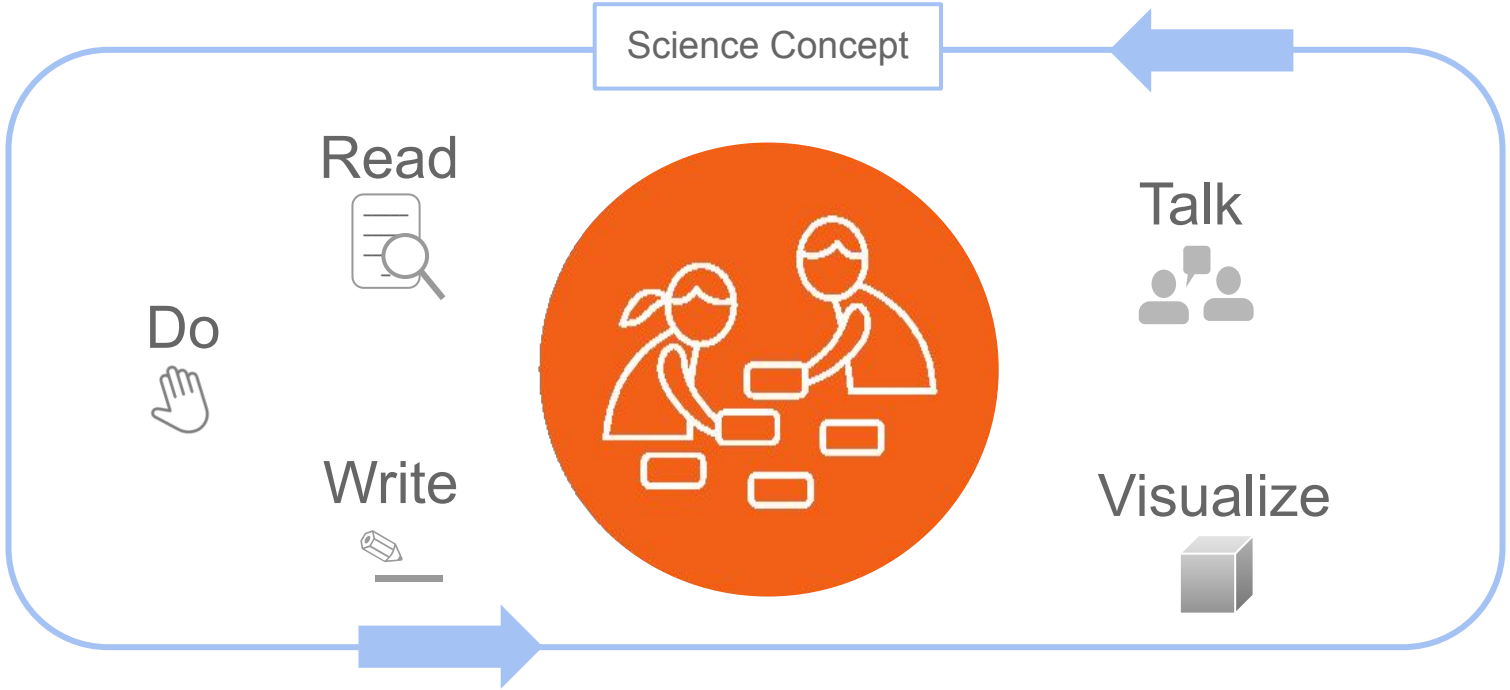
Key Concept: A system is a collection of interacting parts that work together. Each part in the system plays a role to perform a function.

Vocabulary

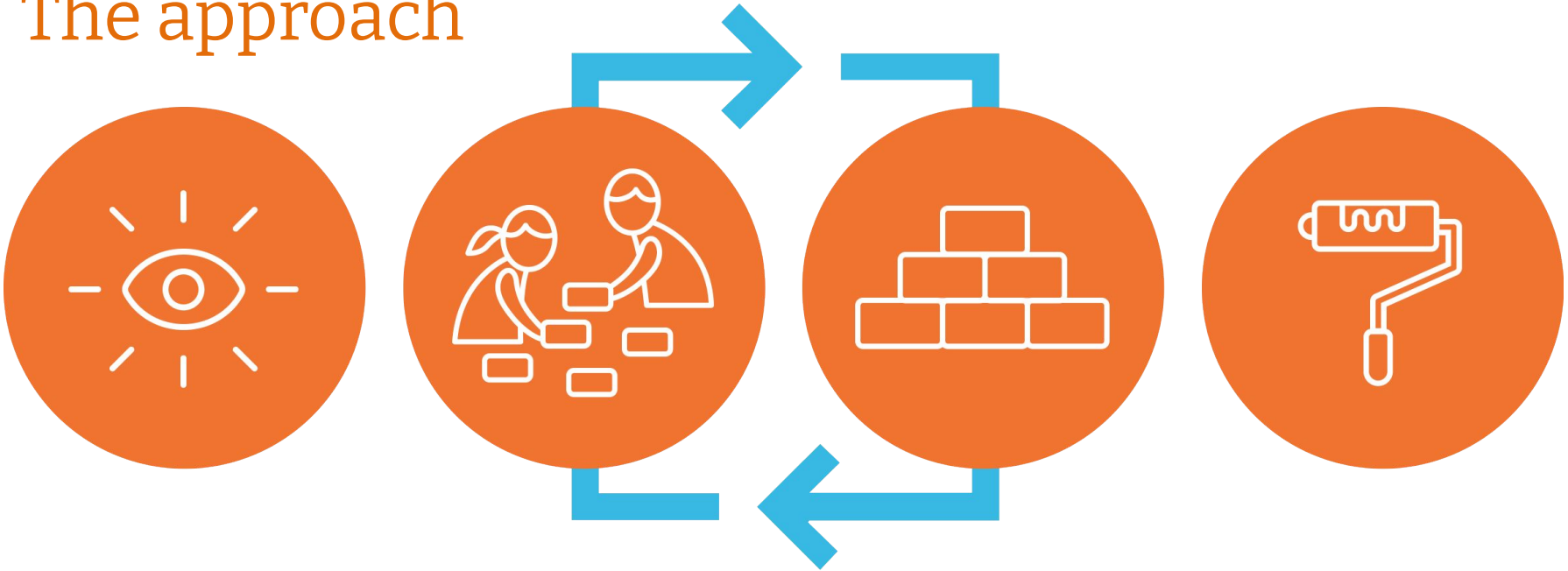
- **engineer**
- **electrical system**
- **function**
- **system**

Multimodal learning

Gathering evidence over multiple lessons



The approach

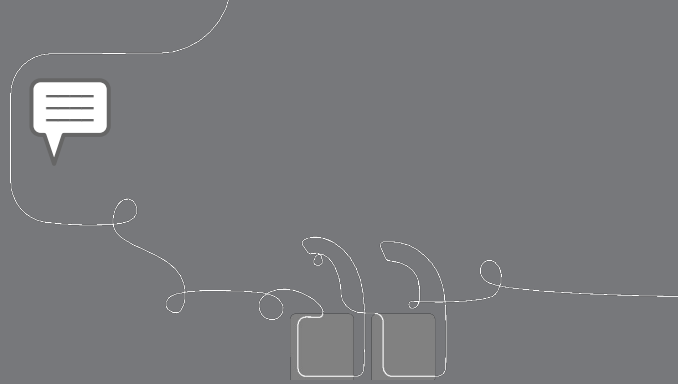


Introduce a real world problem

Collect evidence from multiple sources

Build increasingly complex explanations

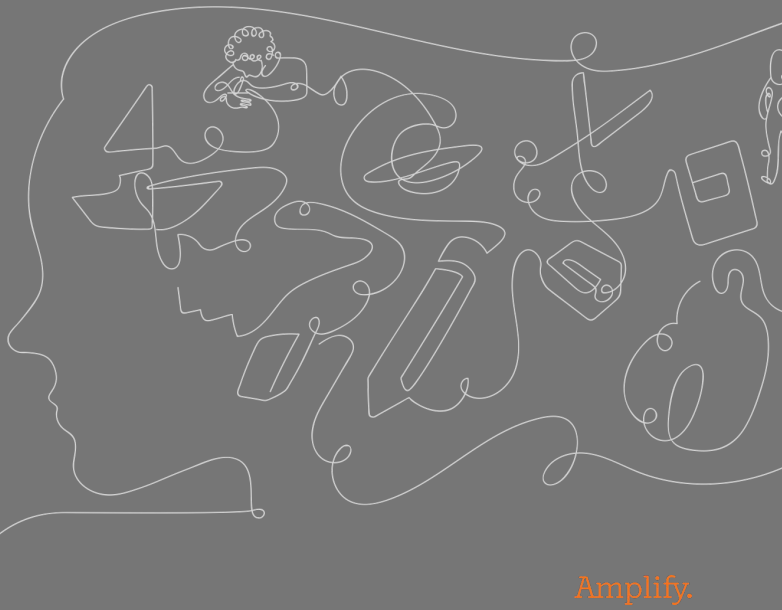
Apply knowledge to solve a different problem



Questions?

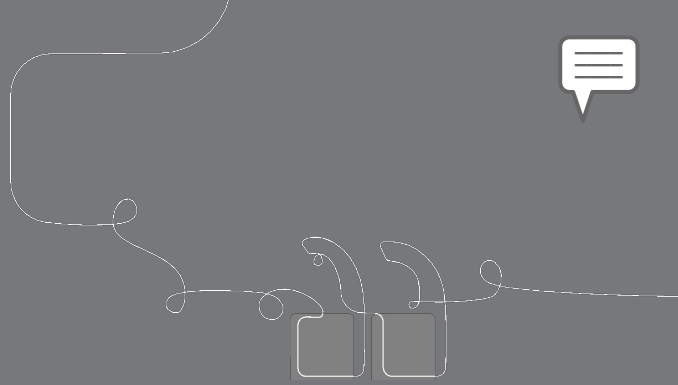
Group Chat

How do you normally prepare to teach a new lesson?



First Days of Teaching

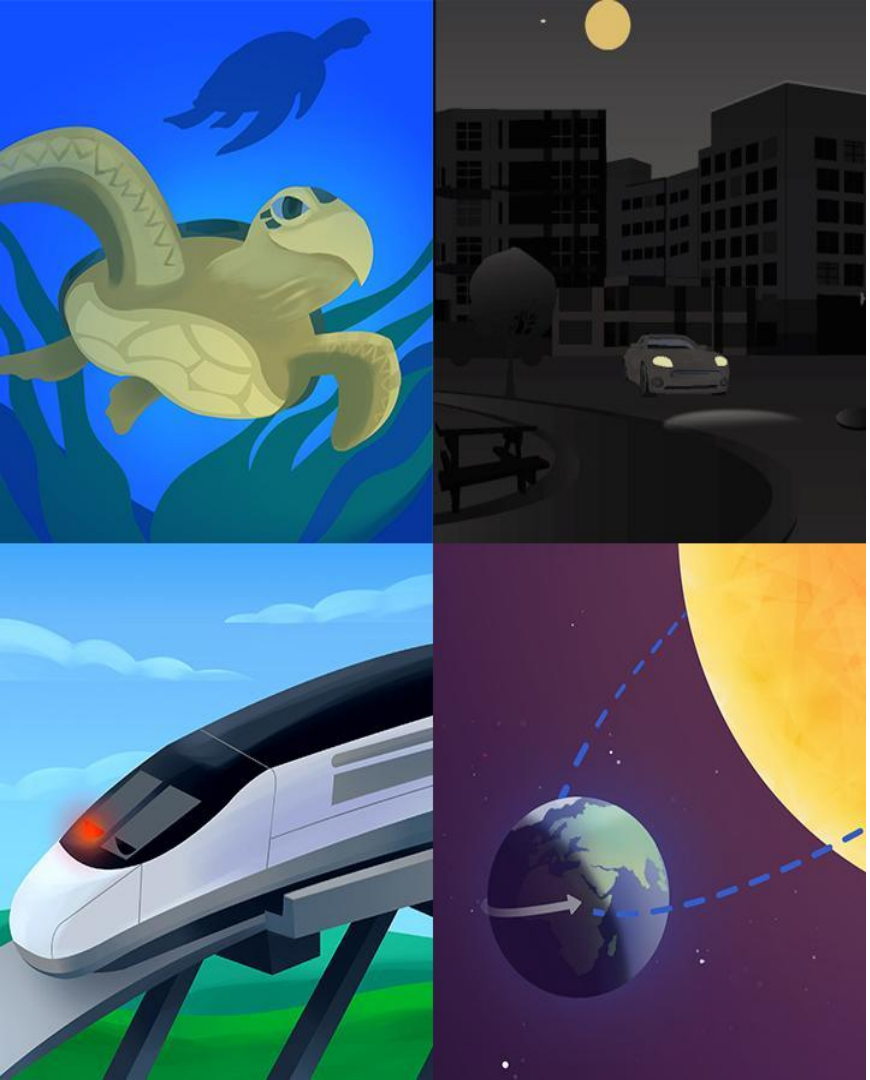
Day 1	Day 2	Day 3	Day 4	Day 5
1.1: Pre-Unit Assessment Structures Prep: 15-45 min --- 1: Students Write Initial Explanations (20 min) 2: Introducing the Problem (15 min.) 3: Introducing Investigation Notebook (10 min.)	**1.2: Introducing Systems** Prep=20 min --- 1: Reflecting on the Unit Problem (5 min.) 2: Observing Simple System (15 min.) 3: Introduction to Synthesizing(15 min.) 4:Reading: Systems (25 min.)	**1.3: Exploring Systems (85 min lesson)** Prep=30 min --- 1: Building a Simple Electrical System (25 min.) 2. Parts of a Simple Electrical System (15 min.) 3. Parts and Functions (20 min.) 4: Reading About Systems in Science and Engineering (25 min.)	**1.4: Electrical Energy** Prep=30 min --- 1: Introducing Energy (10 min.) 2: Exploring the Simulation (20 min.) 3: Finding Electrical Energy in the Simulation (20 min.) 4:What Uses Electrical Energy? (10 min.)	**1.5: Forms of Energy** Prep=20 min --- 1: Electrical Systems with Different Energy Outputs (20 min.) 2: Introducing the Reference Book (10 min.) 3: Reading About and Discussing Forms of Energy (15 min.) 4: Synthesizing (15 min.)



How are students thinking and solving problems like a scientist?

What might your students be challenged by?

Questions?

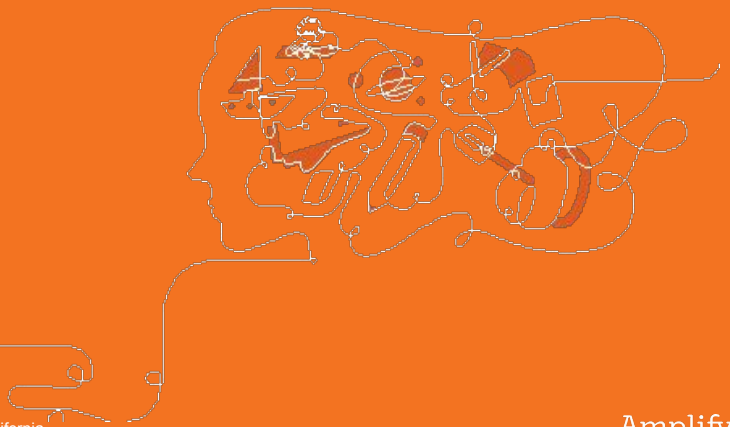


Plan for the day

- Introducing Amplify Science
- Navigation Essentials
- **Assessments**
- Remote & Hybrid Learning Resources
- Reflection and closing

Assessments

How do students show you what they know?



Amplify Science Assessment System

Credible

- Assessments provide reliable information about student learning

Actionable

- Assessments provide actionable suggestions

Timely

- Assessments are embedded into instruction

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.

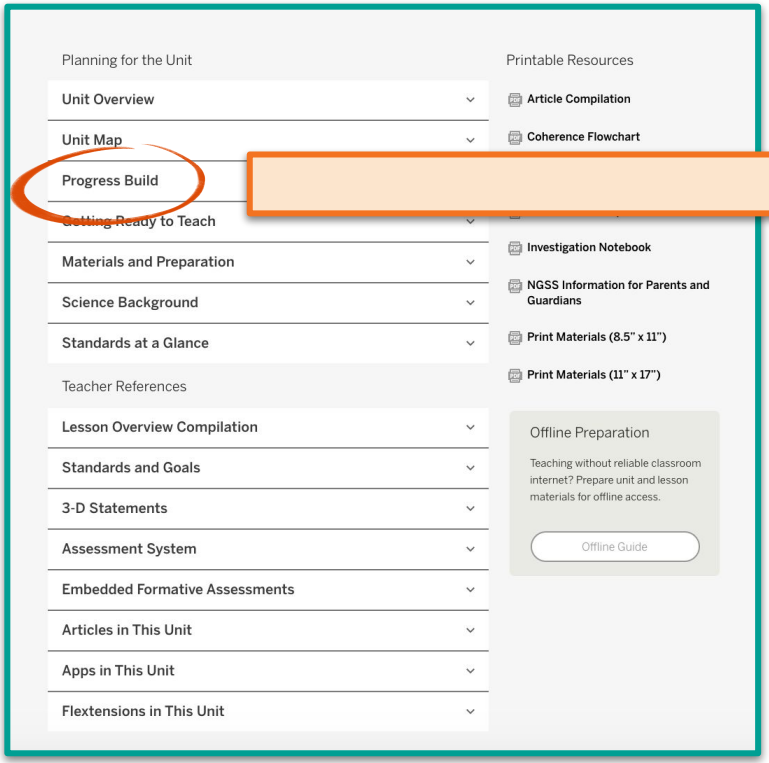
Critical Juncture
Designed to occur at points in the unit in which it is especially important that students understand the content before continuing.

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.

Progress Build



Energy Conversions
Planning for the Unit

Progress Build

Progress Build

A Progress Build describes the way in which students' explanations of the central phenomena should develop and deepen over the course of a unit. It is an important tool in understanding the design of the unit and in supporting students' learning. A Progress Build organizes the sequence of instruction, defines the focus of the assessments, and grounds inferences about students' understanding of the content, specifically at each of the Critical Juncture Assessments found throughout the unit. A Critical Juncture is the differentiated instruction designed to address specific gaps in students' understanding. This document will serve as an overview of the *Energy Conversions: Blackout in Ergstown* Progress Build. Since the Progress Build is an increasingly complex yet integrated explanation, we represent it below by including the new ideas for each level in bold.

In the *Energy Conversions* unit, students will learn to construct scientific explanations of what could have caused a blackout and caused devices to stop working.

Prior knowledge (preconceptions): Students are likely to recognize that many familiar devices need electricity to function. Students will also likely recognize the idea that there is a source of electricity for those devices, but what that source is, how it functions, or how it relates to the device will likely still be mysterious. While neither of these ideas are necessary for students to participate fully in the unit, having exposure to these ideas will prepare students well for what they will be learning.

Progress Build Level 1: Devices work by converting electrical energy to another form.

Devices work by converting electrical energy to another form (motion, light, thermal, sound). They only work when they are plugged in because energy must be supplied to be converted. The electrical system gets a certain amount of energy. If devices in the system need more energy than is going into the system, then the devices will not function.

Progress Build Level 2: Energy must be supplied from a source and converted or there is no electrical energy available for devices to convert.

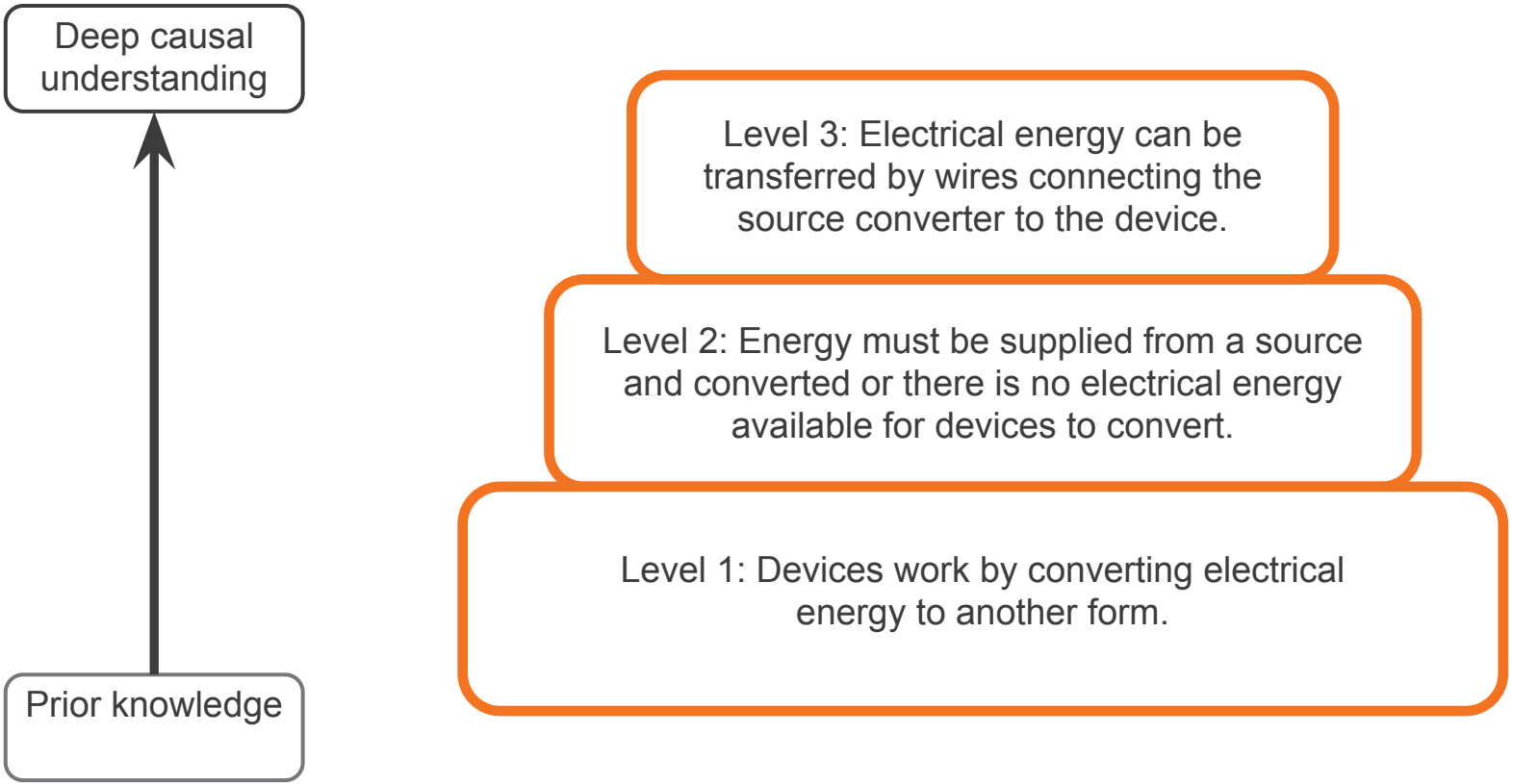
Devices work by converting electrical energy to another form (motion, light, thermal, sound). They only work when they are plugged in because energy must be supplied to be converted. The electrical system gets a certain amount of energy. If devices in the system need more energy than is going into the system, then the devices will not function. **Electrical energy is converted from a source—motion energy (wind, water, steam) is converted by a generator and light energy by solar panels. Energy has to come from somewhere, so energy must be supplied from a source and converted or there is no electrical energy available for devices to convert (the system does not function).**

Progress Build Level 3: Electrical energy can be transferred by wires connecting the source converter to the device.

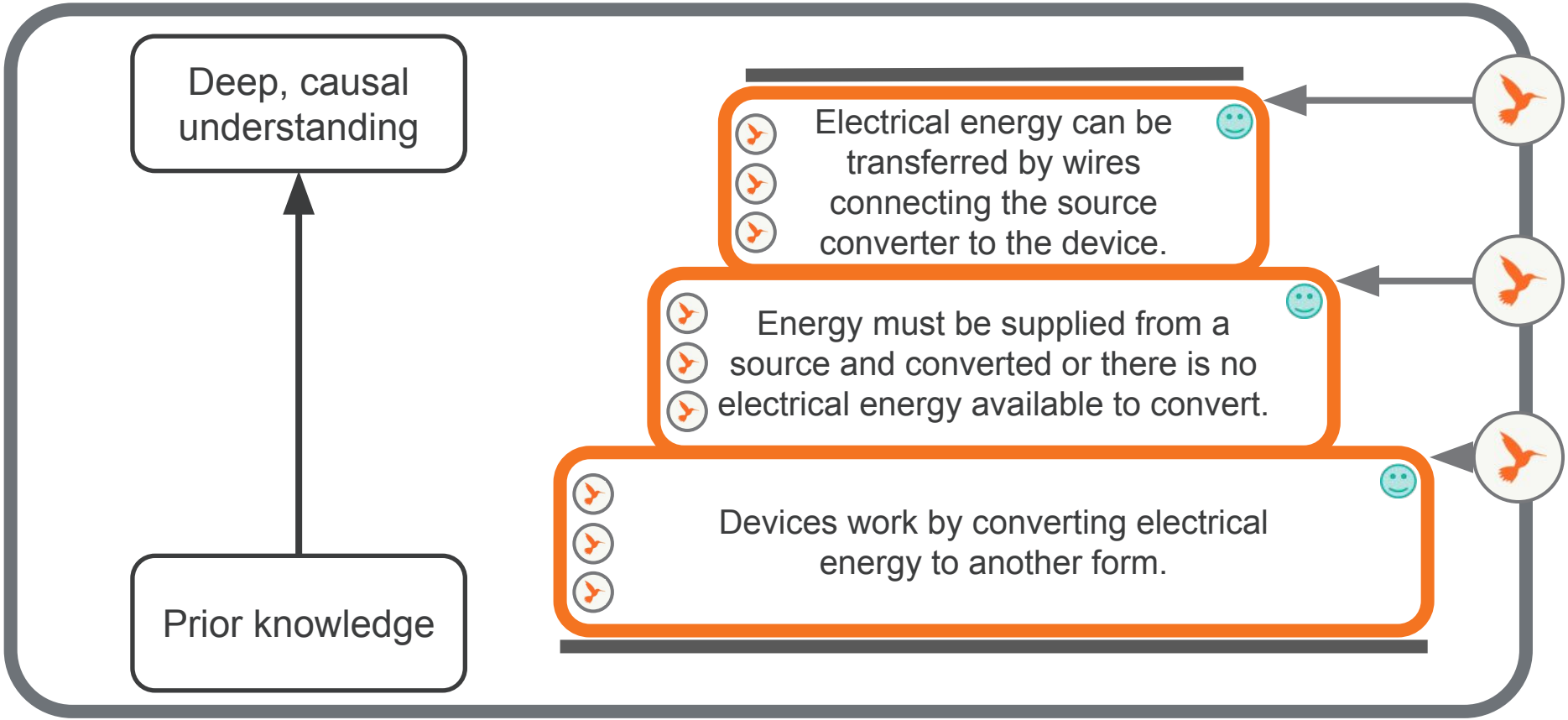
Devices work by converting electrical energy to another form (motion, light, thermal, sound). They only work when they are plugged in because energy must be supplied to be converted. The electrical system gets a certain amount of energy. If devices in the system need more energy than is going into the system, then the devices will not function. Electrical energy is converted from a source—motion energy (wind, water, steam) is converted by a generator and light energy by solar panels. Energy has to come from somewhere, so energy must be supplied from a source and converted or there is no electrical energy available for devices to convert (the system does not function). **Electrical energy can be transferred by wires connecting the source converter to the device. If that connection is broken, the wires cannot play their role and the system does not function.**

Amplify.

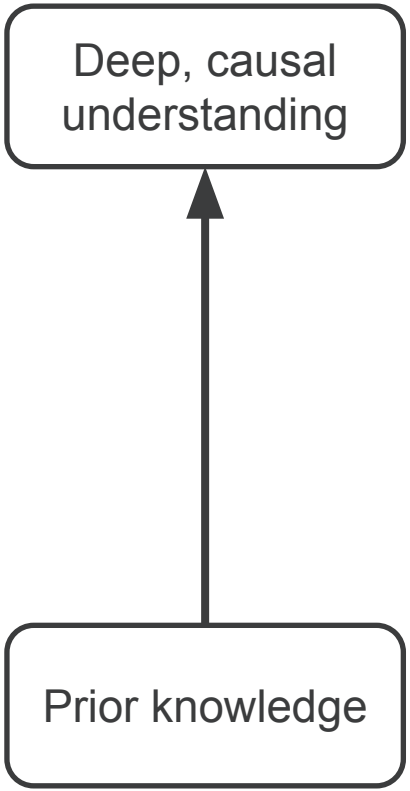
Energy Conversions Progress Build



Assessment System



Pre- and End-of-Unit Assessments

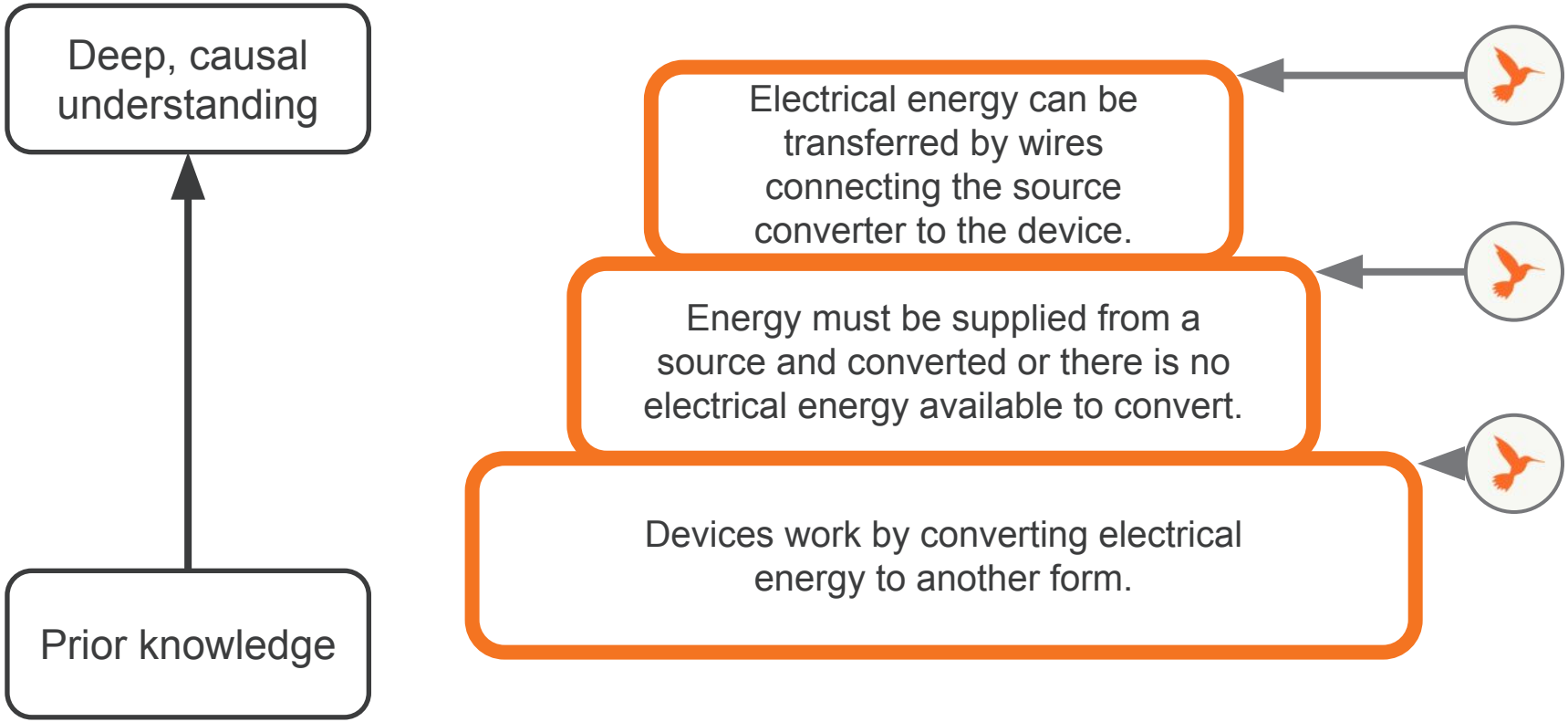


Electrical energy can be transferred by wires connecting the source converter to the device.

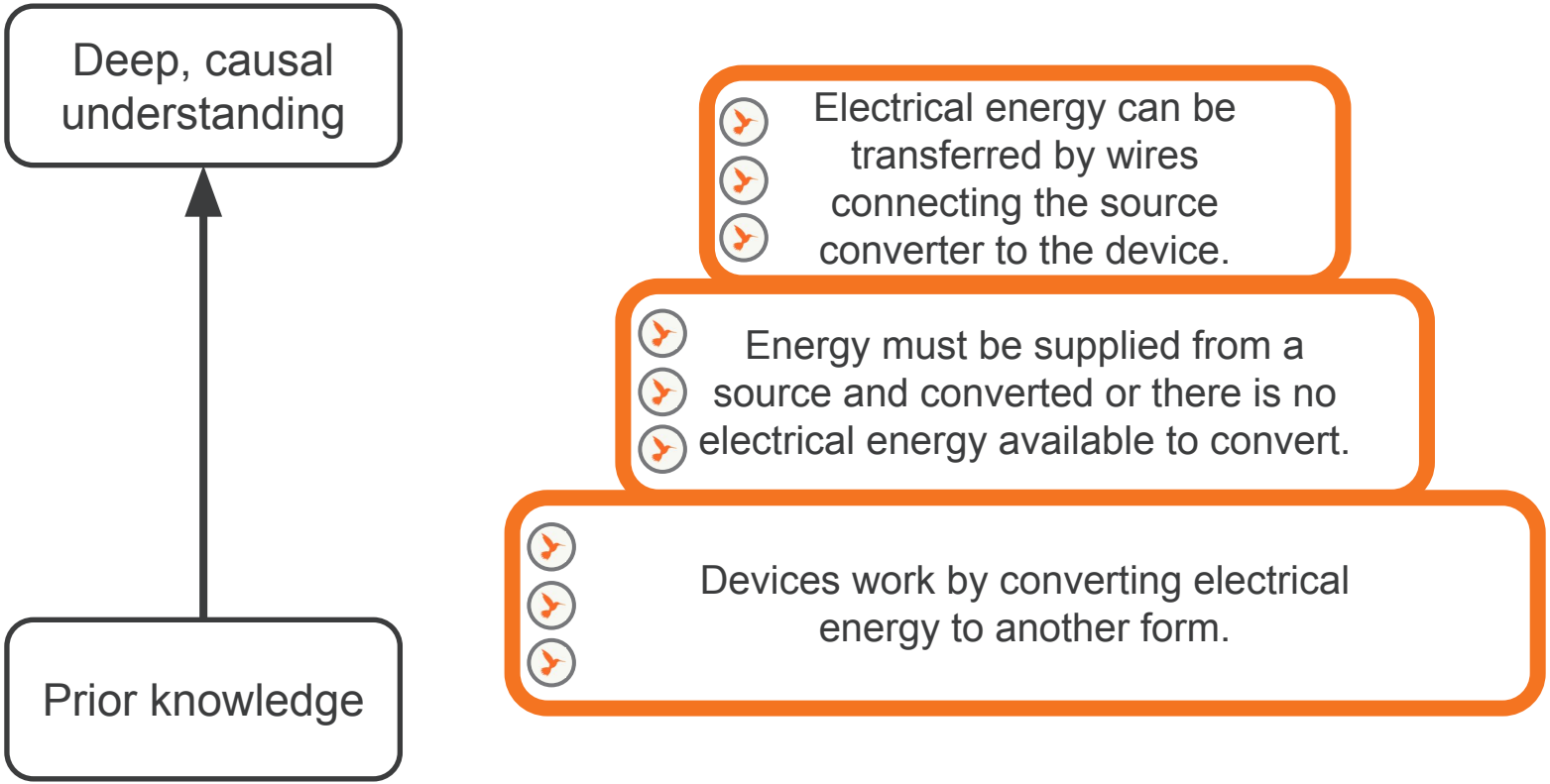
Energy must be supplied from a source and converted or there is no electrical energy available to convert.

Devices work by converting electrical energy to another form.

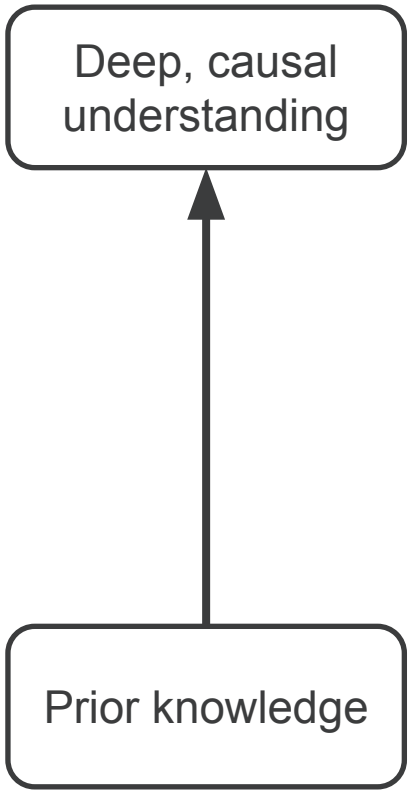
Critical Juncture Assessments



On-the-Fly Assessments



Self-Assessments (optional)

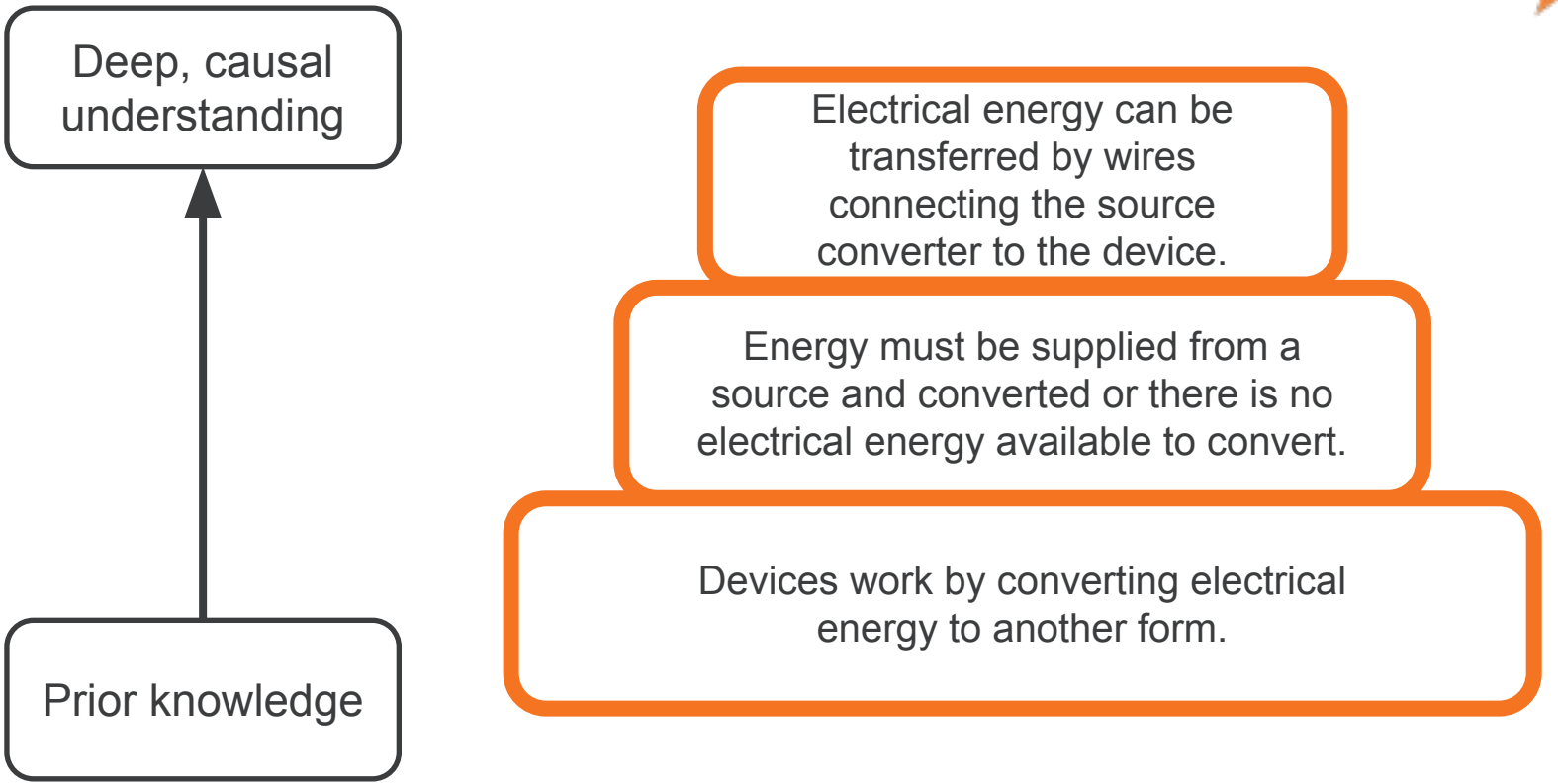


Electrical energy can be transferred by wires connecting the source converter to the device.

Energy must be supplied from a source and converted or there is no electrical energy available to convert.

Devices work by converting electrical energy to another form.

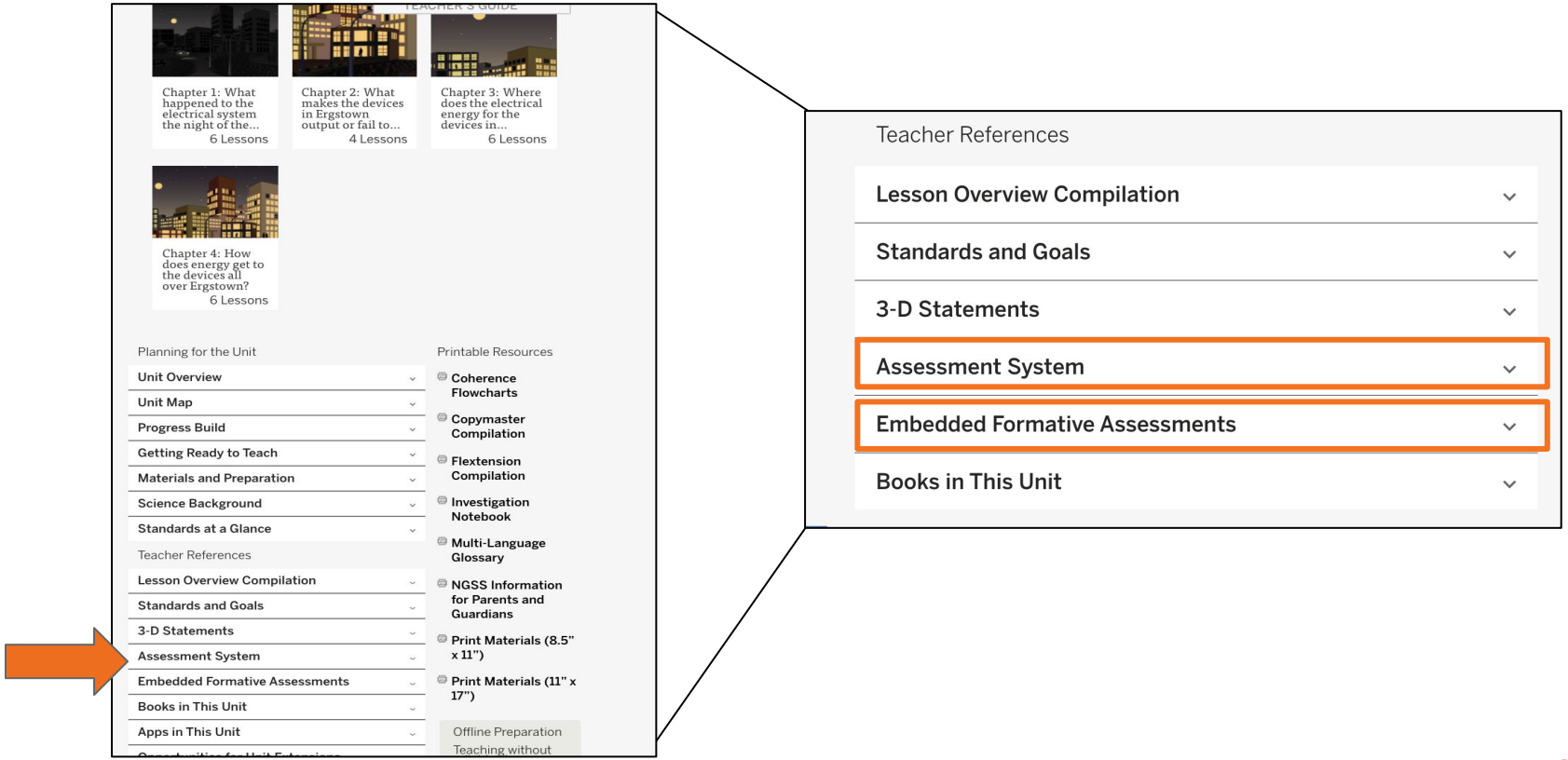
Investigation Assessment



Investigation Assessments

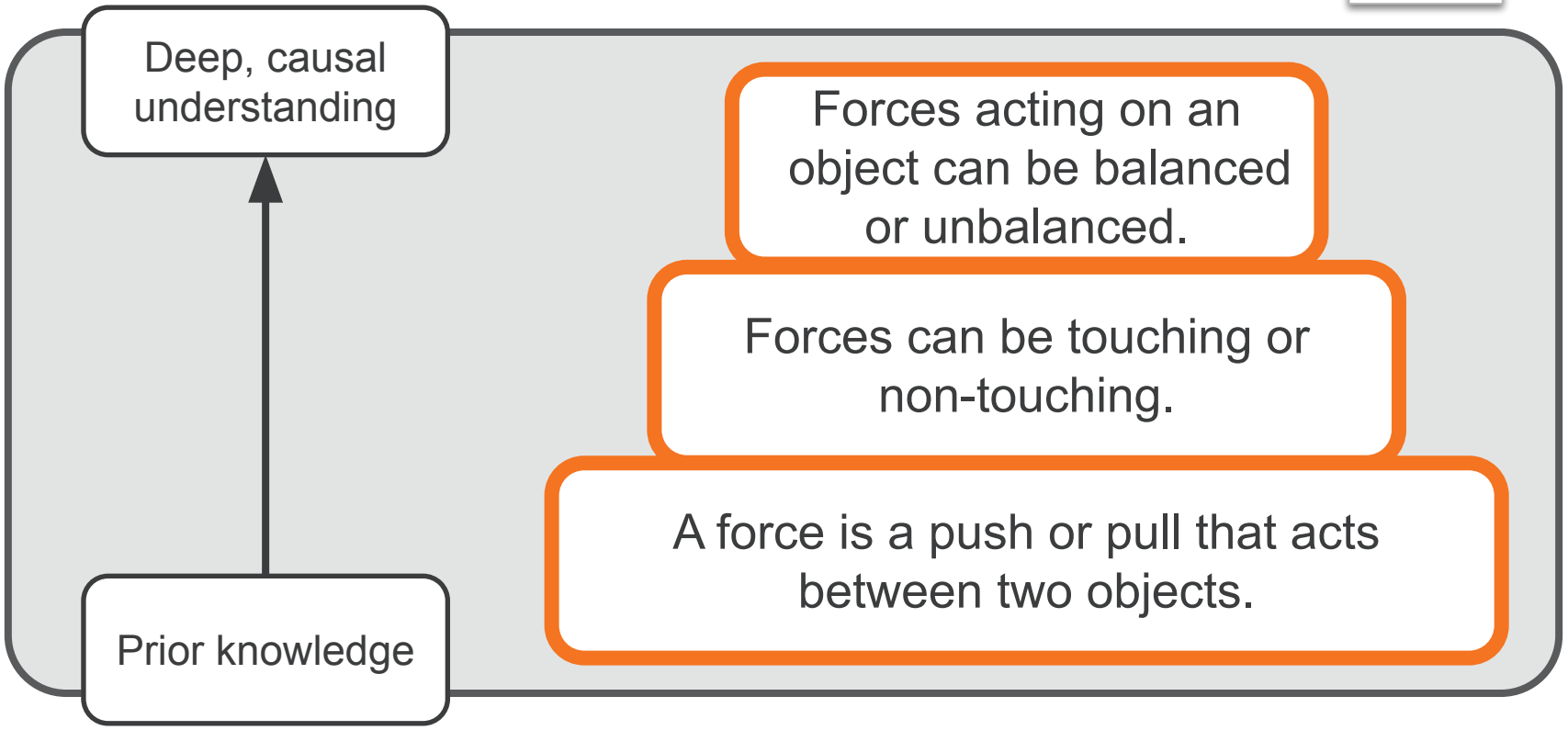
Grade	Unit Title
Kindergarten	Sunlight and Weather
First Grade	Light and Sound
Second Grade	Plant and Animal Relationships
Third Grade	Balancing Forces
Fourth Grade	Vision and Light
Fifth Grade	Patterns of Earth and Sky

Locating Assessment Resources

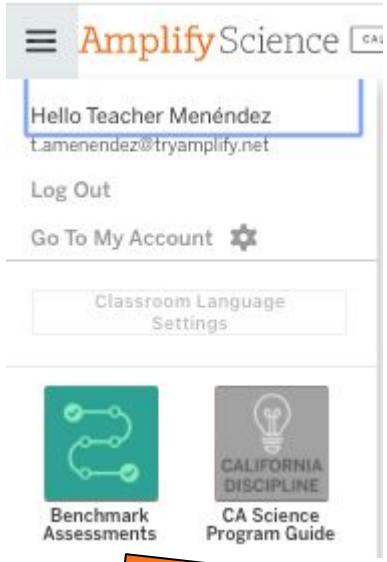


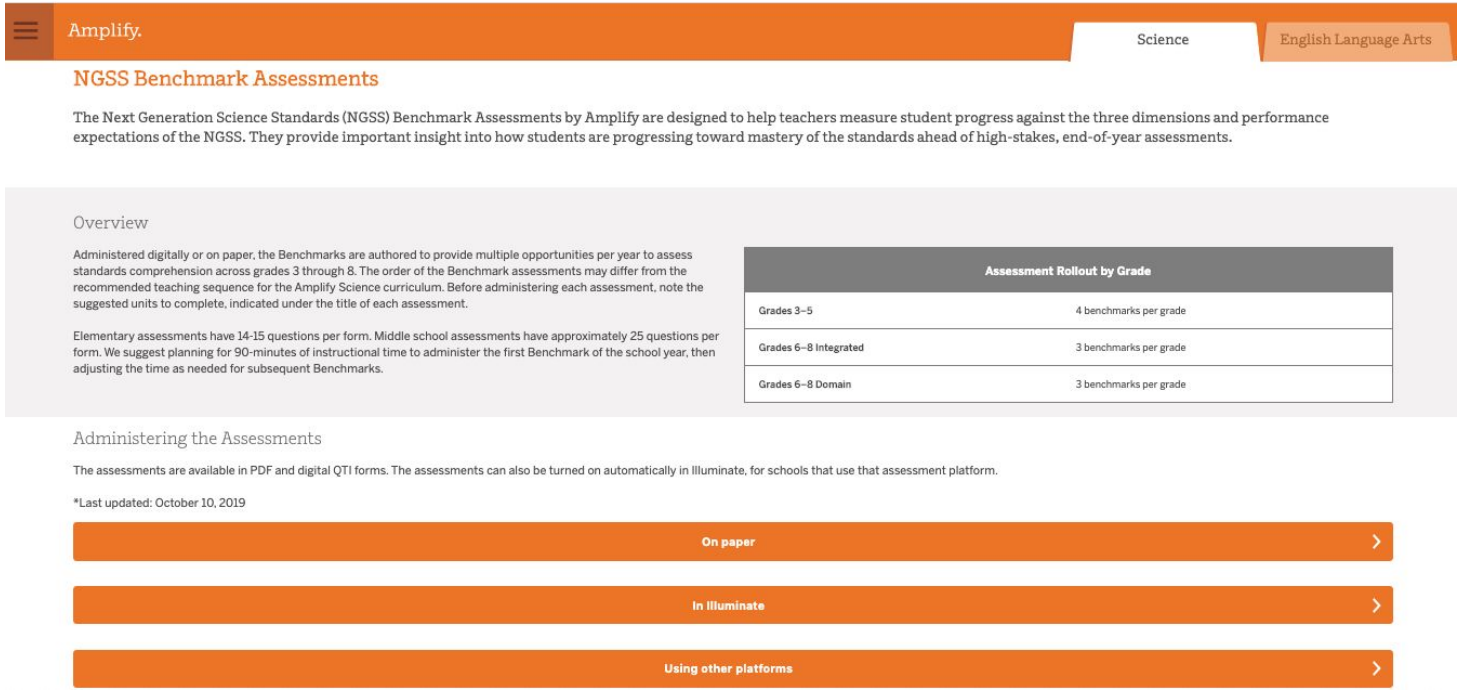
Amplify.

Portfolio Assessment

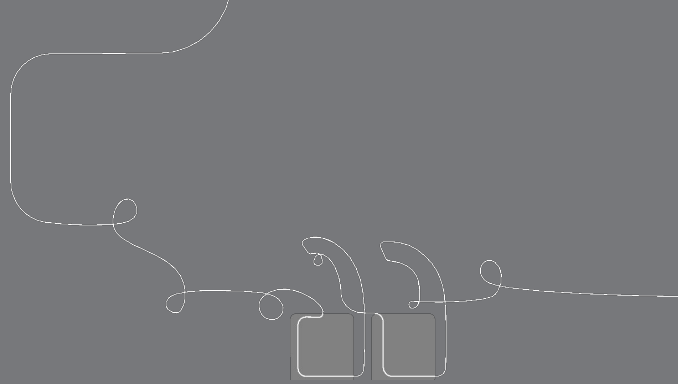


Benchmark Assessment Grades 3-5

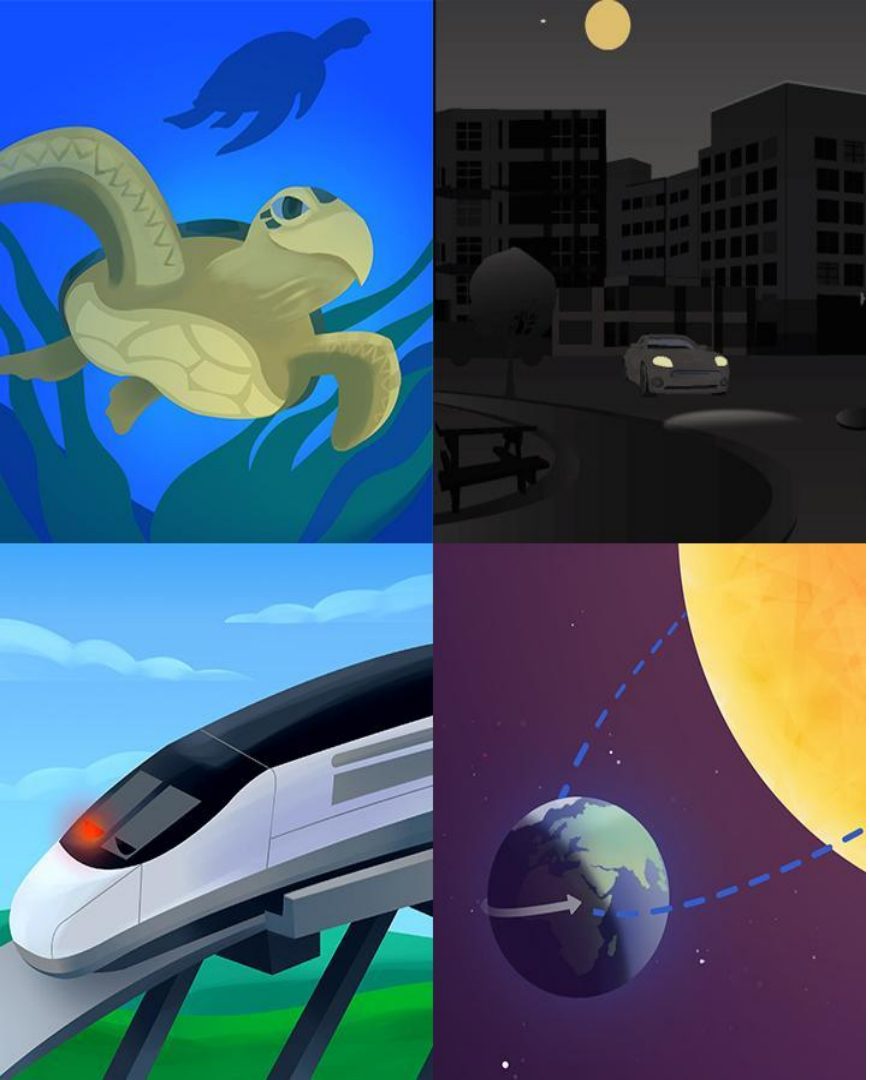




Self-Assessment



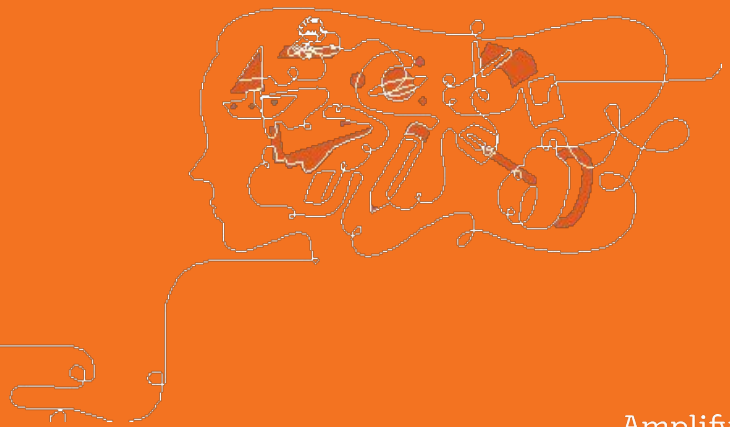
- Which questions have we answered?
- What new questions do you have?



Plan for the day

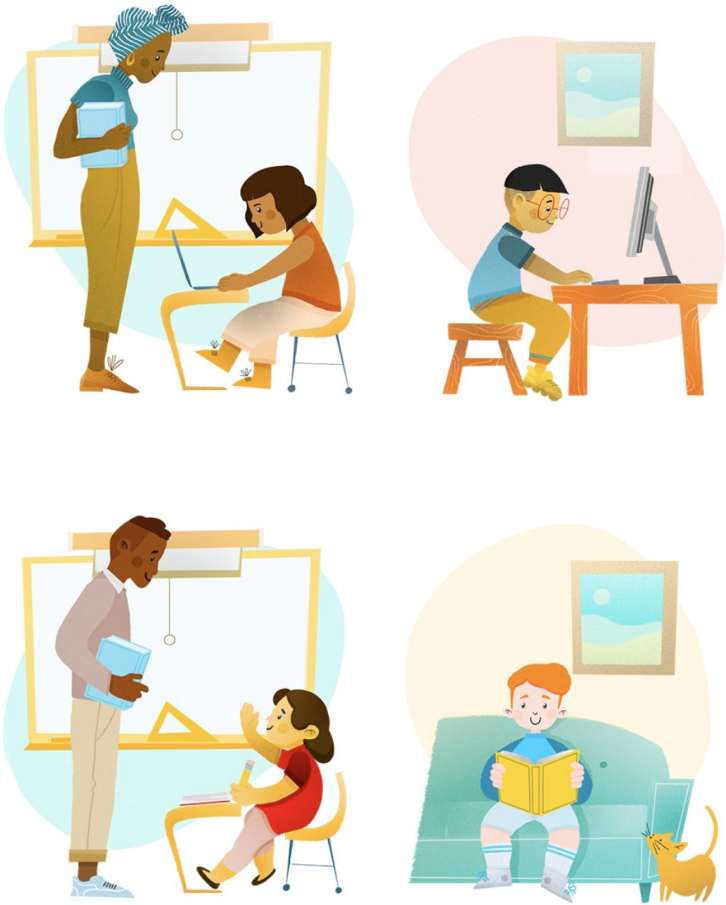
- Introducing Amplify Science
- Navigation Essentials
- Assessments
- **Remote & Hybrid Learning Resources**
- Reflection and closing

Remote/Hybrid Learning Resources



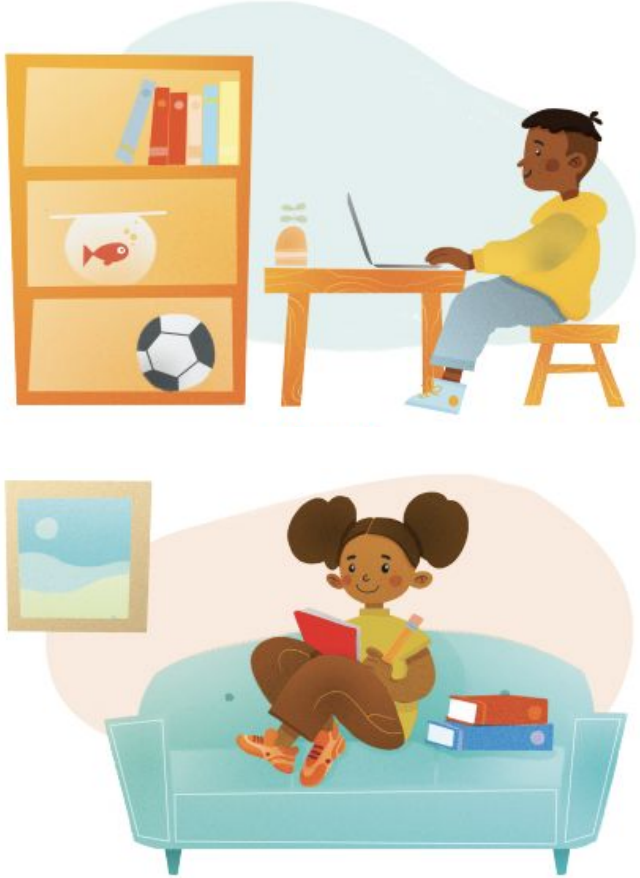
AmplifyScience@Home

A suite of new resources designed to make extended remote and hybrid learning easier for teachers and students.



AmplifyScience@Home

- Built for a variety of instructional formats
- Digital and print-based options
- No materials required
- Available in English and Spanish (student and family materials)
- Accessible on the Amplify Science Program Hub



AmplifyScience@Home

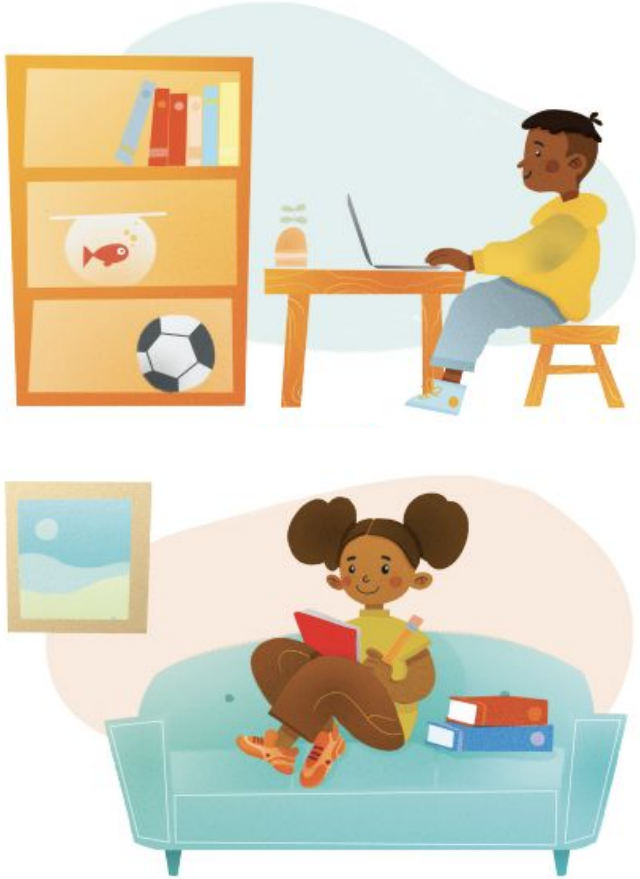
Two different options:

@Home Units

- Packet or slide deck versions of Amplify Science units condensed by about 50%

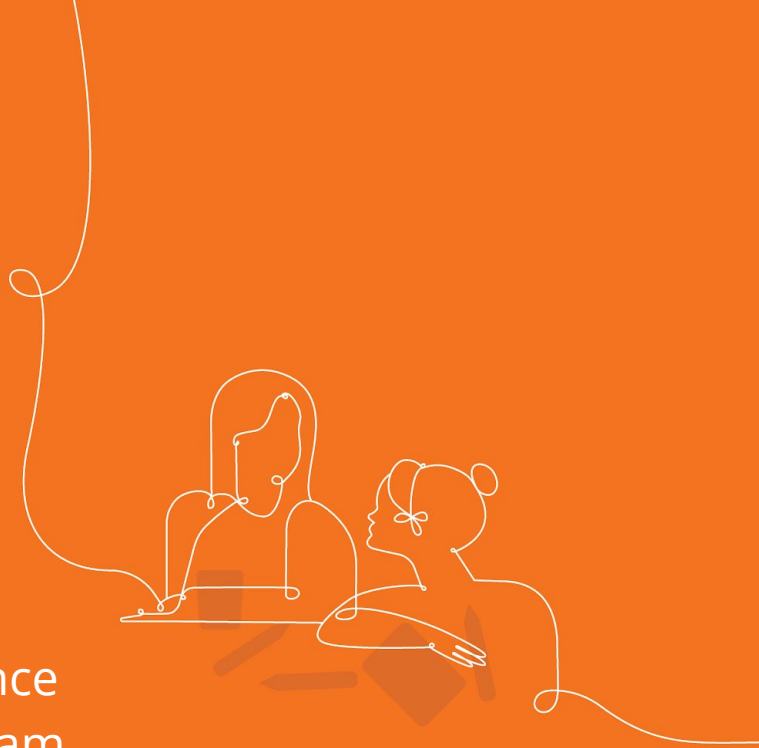
@Home Videos

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



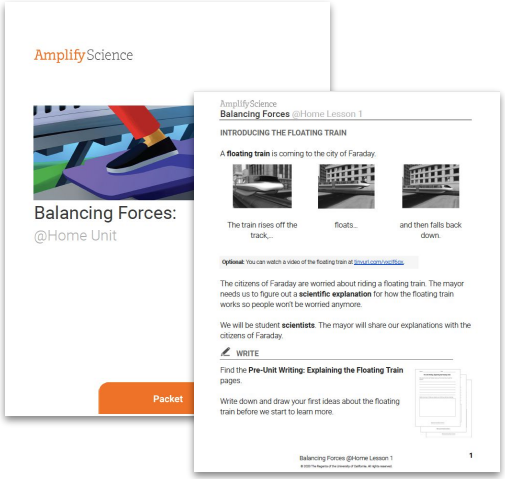
@Home Units

Strategically modified versions of Amplify Science units, highlighting key activities from the program

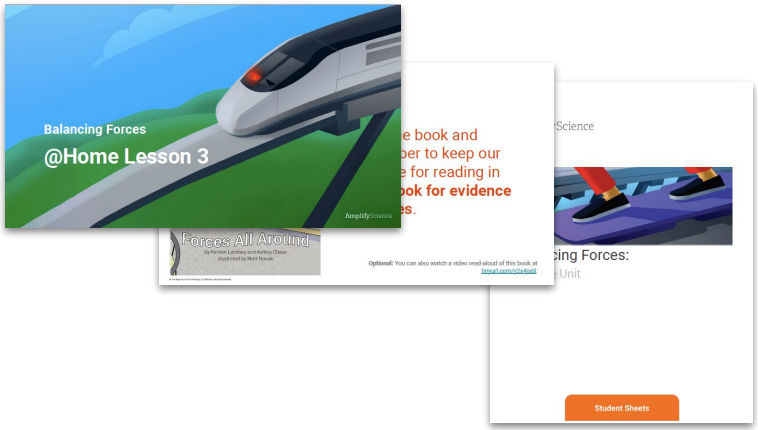


@Home Units

- Solution for **reduced instructional time**
- Two options for student access

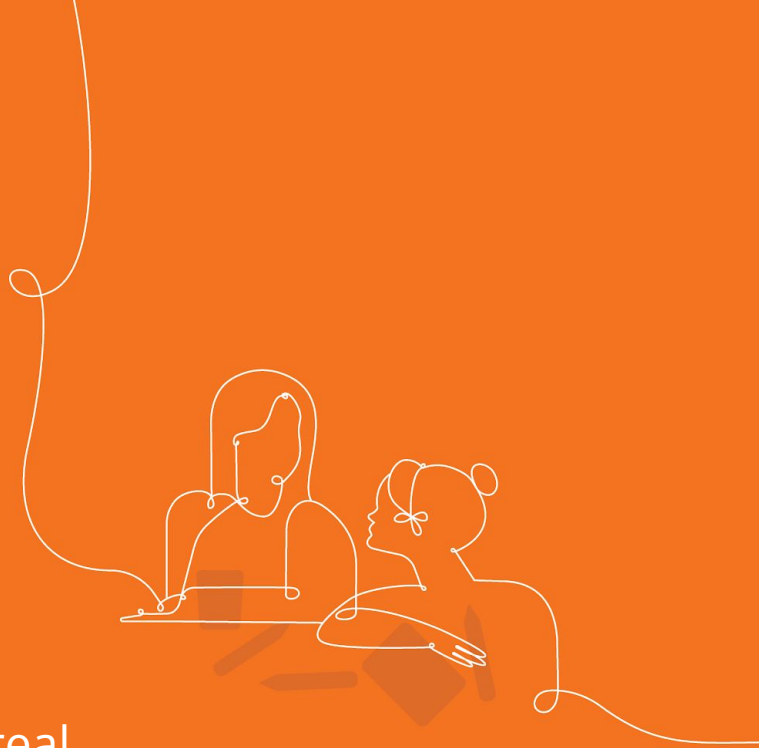


@Home Packets: print-based



@Home Slides and Student Sheets: tech-based

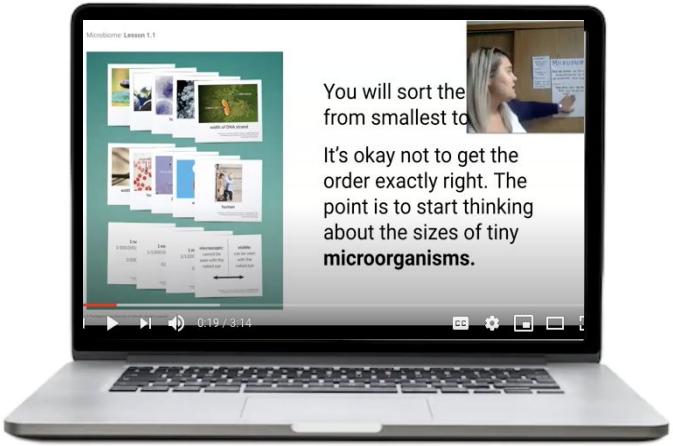
@Home Videos



Versions of original Amplify Science lessons adapted for remote learning and recorded by real Amplify Science teachers

@Home Videos

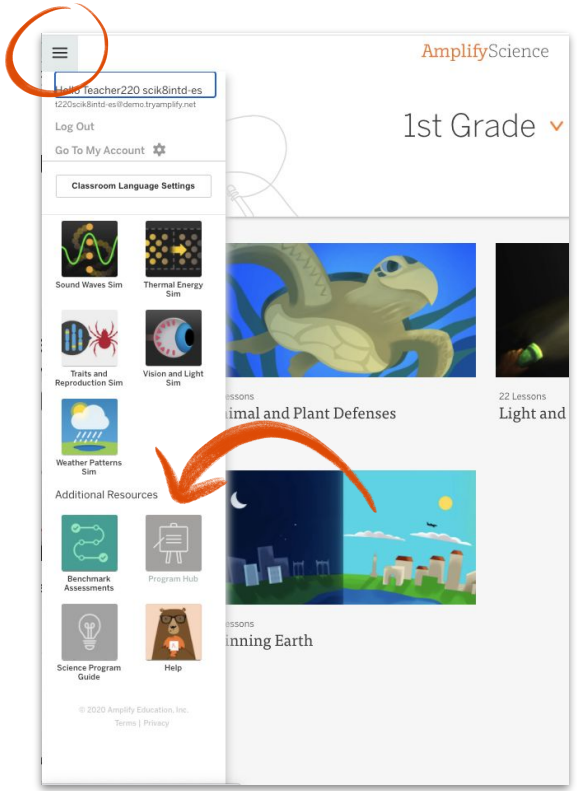
- Lesson playlists include **all activities** from original units
- Great option if have the **same amount of instructional time** as you typically would for science
- Requires **tech access** at home
- Can be used as models for **creating your own videos**



Accessing Amplify Science@Home

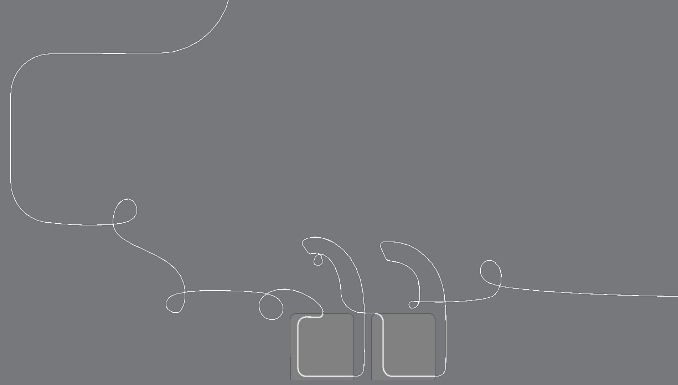
Amplify Science Program Hub

- New site containing Amplify Science@Home and additional PL resources
- Accessible via the Global Navigation menu

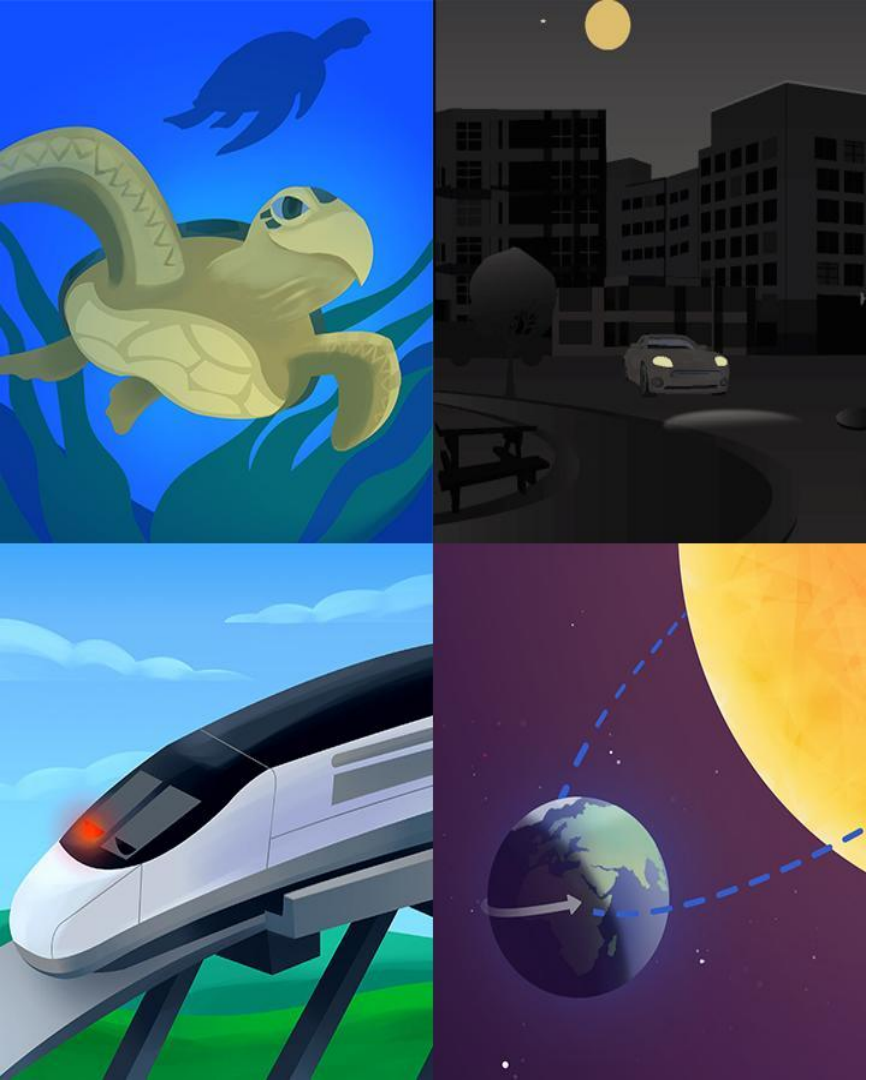


Which resource should I choose?

Use @Home Units if...	Use @Home Videos if...
• You have reduced instructional time for science • You need a print-based solution for some or all of your students	• You have about the same amount of instructional time for science
As you explore the resources, you may decide to use both!	



Questions?



Plan for the day

- Introducing Amplify Science
- Navigation Essentials
- Assessments
- Remote & Hybrid Learning Resources
- **Reflection and closing**

Navigation Temperature Check

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

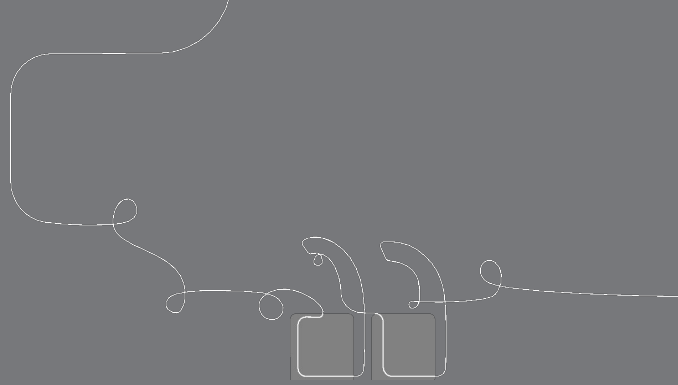
1 = Extremely Uncomfortable

2 = Uncomfortable

3 = Mild

4 = Comfortable

5 = Extremely Comfortable

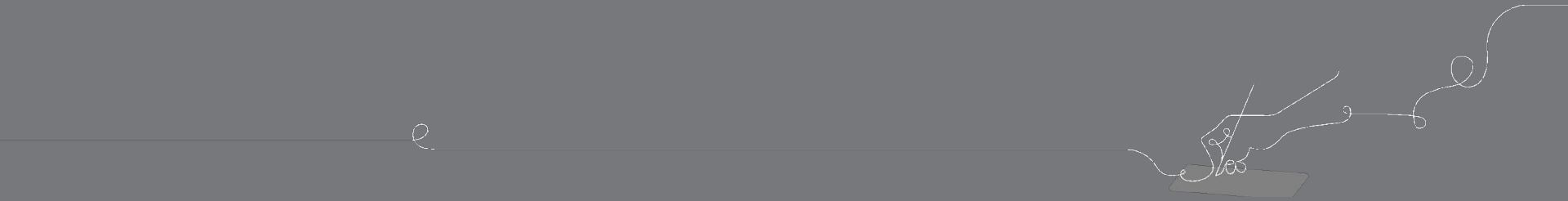


Questions?

Objectives

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

- Navigate the Amplify Science curriculum
- Navigate the Program Hub



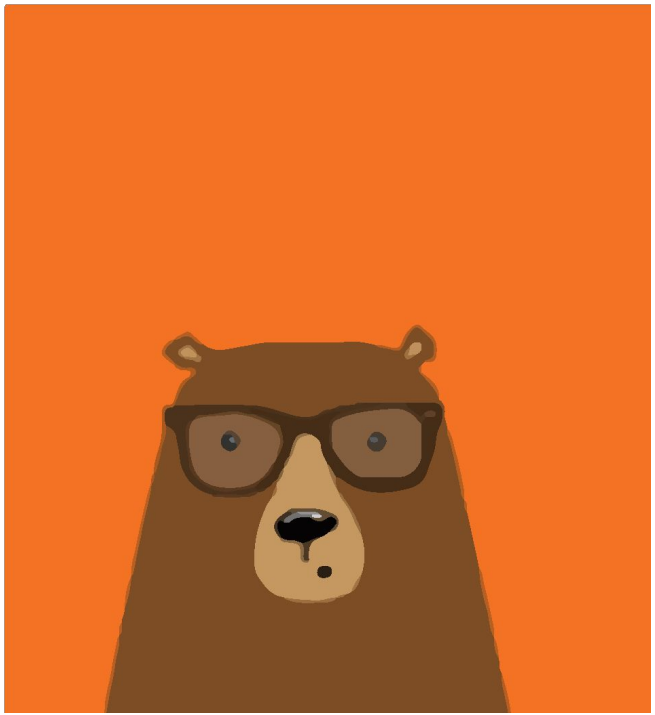
LAUSD Amplify resources

Amplify Science for LAUSD

Glean additional insight into the program's structure, intent, philosophies, supports, and flexibility. Review previous trainings and access materials from the trainings.

https://amplify.com/lausd-science

Additional Amplify resources



Program Guide

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

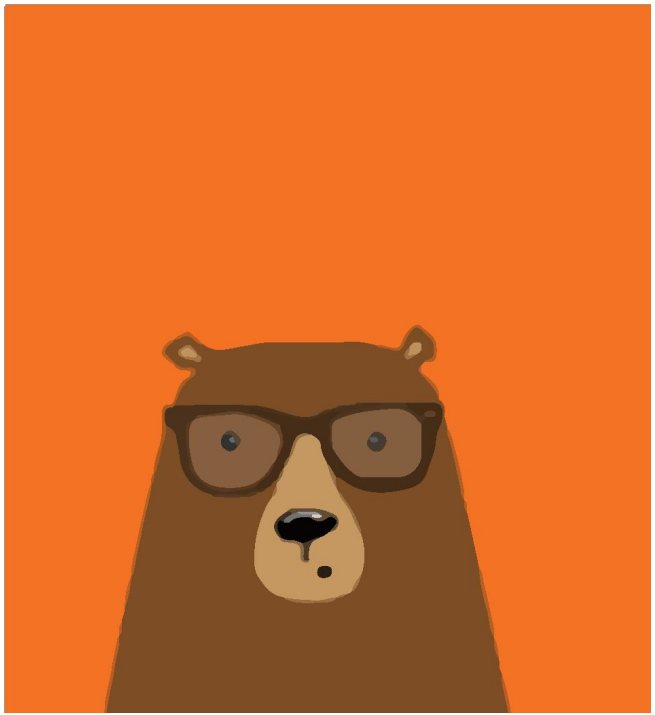
https://my.amplify.com/programguide/content/national/welcome/science/

Amplify Help

Find lots of advice and answers from the Amplify team.

my.amplify.com/help

Additional Amplify 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 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.