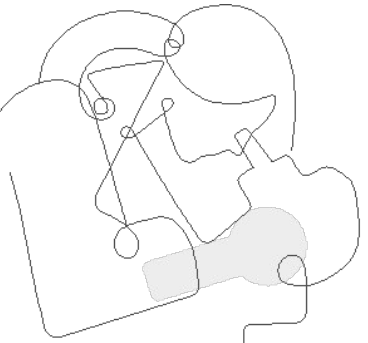
Amplify Science

Unit Internalization / Guided Planning

Grade K, Unit 2: Pushes and Pulls

Part 1



Los Angeles Unified School District
Date:
Presented by:

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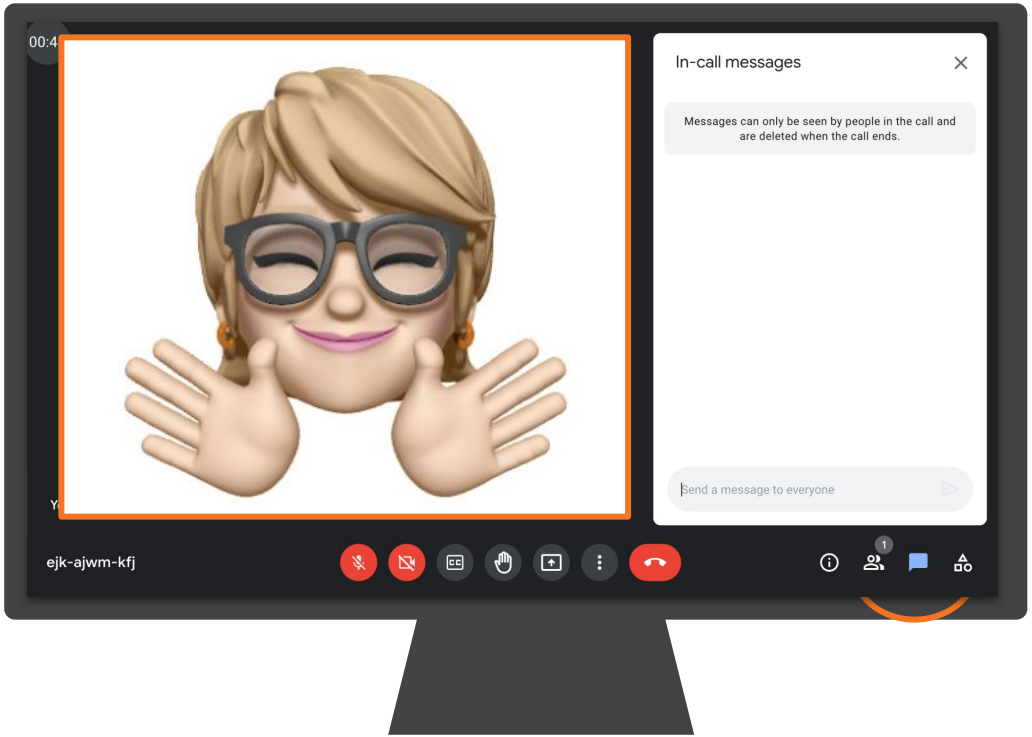
Ice Breaker!

Who do we have in the room today?

- Share your experience with Amplify Science so far.



Amplify's Purpose Statement

Dear teachers,

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

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

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

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

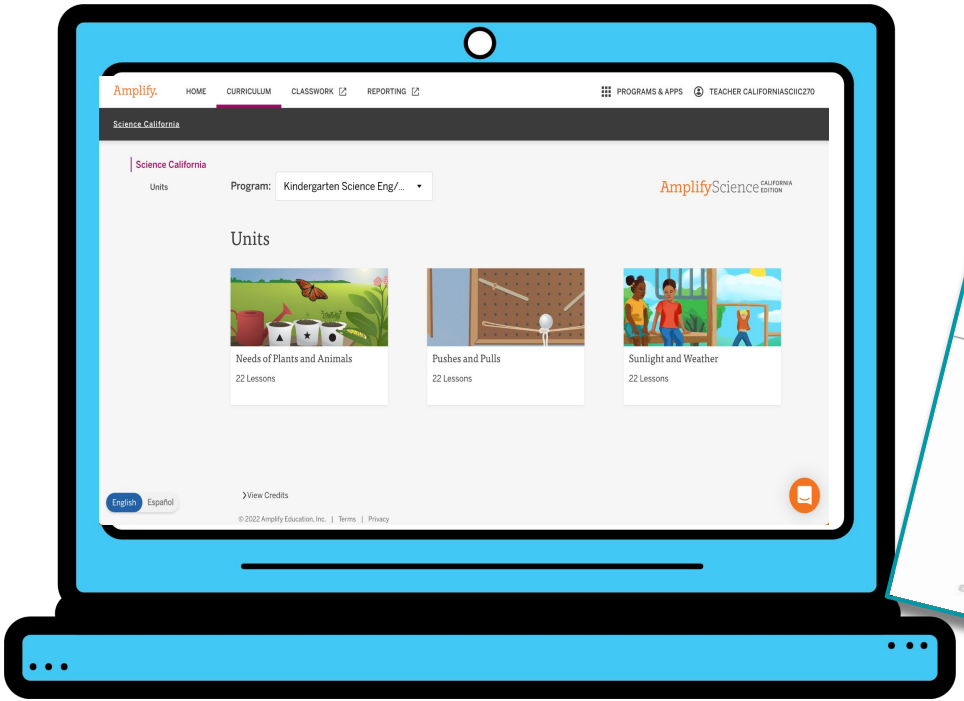
Sincerely,
Amplify

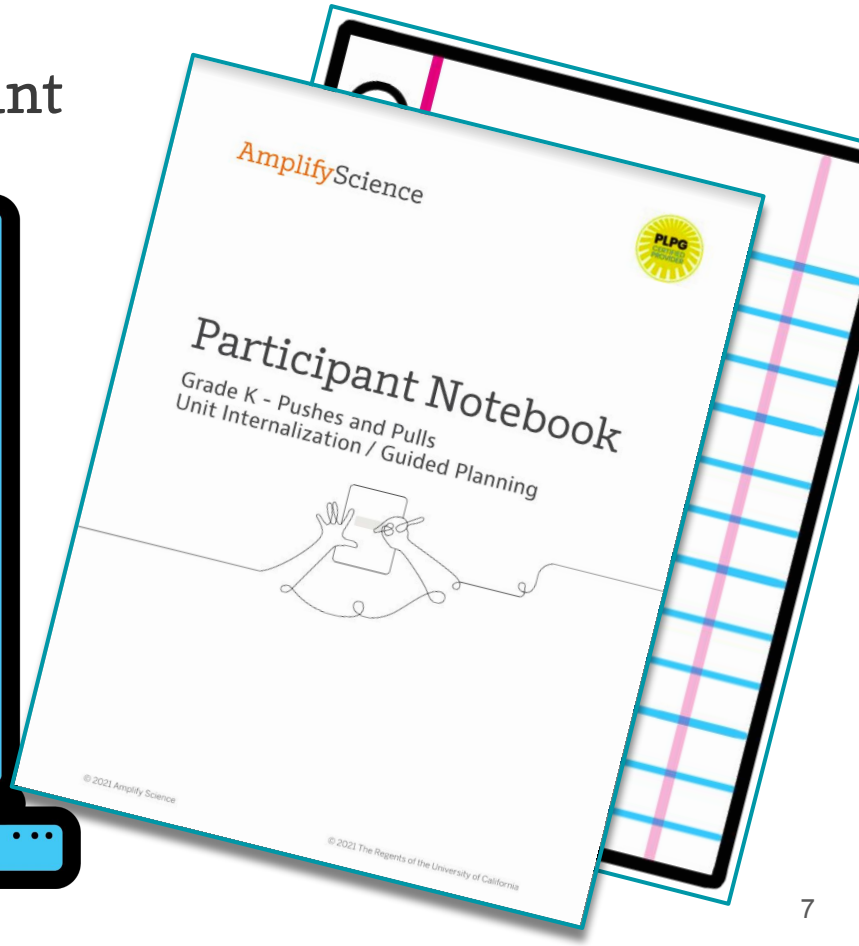
Norms: Establishing a culture of learners

- **Take risks:** Ask any questions, provide any answers.
- **Participate:** Share your thinking, participate in discussion and reflection.
- **Be fully present:** Unplug and immerse yourself in the moment.
- **Physical needs:** Stand up, get water, take breaks.

Welcome to Amplify Science!

Log in through your Schoology account





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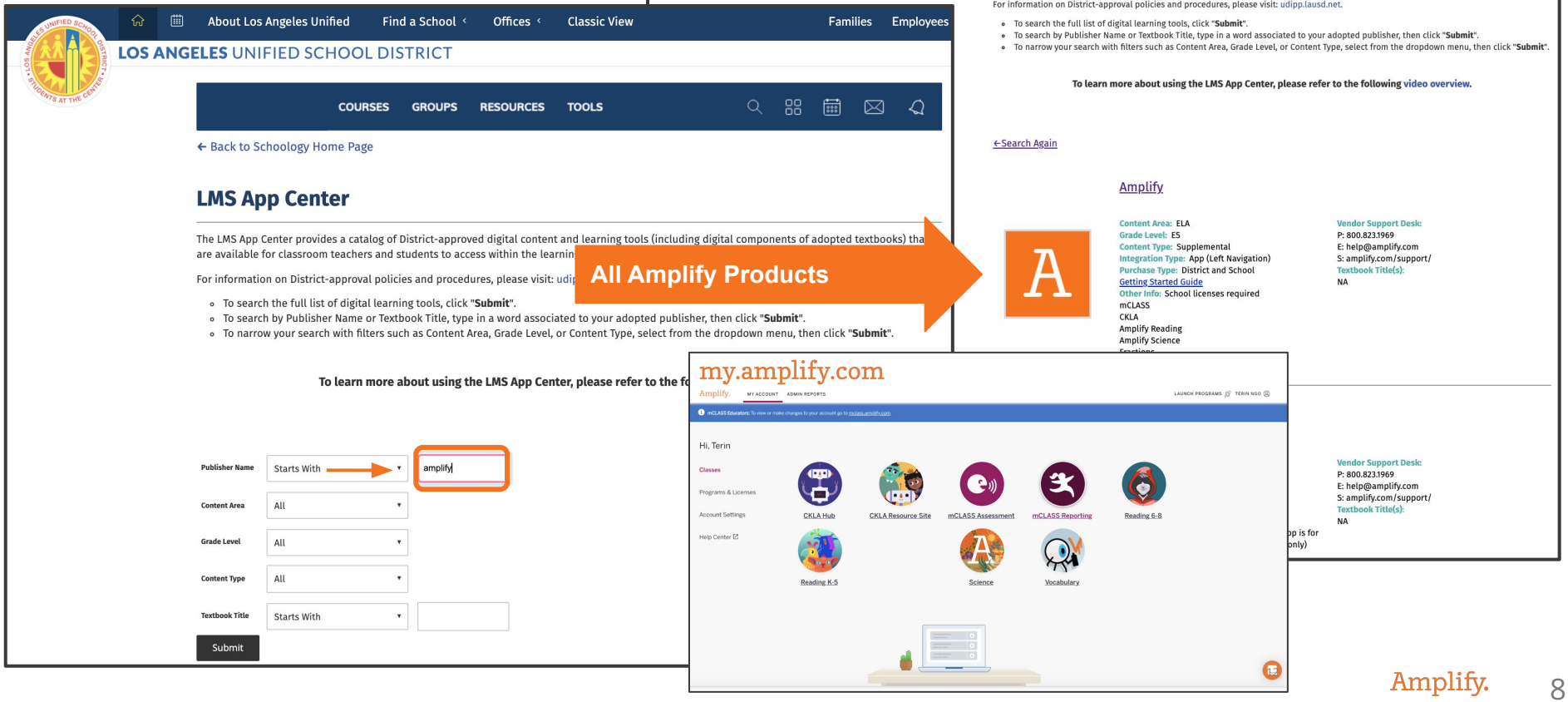
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Amplify. on Schoology

2021-2022

Join Amplify Science Schoology Group

To join Amplify Science Schoology ES Group: W4PK-W466-63F5B

Navigation Temperature Check

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

1 = Extremely Uncomfortable

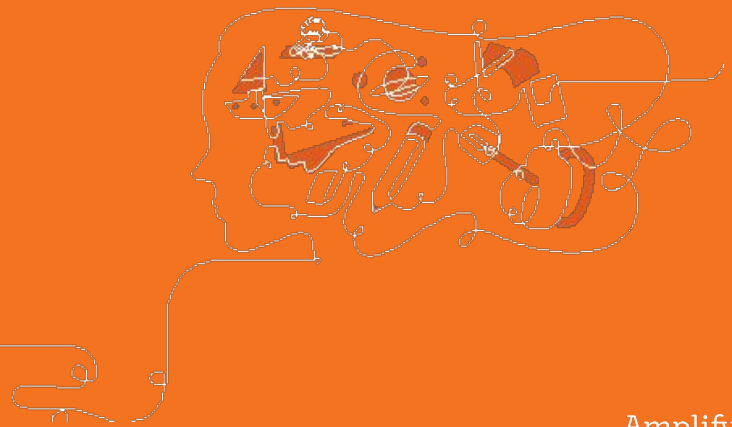
2 = Uncomfortable

3 = Mild

4 = Comfortable

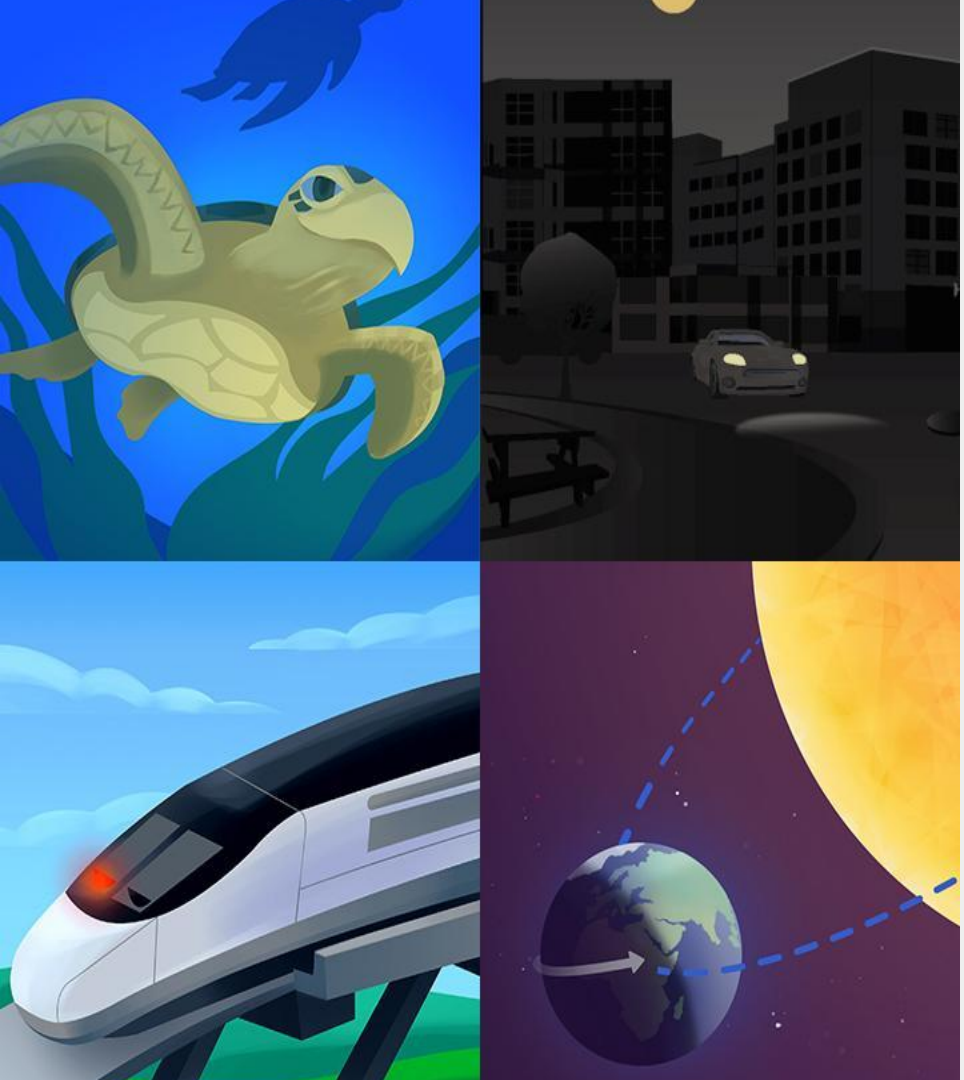
5 = Extremely Comfortable

Part 1



Overarching goals

- Explain how students engage in phenomenon based and 3D learning to construct an understanding of the science concepts introduced in *Pushes and Pulls.*
- Internalize the unit and apply your new understanding to plan for the diverse needs of your classroom and students



Plan for the day: Part 1

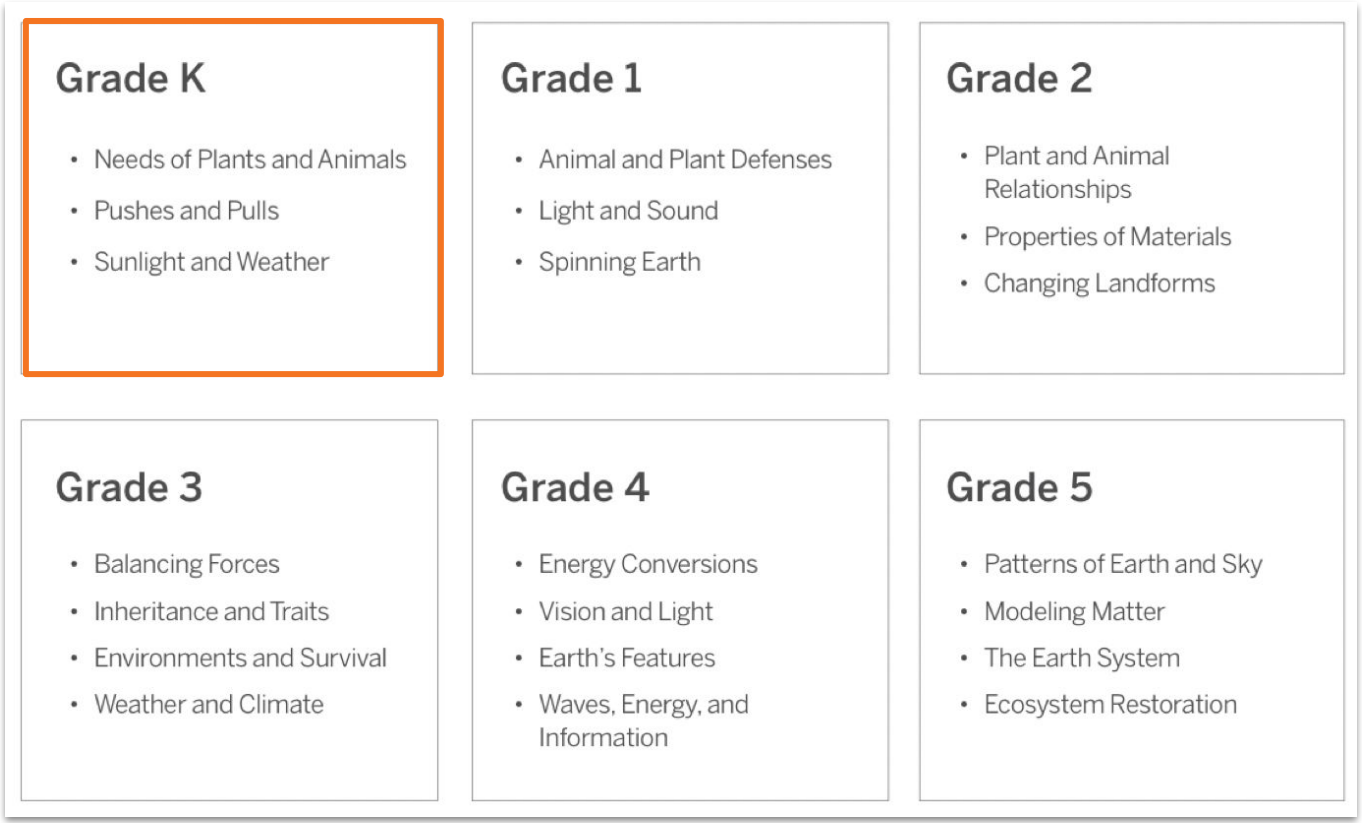
- Introduction and Framing
- NGSS & 3D Learning
- Phenomenon-based Instruction
- Navigation & Unit Internalization
- Additional Resources
- Closing

THE LAWRENCE HALL OF SCIENCE
UNIVERSITY OF CALIFORNIA, BERKELEY

+ Amplify.

Amplify Science

Course curriculum structure



Key takeaways:

- There are 22 lessons per unit
- Lessons at grades 2-5 are 60 minutes long

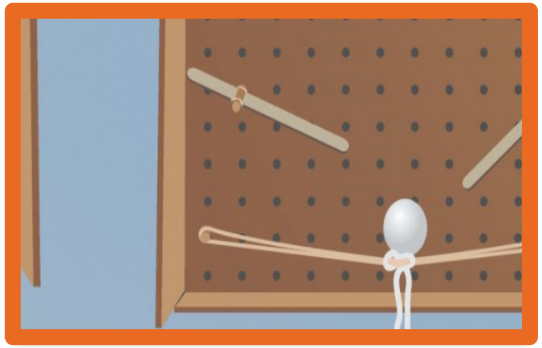
Year at a Glance: Kindergarten

Needs of Plants and Animals

Domain: Life Science

Unit type: Investigation

Student role: Scientist

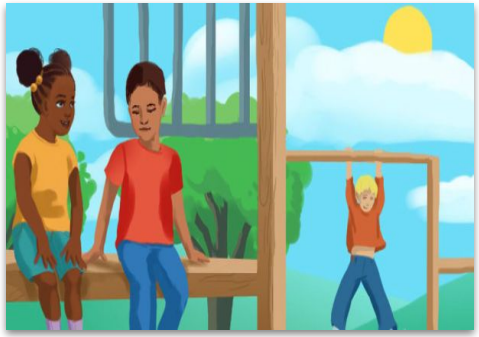


Pushes and Pulls

Domain: Physical Science

Unit type: Engineering Design

Student role: Pinball Engineer



Sunlight and Weather

Domain: Earth and Space Science

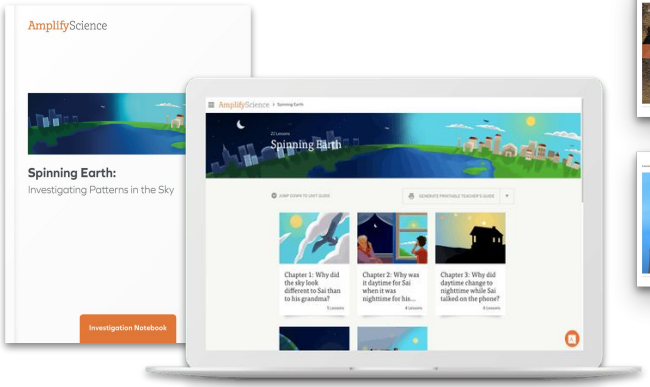
Unit type: Modeling

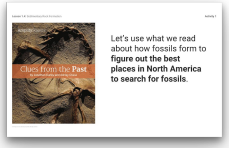
Student role: Weather Scientist

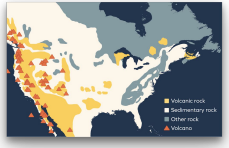
K-5 Program components

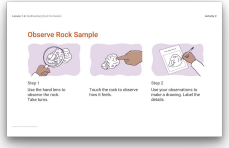
Teacher materials

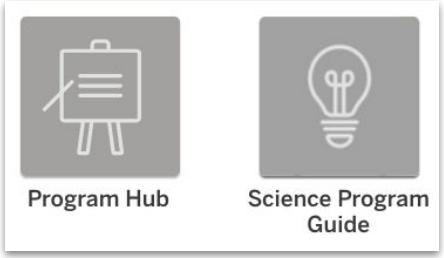
- Teacher's Guide (print and digital)
- Classroom Slides
- Classroom wall materials
- Embedded assessments
- Program Guide
- Program Hub
- Amplify Help Site

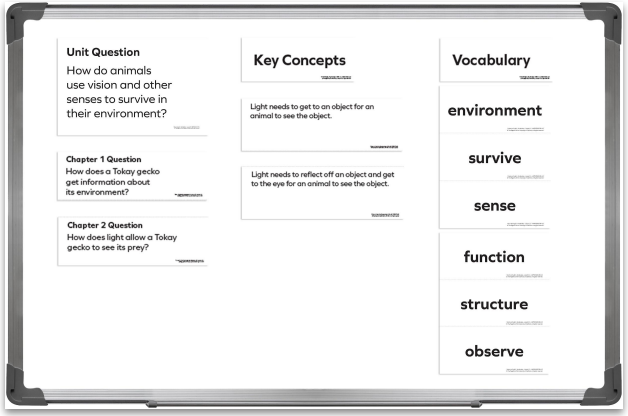








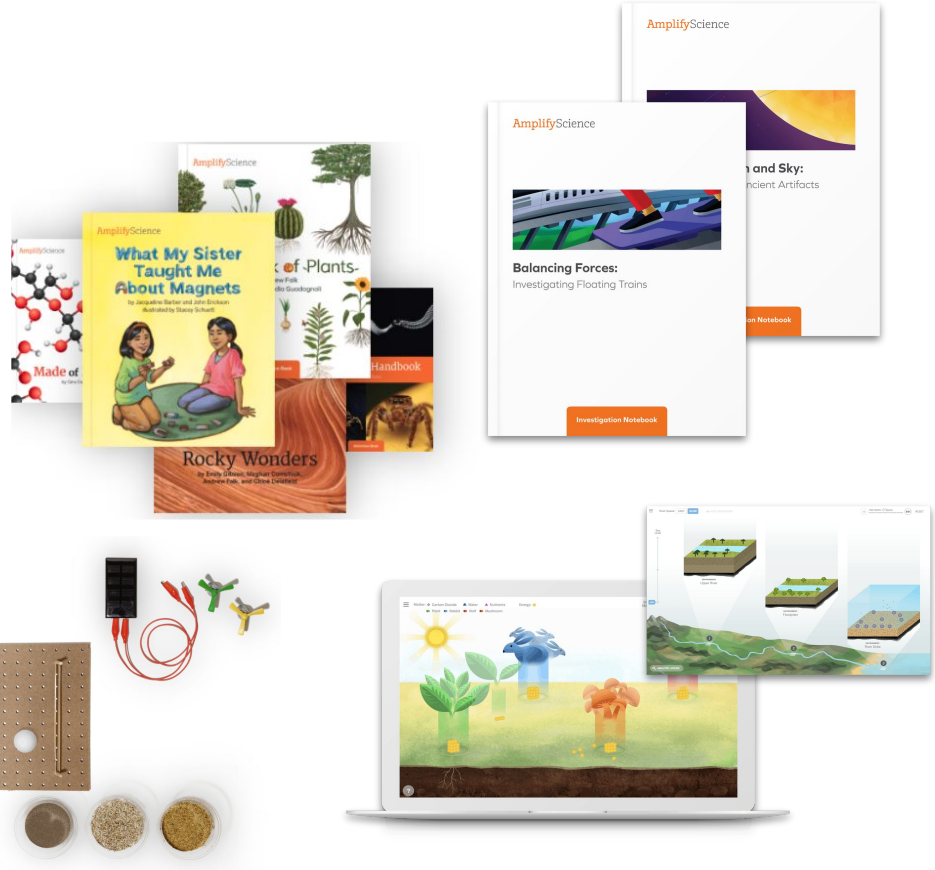




K-5 Program components

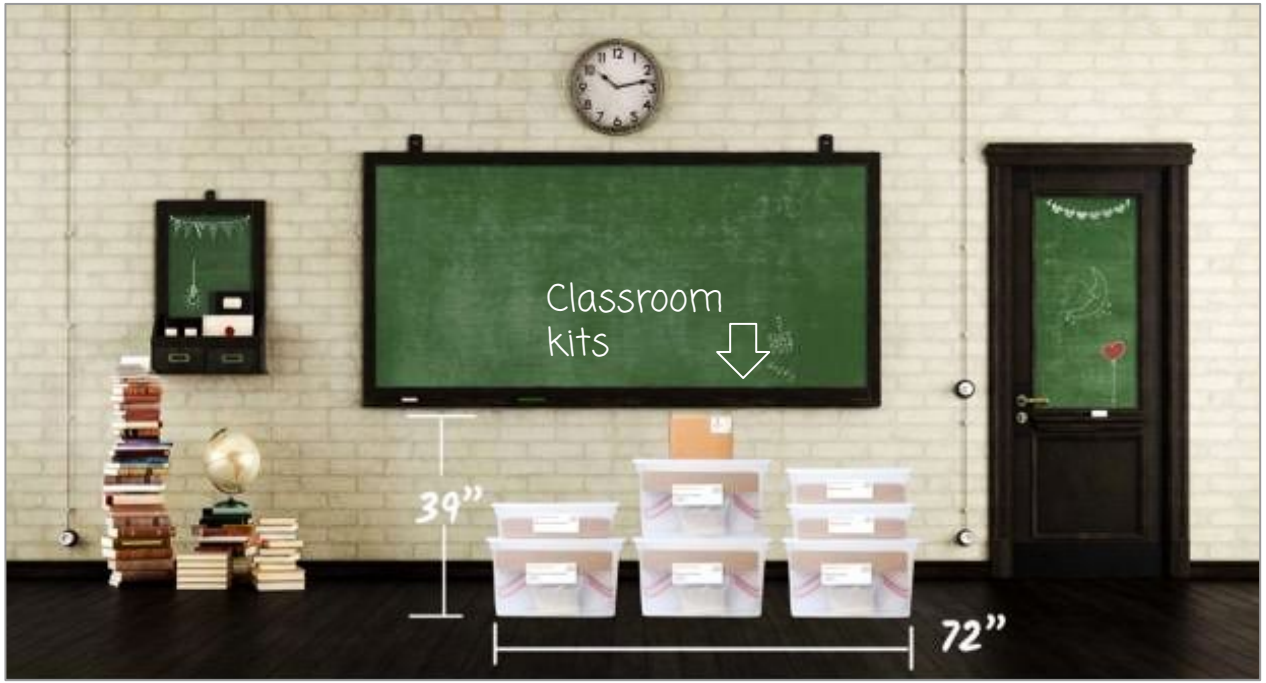
Student materials

- Hands-on materials
- Investigation Notebooks (print and digital)
- Student books
- Digital Applications



K-5 Program components

Classroom kits

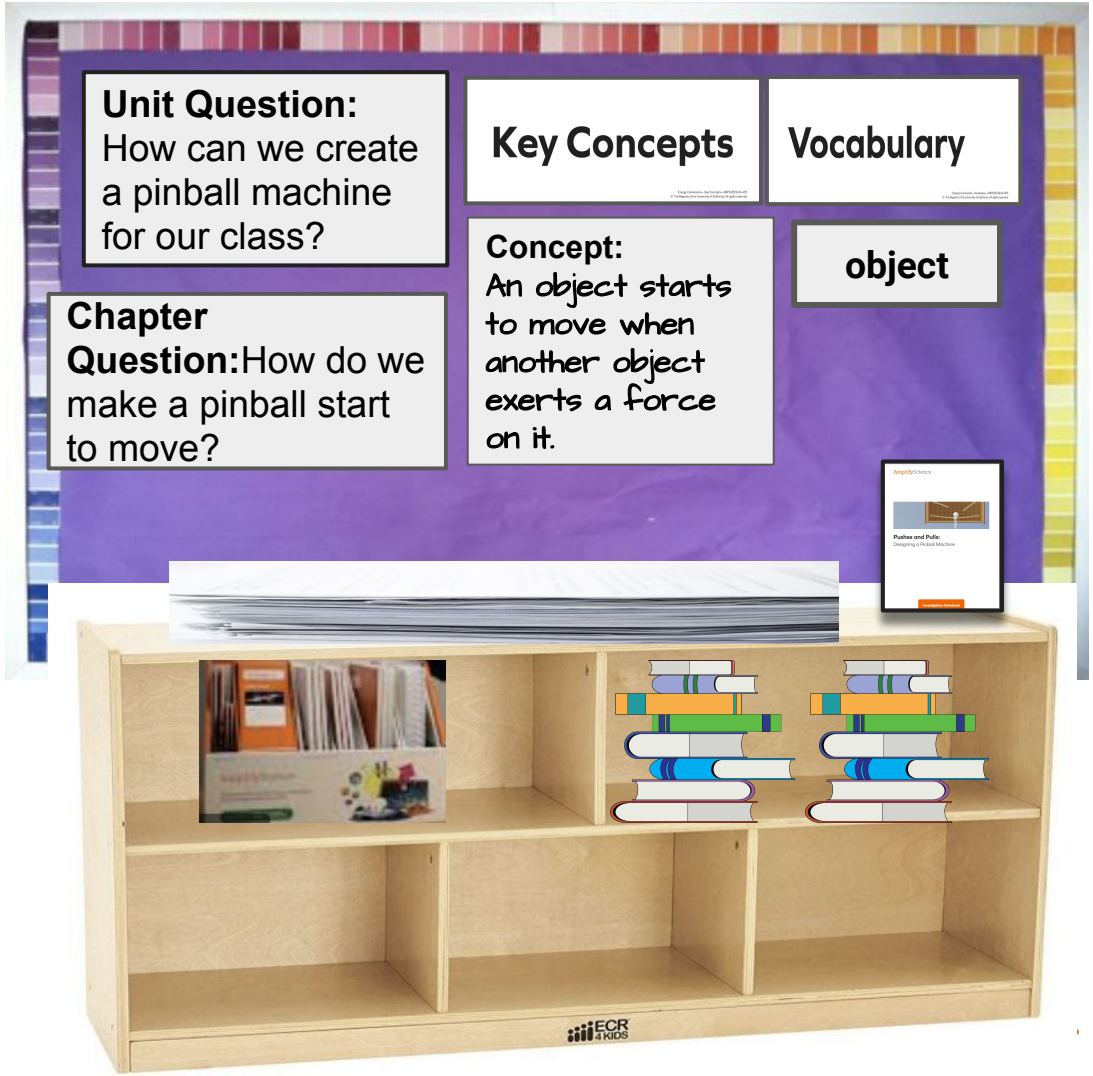


Classroom kits

Built for a class of 36 students, with consumables for two years

Unpacking the Kit

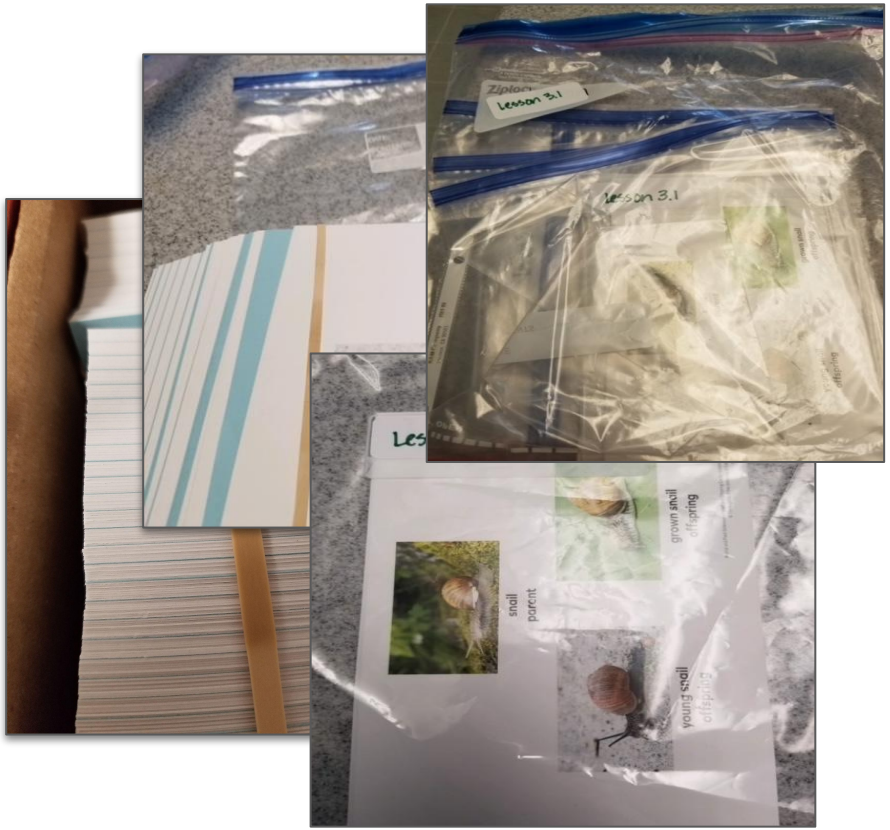
- Pull out the unit question, key concepts and vocabulary materials.
- Place them on the top of the table or bookcase below your science board
- Take books out of kit and place in the bookcase or on the table. (Always collect books after each lesson use. Return to bookcase so they are easily accessible.)



Cards for games, sorting or matching activities

Organization tips:

- Separate and place in envelopes or bags (or clip together)
- Label the envelopes or bags with the name and lesson # and activity # (ex. Lesson 2.4, Act. 1)
- Put each envelope or bag (1 set) into a bigger bag and label



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

Welcome to Amplify Science!

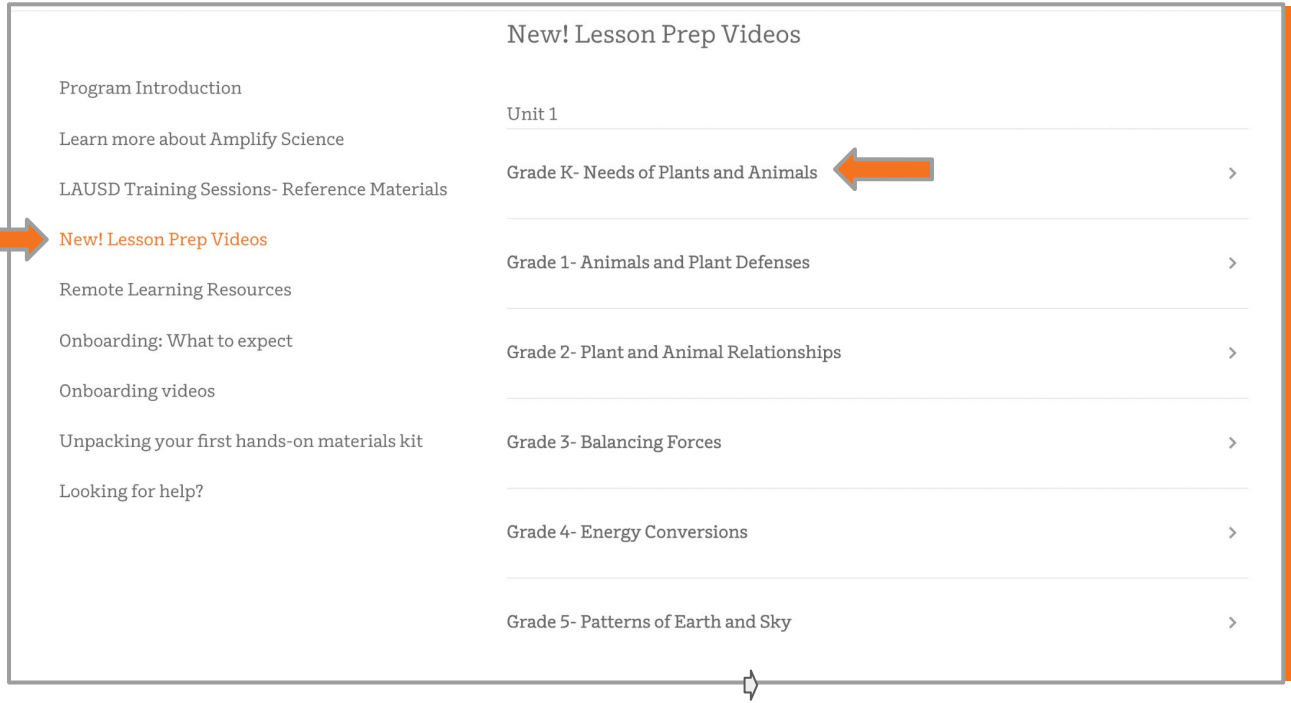
This site contains supporting resources designed for the LAUSD Amplify Science adoption for grades TK–8.

- Access the Amplify Science Program Hub (To help orient you to the new design, watch this video and view this reference guide.)
- Find out more about Amplify Science@Home
- Share the Caregiver Hub (Eng/Span) with your families
- For LAUSD ES Teachers- Amplify Science & Benchmark Advance Crosswalk
- Instructional guidance for a Responsive Relaunch of Amplify Science in 21-22

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

Microsite: Unit 1, K-2 Lesson Prep Videos

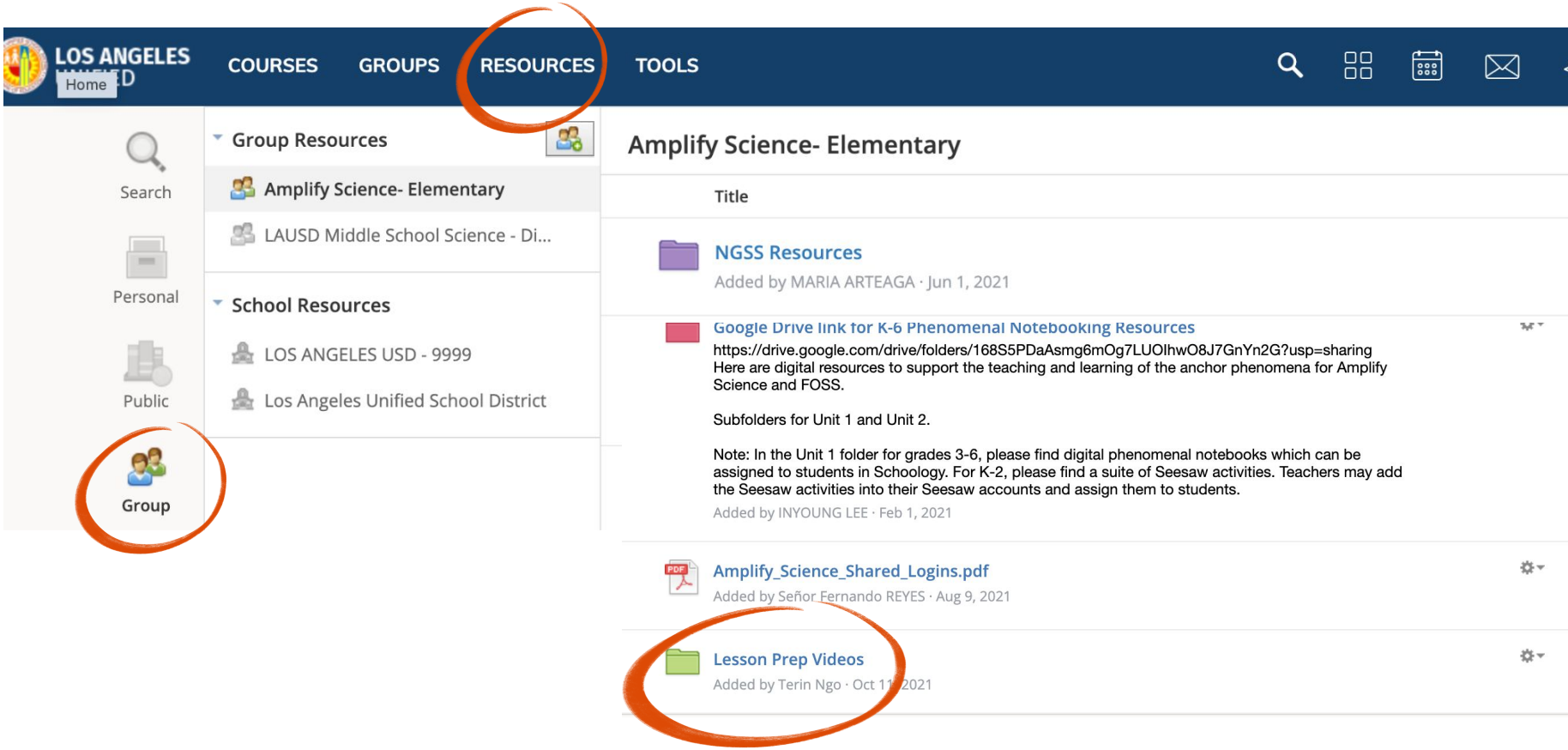
Classroom kits



Classroom Kits

Built for a class of 36 students, with consumables for two years

LAUSD Schoology: Unit 1, K-5 Lesson Prep Videos

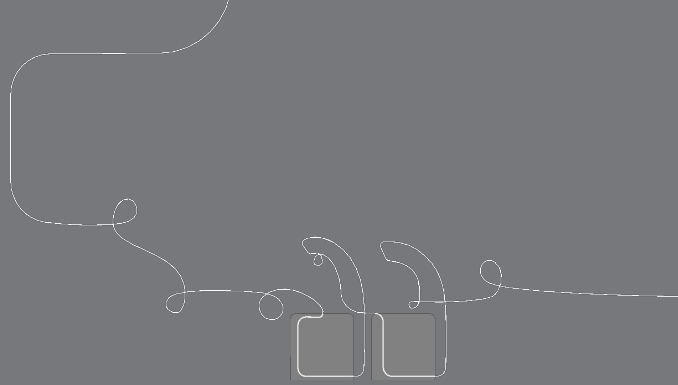


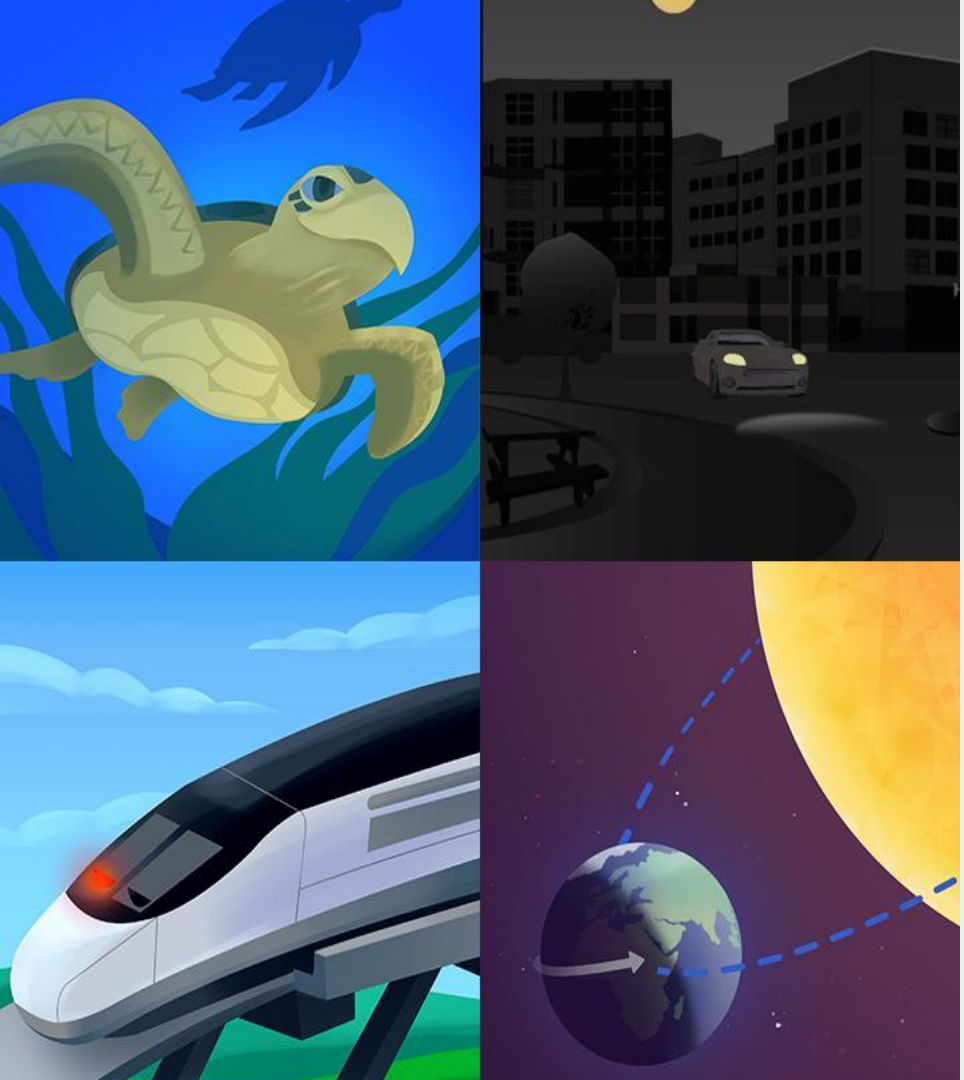
Hands On Material Organization

Directions
1. Open the Digital Lesson Guides Only page 7 from the Unit Landing page or go the Print TE to page 31. (Chapter 1 Activities)
2. Look for the lessons with Hands On.
HANDS-ON
3. Note in the table below.
4. Review the materials and preparation to determine if it can be prepared prior to the lesson or on the day of the lesson.
5. Use this same procedure for each Chapter. (Go to the Chapter Activities Contents)

Chapter/Lesson	Activity	Prep Prior	Prep Day of	What to do	
1.1	1	X		Prep plastic bags with labels A, B, C, D and M. Place 1 tsp of the following cinnamon, salt, flour, cornstarch in A,B,C, D. In bag M mix 1 tsp salt and 1 tsp cinnamon.	*This is an example from Properties of Materials Grade 2*

Questions?





Plan for the day: Part 1

- Introduction and Framing
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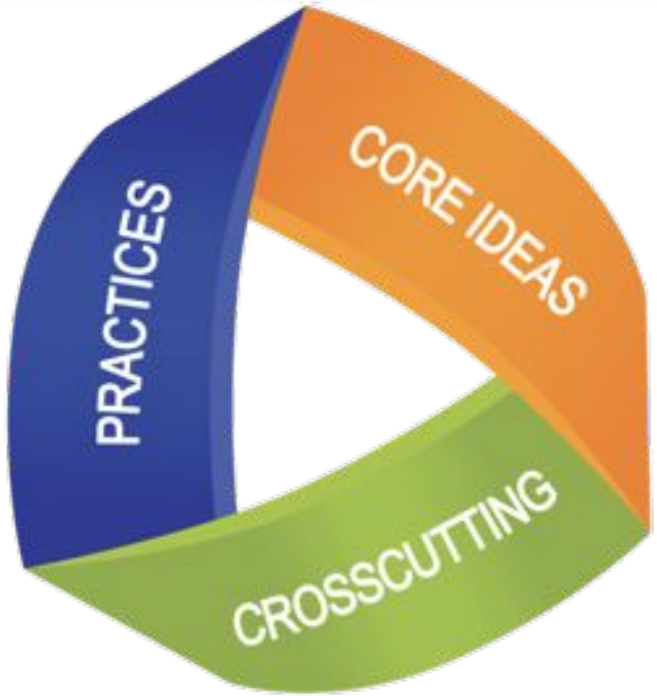
NGSS - Three dimensional learning

Evaluate your knowledge

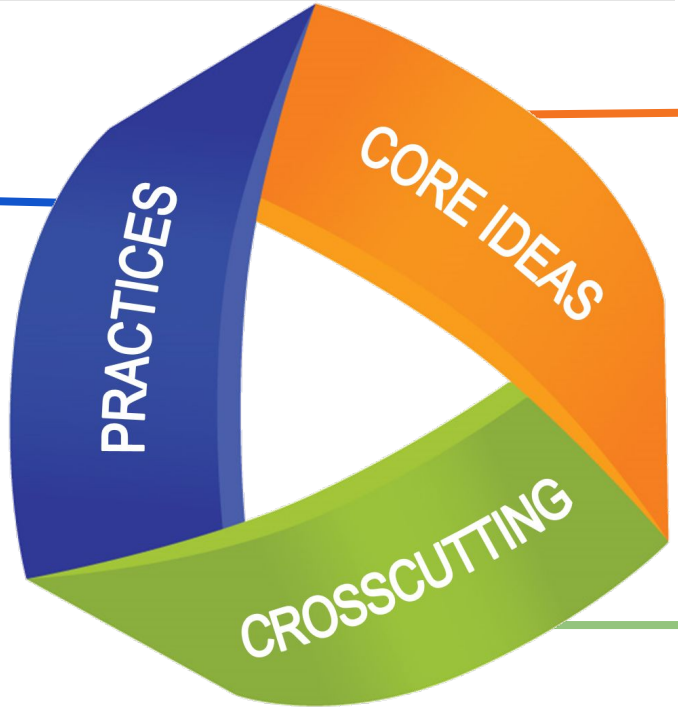
- On a scale of 0-5, how would you rate your familiarity with 3-D learning?



Figuring out Phenomena

Using 3-D teaching and learning

What scientists do
Science and Engineering Practices



What scientists want to know
Disciplinary Core Ideas

How scientists think
Crosscutting Concepts

Science and Engineering Practices

inquiry

1. Asking questions (for science) and defining problems (for engineering)
2. Developing and using models
3. Planning and carrying out investigations

math

4. Analyzing and interpreting data
5. Using mathematics and computational thinking

language

6. Constructing explanations (for science) and designing solutions (for engineering)
7. Engaging in argument from evidence
8. Obtaining, evaluating, and communicating information

Crosscutting Concepts

5. Energy and Matter

Tracking energy and matter flows, into, out of, and within systems helps one understand their system's behavior.

6. Structure and Function

The way an object is shaped or structured determines many of its properties and functions.

7. Stability and Change

For both designed and natural systems, conditions that affect stability and factors that control rates of change are critical elements to consider and understand.

---

4. Systems and System Models

A system is an organized group of related objects or components; models can be used for understanding and predicting the behavior of systems.

Students who demonstrate understanding can:

K-PS2-1. **Plan and conduct an investigation to compare the effects of different strengths or different directions of pushes and pulls on the motion of an object.** [Clarification Statement: Examples of pushes or pulls could include a string attached to an object being pulled, a person pushing an object, a person stopping a rolling ball, and two objects colliding and pushing on each other.] [*Assessment Boundary: Assessment is limited to different relative strengths or different directions, but not both at the same time. Assessment does not include non-contact pushes or pulls such as those produced by magnets.*]

The performance expectation above was developed using the following elements from the NRC document *A Framework for K-12 Science Education*:

Science and Engineering Practices

Planning and Carrying Out Investigations

Planning and carrying out investigations to answer questions or test solutions to problems in K–2 builds on prior experiences and progresses to simple investigations, based on fair tests, which provide data to support explanations or design solutions.

- With guidance, plan and conduct an investigation in collaboration with peers.

Connections to the Nature of Science

Scientific Investigations Use a Variety of Methods

- Scientists use different ways to study the world.

Disciplinary Core Ideas

PS2.A: Forces and Motion

- Pushes and pulls can have different strengths and directions.
- Pushing or pulling on an object can change the speed or direction of its motion and can start or stop it.

PS2.B: Types of Interactions

- When objects touch or collide, they push on one another and can change motion.

PS3.C: Relationship Between Energy and Forces

- A bigger push or pull makes things speed up or slow down more quickly. *(secondary)*

Crosscutting Concepts

Cause and Effect

- Simple tests can be designed to gather evidence to support or refute student ideas about causes.

3D Statements

Key

Practices Disciplinary Core Ideas Crosscutting Concepts

Unit Level

Chapter Level

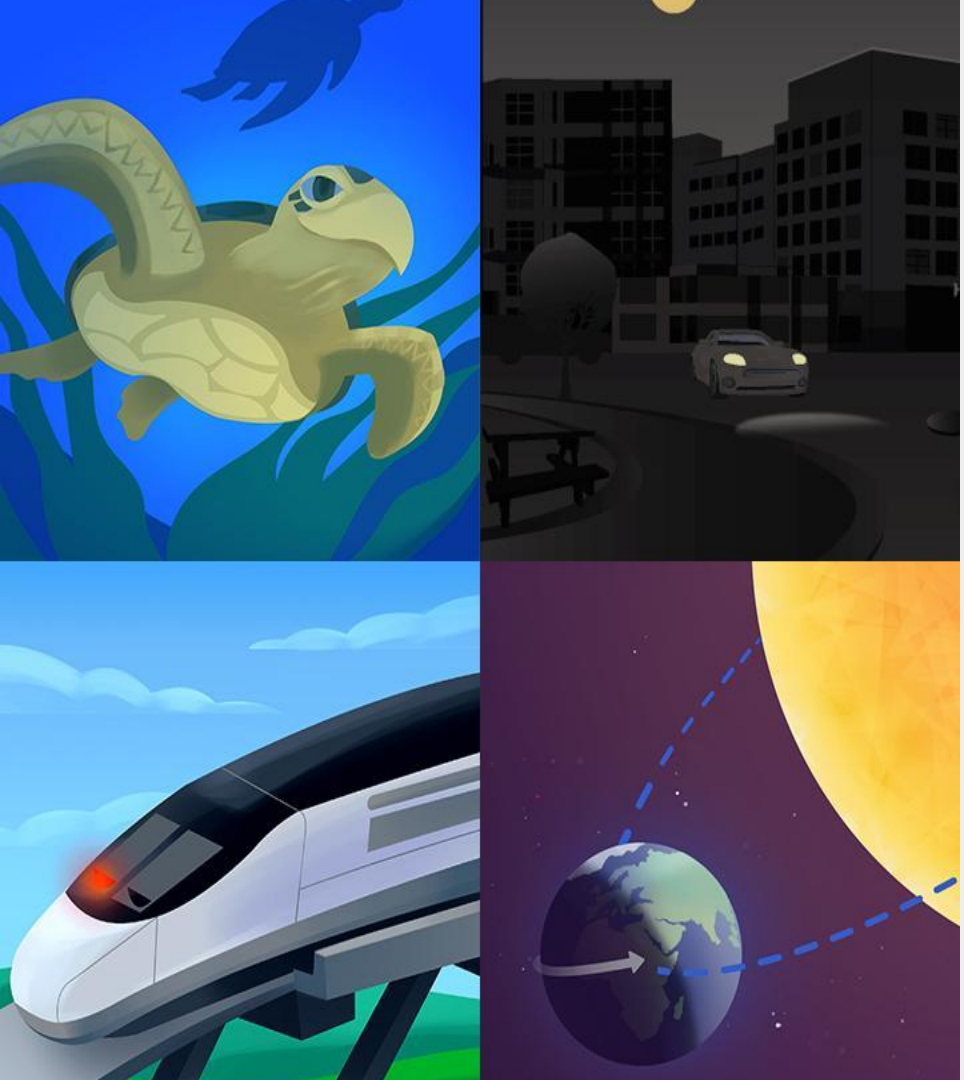
Chapter 1: How do we make a pinball start to move?

Acting as pinball engineers, students create Box Models to test ideas in order to begin designing a Class Pinball Machine. They carry out investigations, draw diagram models, then share solutions of possible launchers to make the pinball start to move.

Lesson Level

Lesson 1.1: Pre-Unit Assessment

Students begin to investigate the question of what makes a pinball start to move (cause and effect) by exploring the classroom to find objects they can move.



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Next Generation Science Standards

Phenomenon-based learning and teaching

A scientific phenomenon is an **observable event** that occurs in the universe that we can use science ideas to explain or predict.

Comparing topics and phenomena

Topic-based	Phenomenon-based
Monarch Butterflies	Monarchs have disappeared from an area after it was changed from a field to a garden.

Next Generation Science Standards

How might learning be different?

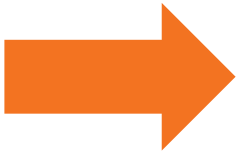
Topic-based	Phenomenon-based
Ocean Habitats	How can a sea turtle that was just released into the ocean survive ?
Weather	Students at one school are too cold during morning recess while students at another school are too hot. The schools are within a mile from each other.

Comparing topics and phenomena

A shift in science instruction

from learning about

(like a student)



to figuring out

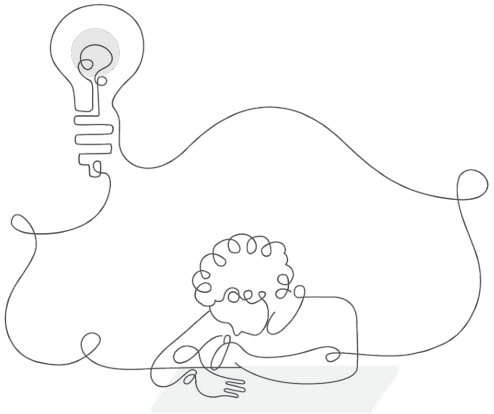
(like a scientist)

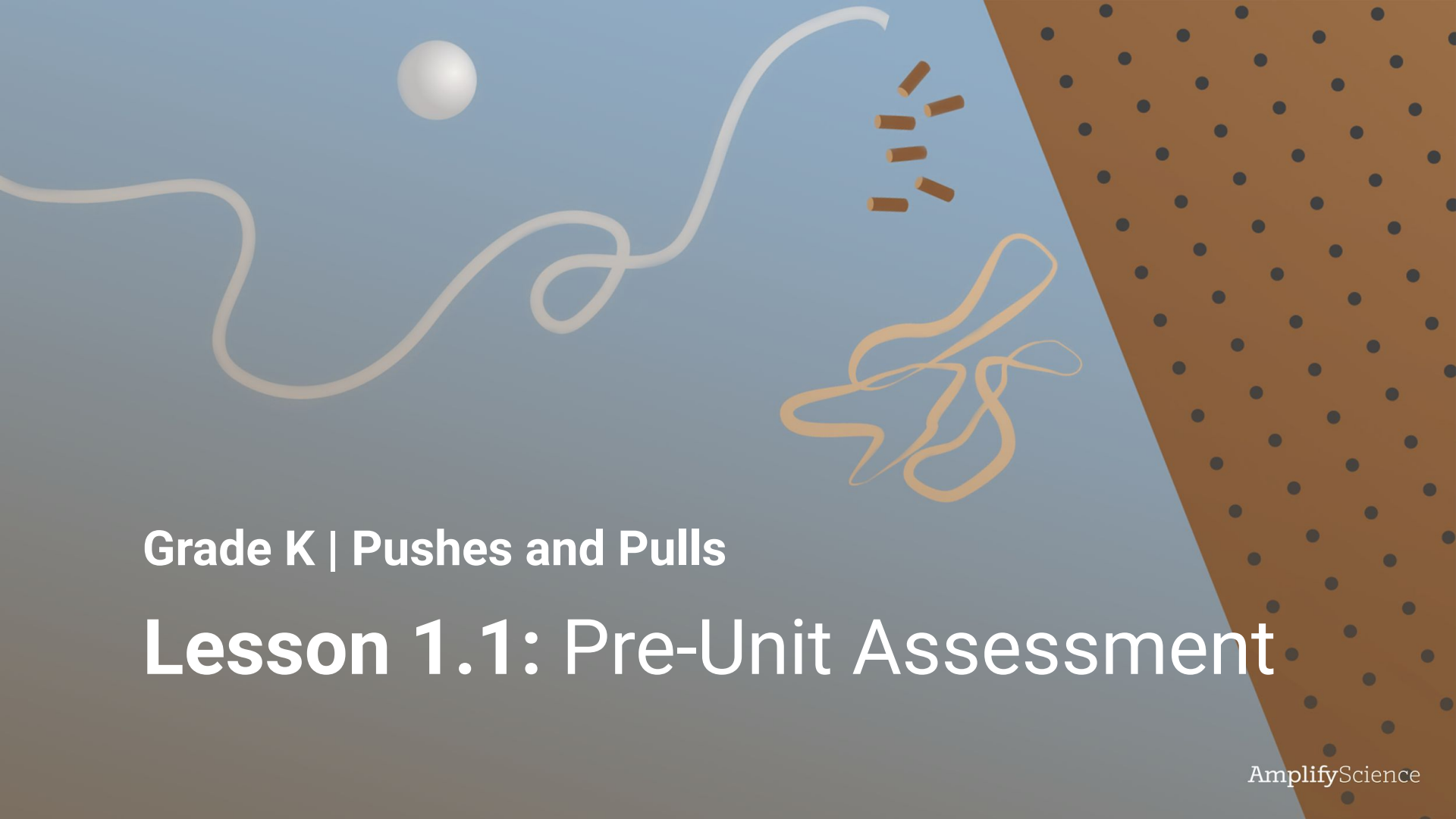
Previewing the unit

Introducing the phenomenon

Amplify Science units are designed around complex phenomena that drives student learning through the unit.

Pay attention to the phenomenon, or observable event, students will figure out in your unit.





Grade K | Pushes and Pulls

Lesson 1.1: Pre-Unit Assessment

AmplifyScience

25 MIN

Activity 1

Introducing Students' Role as Engineers

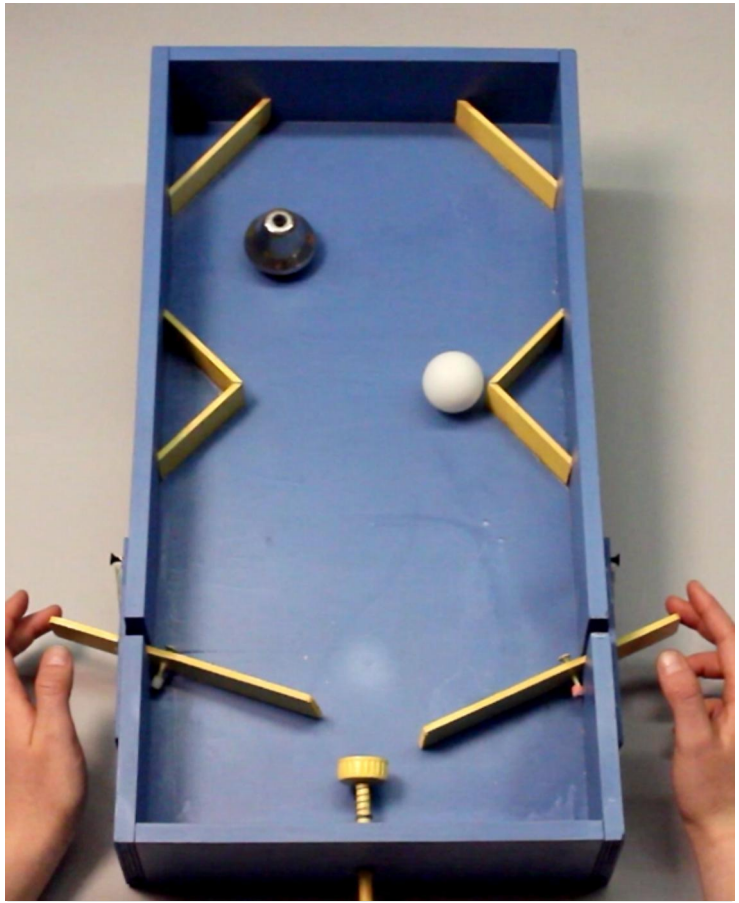
We have a chance to take on an interesting new challenge!

I have been thinking that our class could create our own pinball machine that we could play.

Let's think about what we already know about pinball machines.

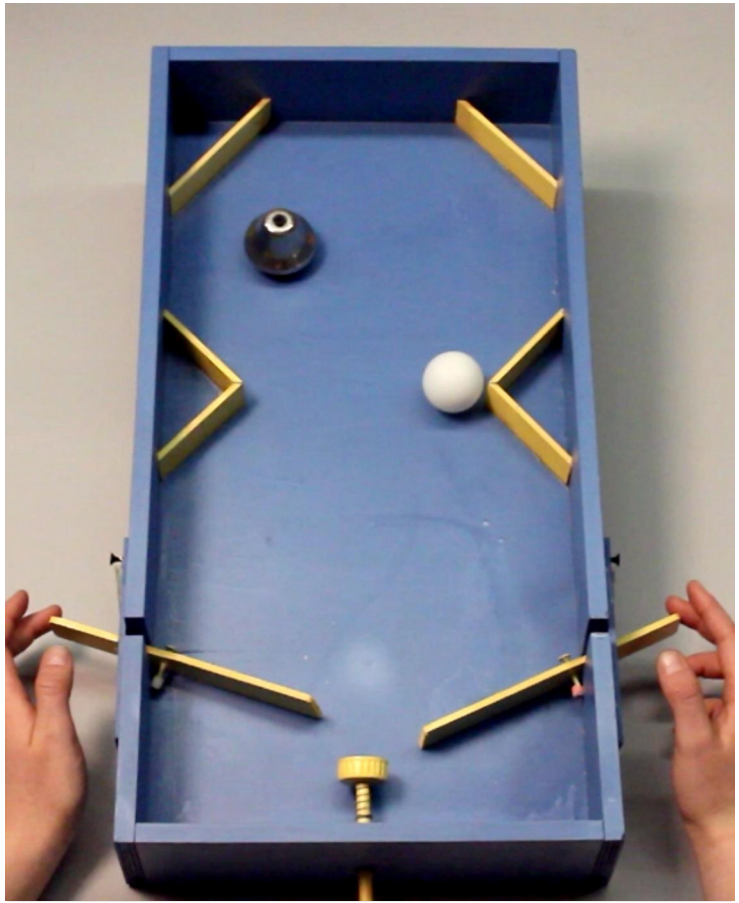
Do you know what a **pinball machine** is?

What do pinball machines do?



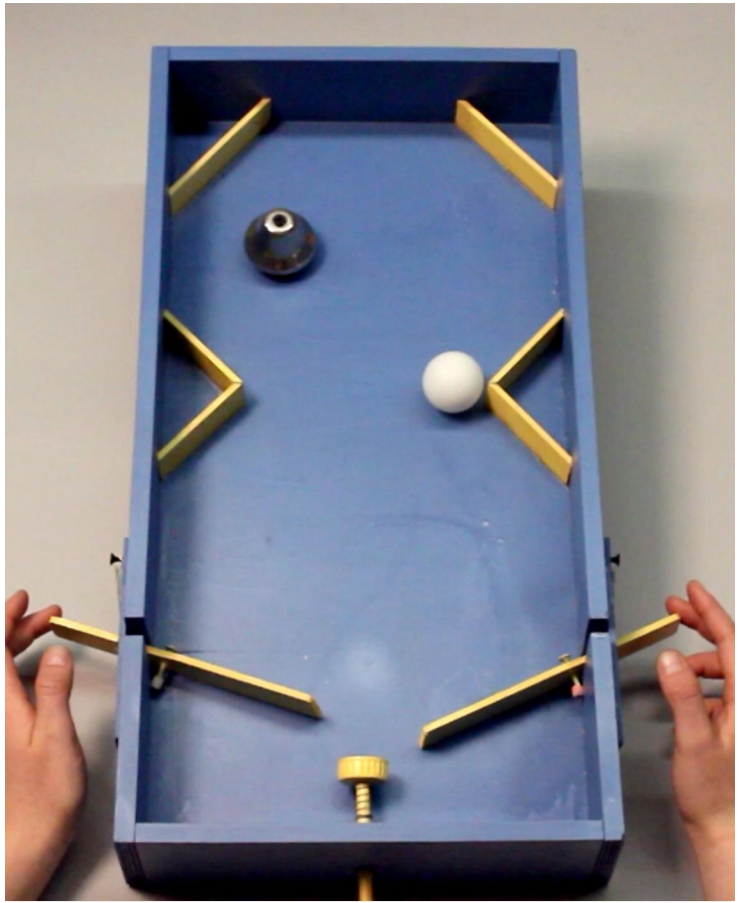
We will watch a video that shows **what pinball machines do.**

This will help us start thinking about how to make our pinball machine.



I am going to show the video a second time.

This time, pay careful attention to the **different ways that the ball moves.**



Let's talk about what we noticed.

What made the pinball **move in different ways** in the video?

Let's talk about what we noticed.

- I noticed the ball was not moving at the beginning, but then it started moving. What do you think made it start to move?

- I noticed the ball sometimes went a short ways and other times it went a long ways. What do you think made it move short ways or long ways?

Unit Question

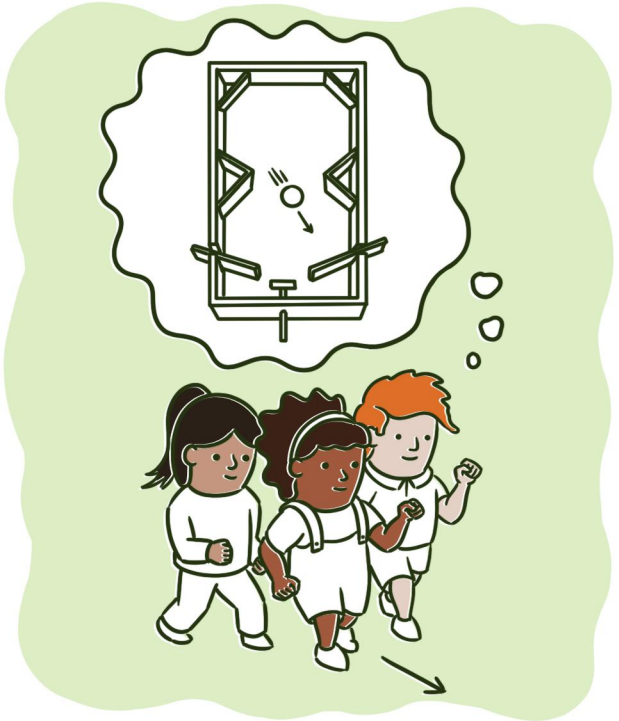
Why do things move in different ways?

Using Our Bodies to Show How Pinballs Move

1.
Stand up so we can act out being a moving pinball in a pinball machine.

2.
Move to the left! Move to the right! Move forward! Move to the back!

3.
Take a seat.



To figure out how to make a pinball machine, we need to think and work like **engineers.**

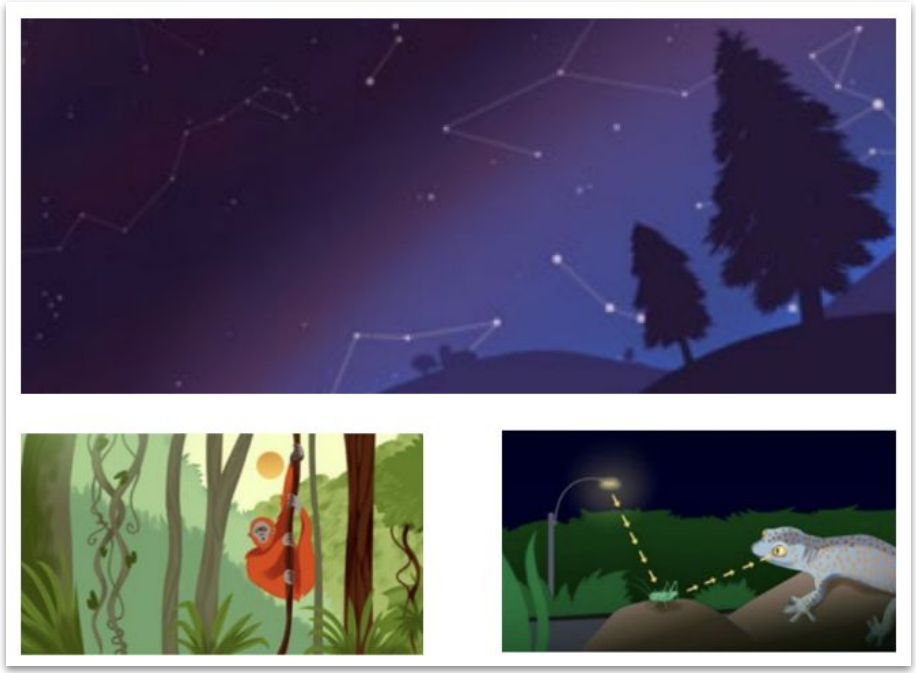
Engineers make things to solve problems. This is what we will do when we work as engineers.

There are different kinds of engineers that you might have heard about. One kind of engineer drives a train. We are going to be thinking and working as a **different kind of engineer**—an engineer who makes things to solve problems.

Amplify Science

Anchoring phenomenon

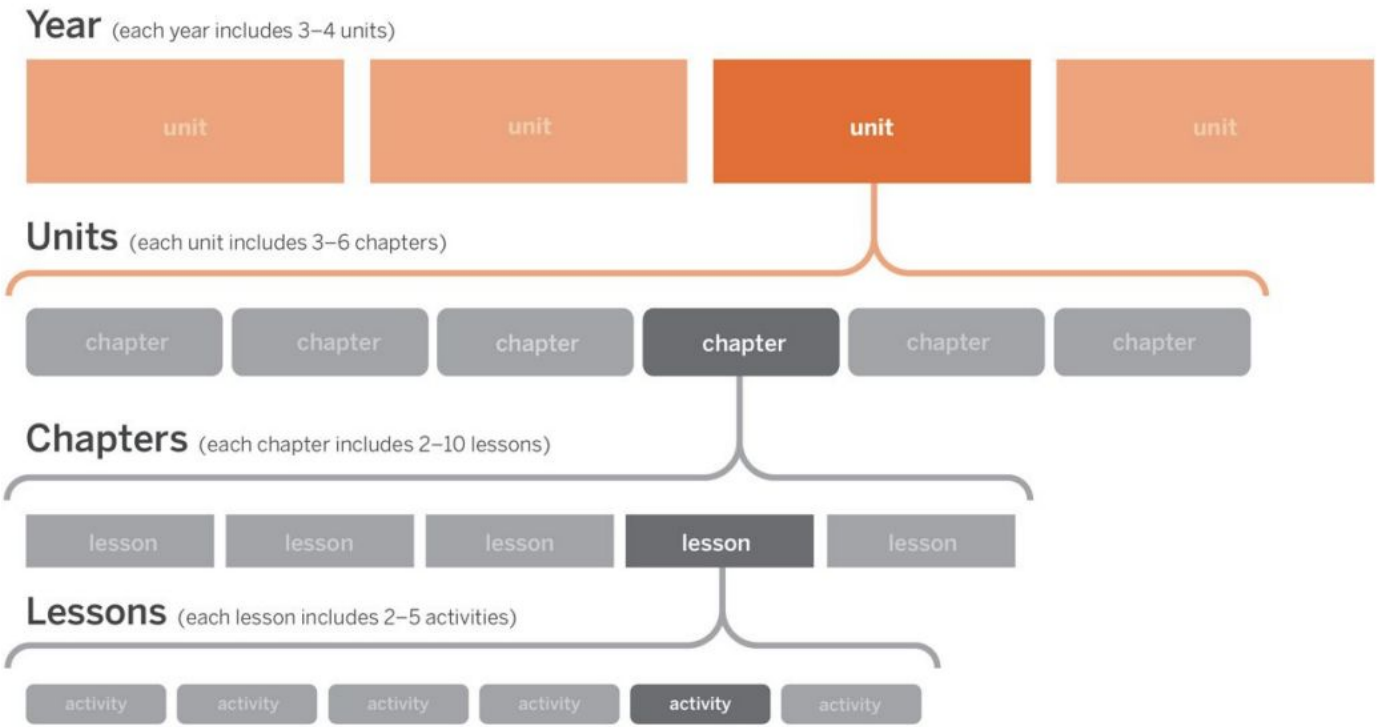
- Complex and rich
- Drives learning through a whole unit
- Specific and observable
- Relatable at students' developmental level



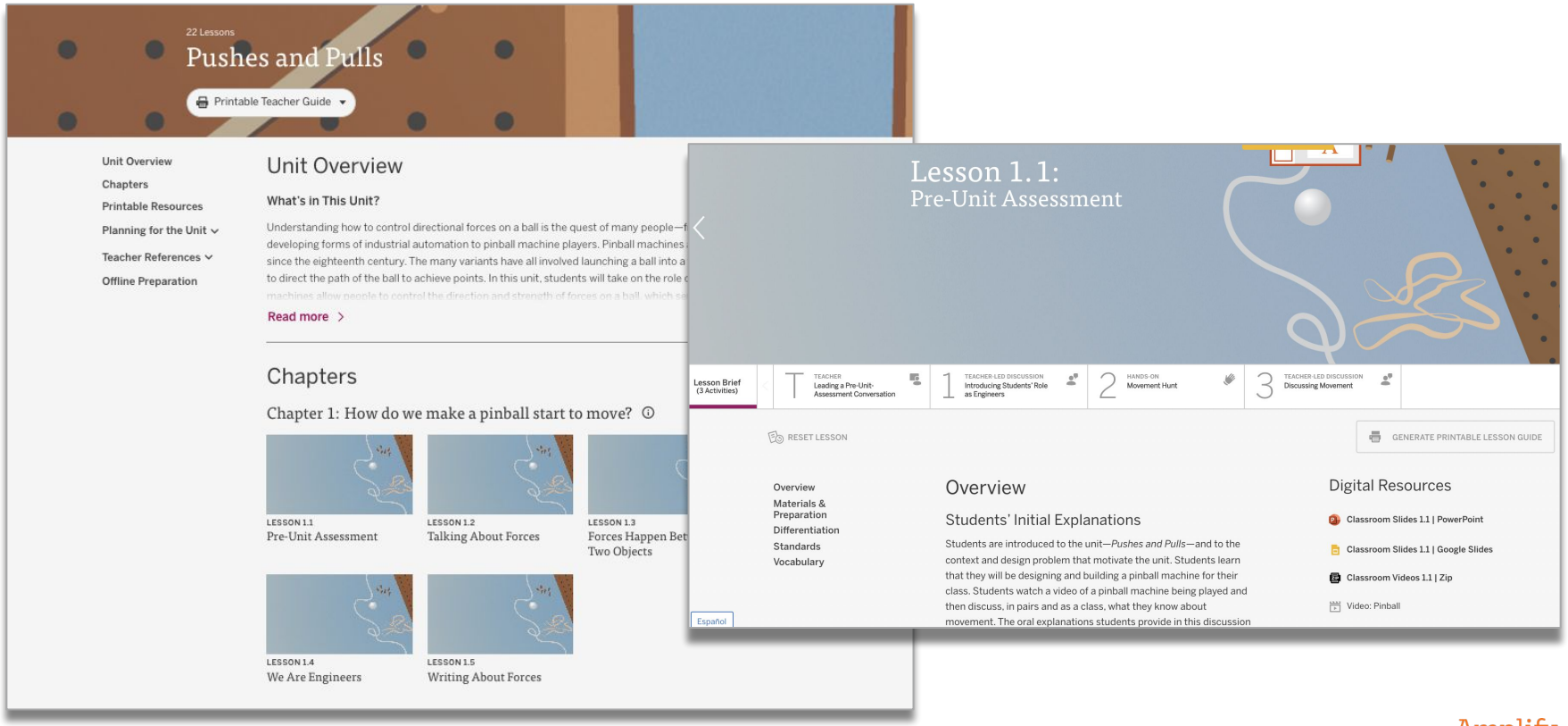
Plan for the day: Part 1

- Introduction and Framing
- NGSS & 3D Learning
- Phenomenon-based Instruction
- Navigation & Unit Internalization
- Additional Resources
- Closing

K-5 Navigation structure



Let’s Go Live!

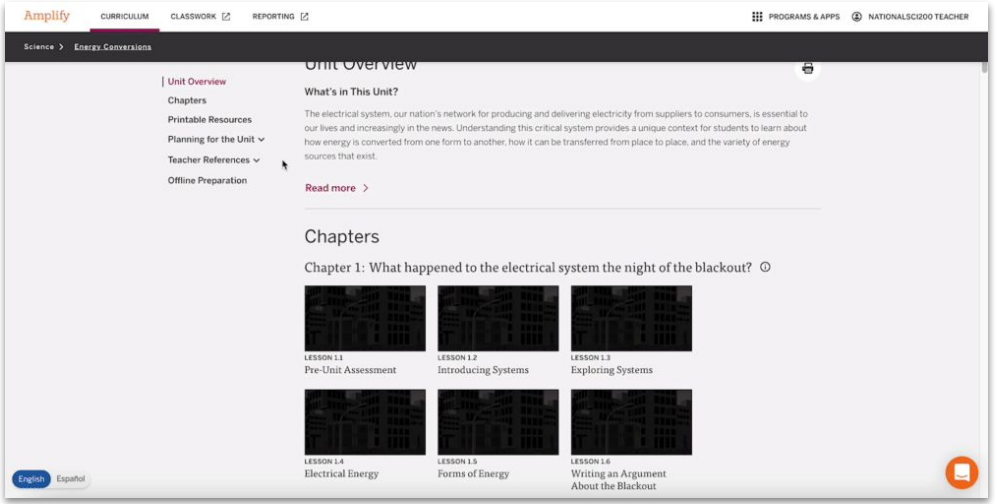


Amplify.

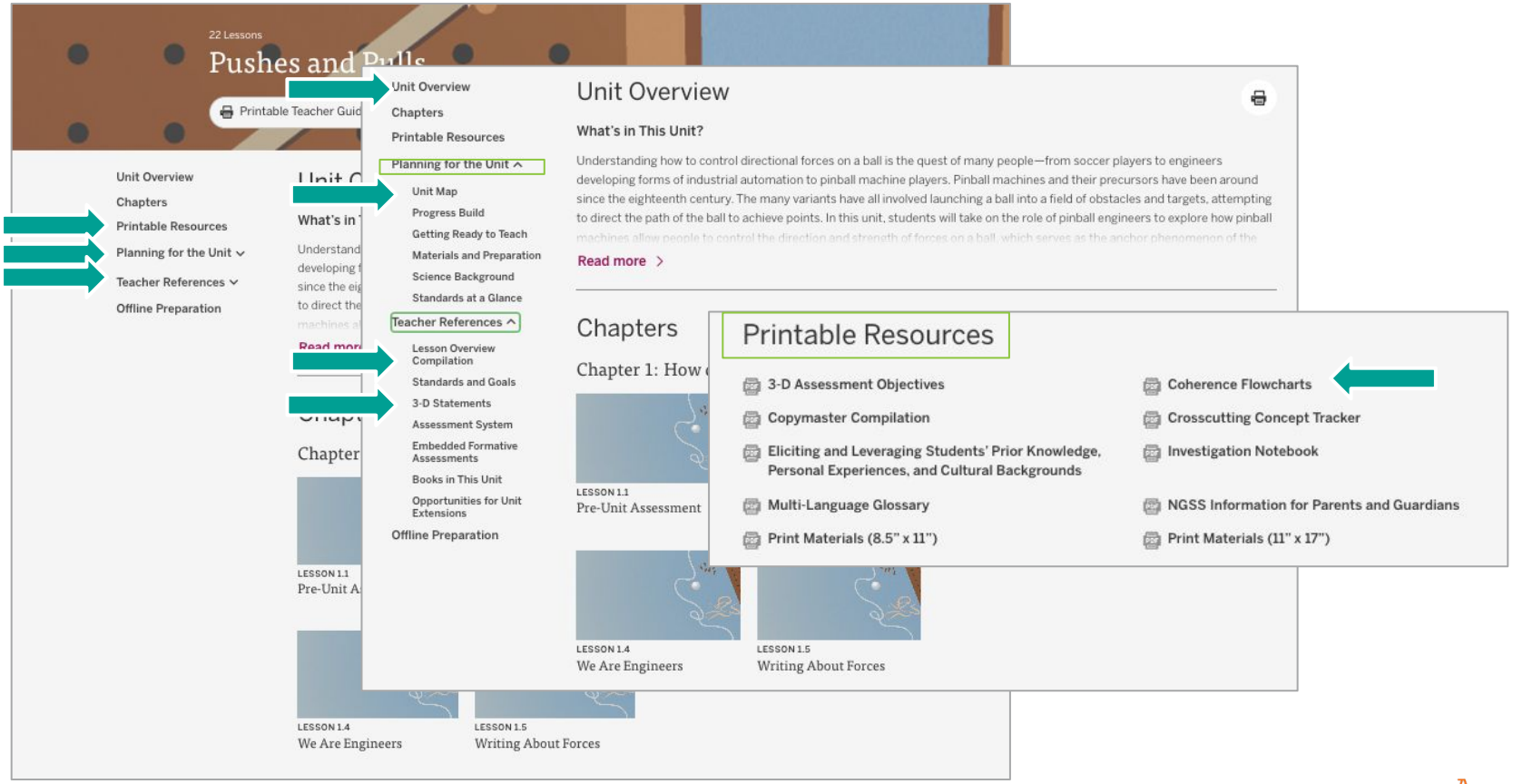
Unit Level resources

Collection of resources to support planning and day-to-day instruction in the unit:

- Printable Resources
- “Planning for the Unit” documents
- Teacher References



Key Unit Documents for Unit Planning



Core Unit Planning & Internalization

Unit Title:	1

Overview

[Resources: Unit Overview, Teacher's Guide, Coherence Flowchart, Unit Map, 3-D Statements]

What is the phenomenon/real-world problem students are investigating in your unit? 2	Student Role: 3
Unit Question: 4	Relationship between the Unit Phenomenon and Unit Question: 5
By the end of the unit, students figure out... 6	
How do students engage with three-dimensional learning to figure out the phenomenon/real-world problem in your unit? 7	

1

Unit Guide resources:
- **Unit Overview**
- **Unit Map**
- ***Coherence Flowchart***

Unit Guide resources:
- **Lesson Overview Compilation**
- **Unit Overview**

Unit Guide resources:
- **Unit Map**

Unit Guide resources:
- **3D Statements at the Unit Level**

Core Unit Planning & Internalization

Unit Title:	Pushes and Pulls

Overview

[Resources: Unit Overview, Teacher's Guide, Coherence Flowchart, Unit Map, 3-D Statements]

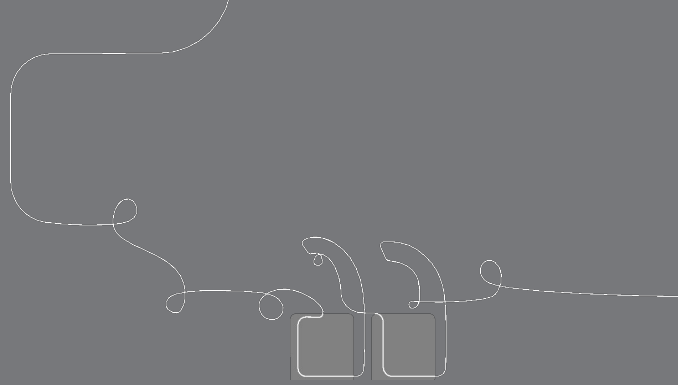
What is the phenomenon/real-world problem students are investigating in your unit?	Student Role:
How can we create a pinball machine for our class!	Pinball Engineers
Unit Question:	**Relationship between the Unit Phenomenon and Unit Question:**
Why do things move in different ways?	Students use their understanding of the phenomena of force and motion to identify pushes and pulls more broadly in their lives.

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

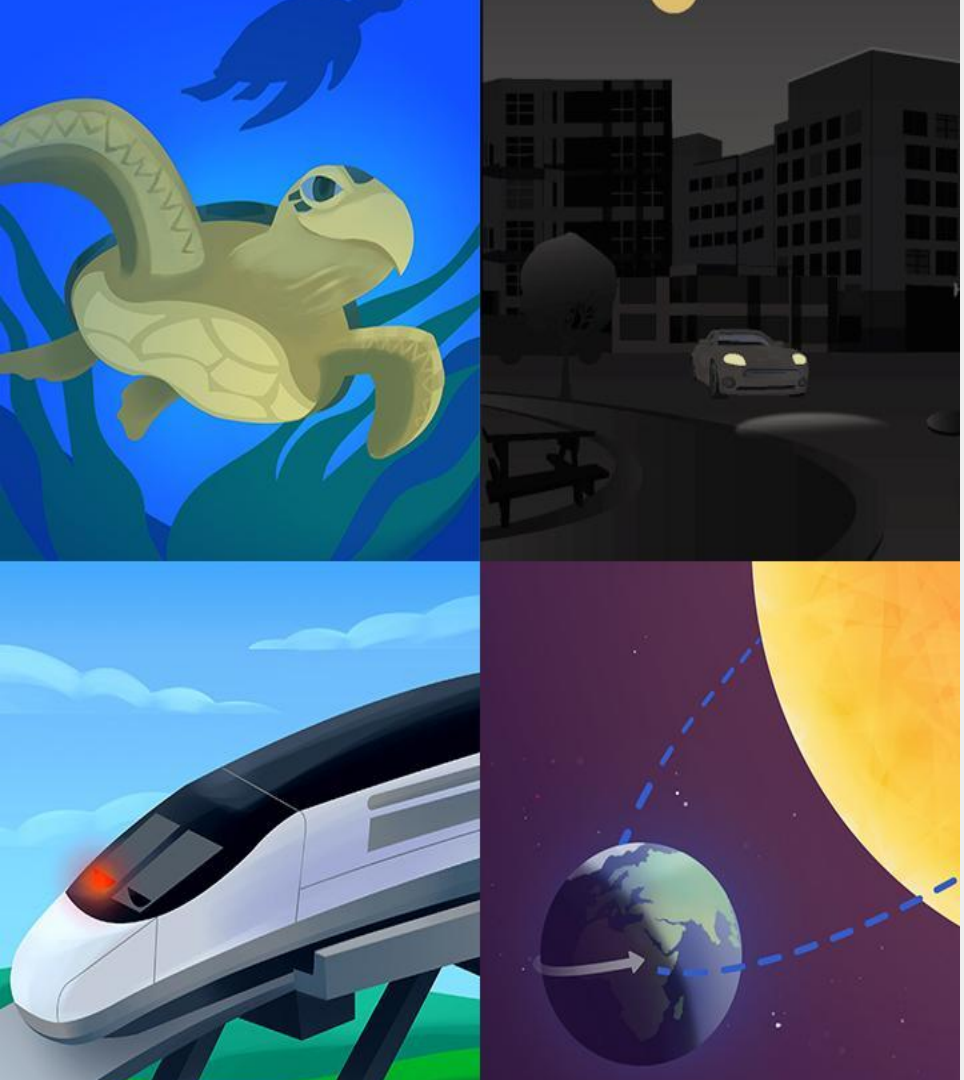
To make a pinball move, they have to exert a strong or weak force on the ball to make it go a further or a shorter distance, in the direction we want it. If we want the ball to change direction, we have to exert another force on it.

How do students engage with three-dimensional learning to figure out the phenomenon/real-world problem in your unit?

Students plan and carry out investigations to determine how force affects the movement of an object, its direction and its distance.(cause and effect;scale, proportion, and quantity; structure and function)



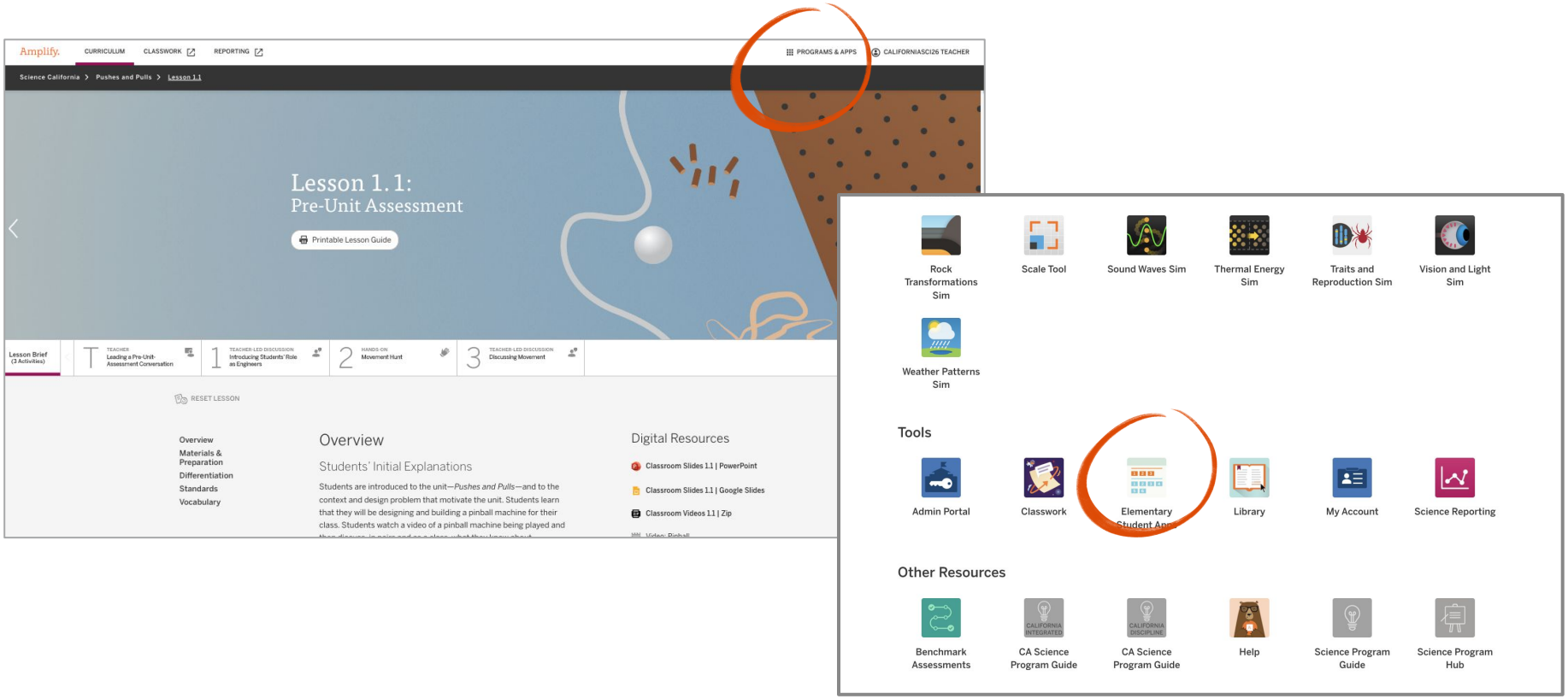
Questions?



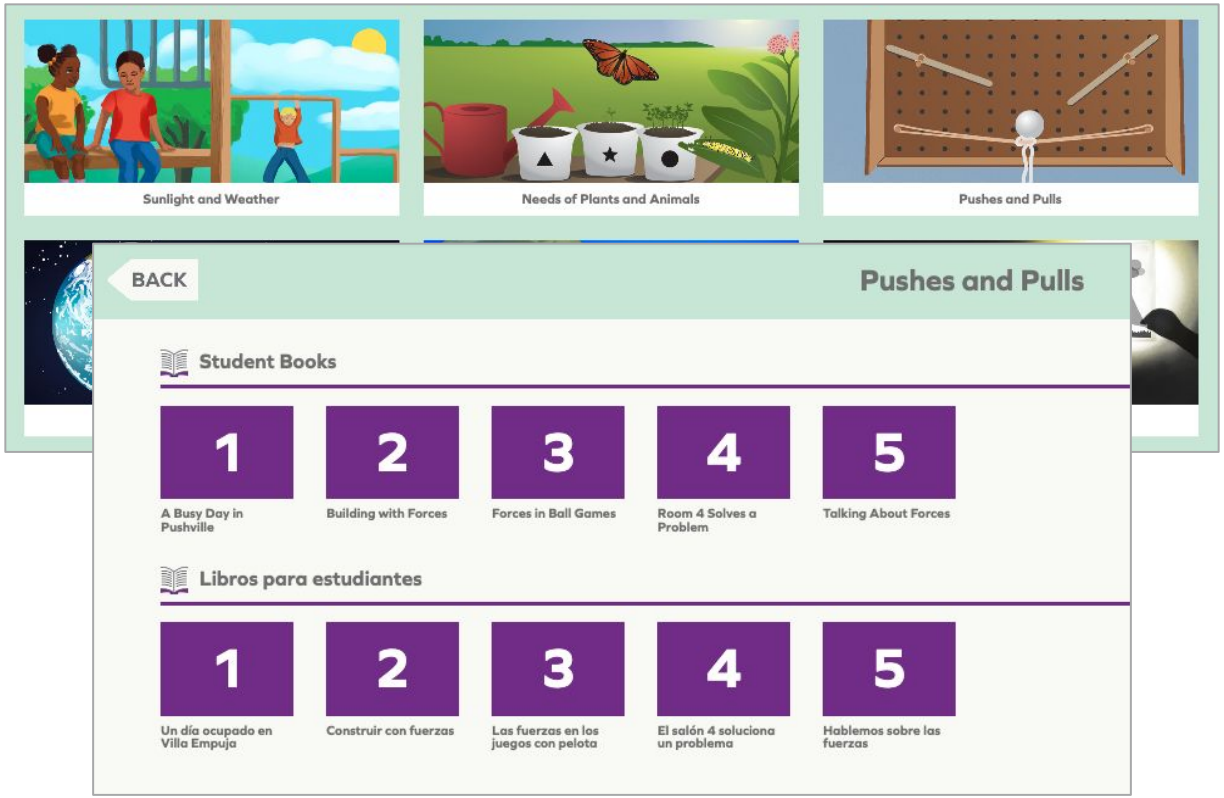
Plan for the day: Part 1

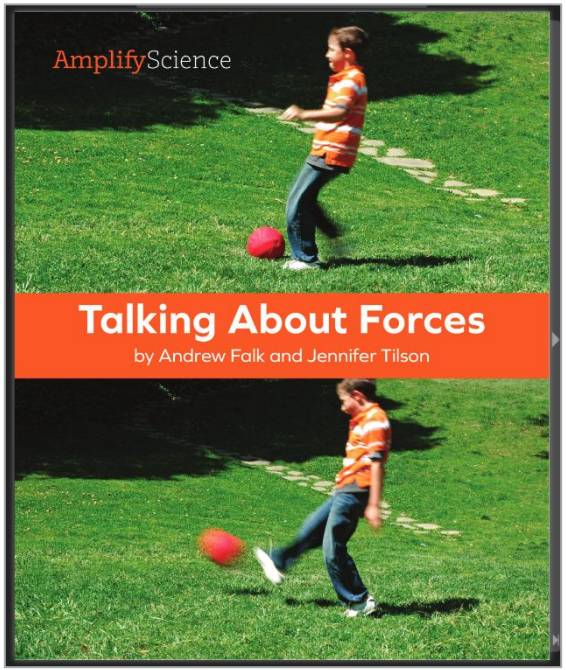
- Introduction and Framing
- NGSS & 3D Learning
- Phenomenon-based Instruction
- Unit Internalization
- Additional Resources
- Closing

Navigating to the Student Apps page



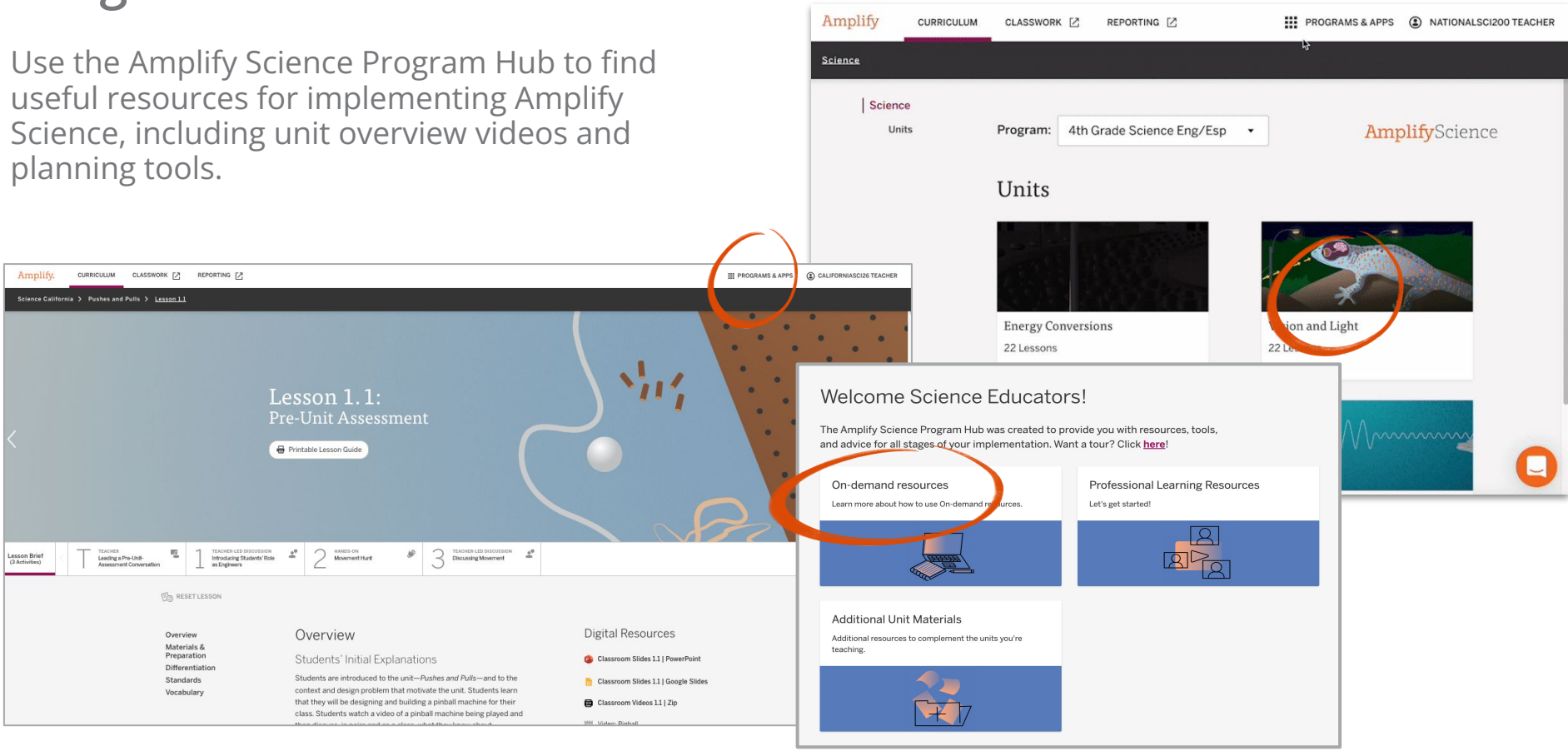
Student Apps page and accessing the book





Program Hub

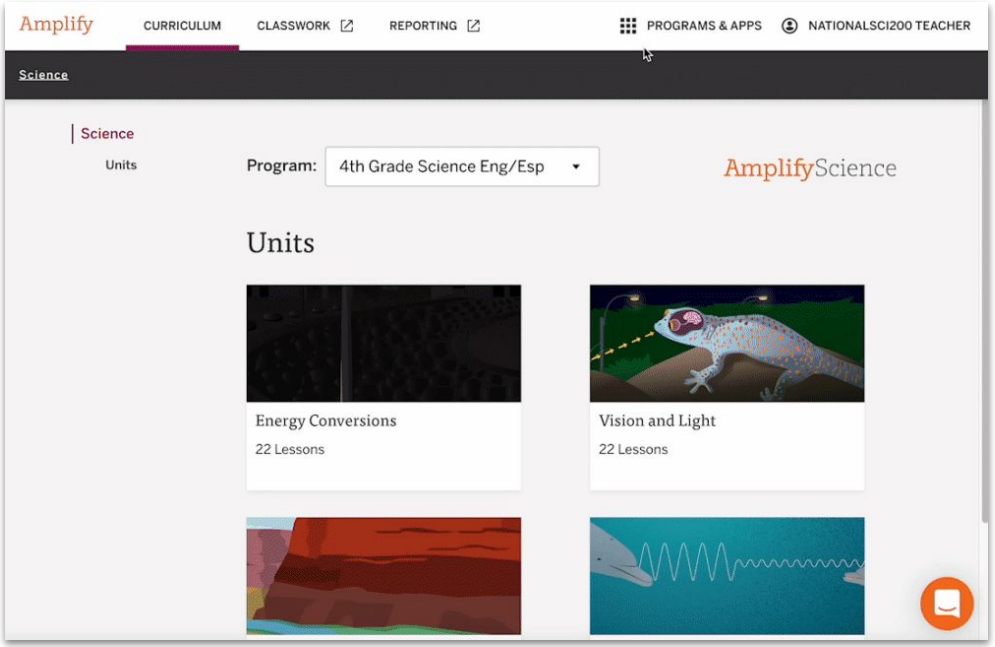
Use the Amplify Science Program Hub to find useful resources for implementing Amplify Science, including unit overview videos and planning tools.



Explore the Program Hub

Familiarize yourself with the Program Hub.

Be ready to share one resource you've found that you'll use while planning and teaching.



Additional resources

Welcome, caregivers!

We hope you enjoy learning more about Amplify Science and what students are learning in science this year.

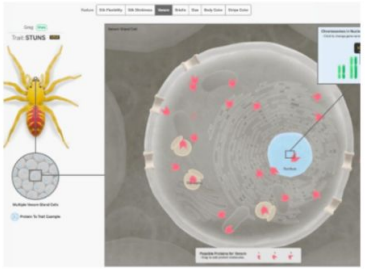
Para acceder a este sitio en español haga clic aquí.

Amplify welcomes you and your learner to the Science program for the new school year. We are very excited to provide you with exceptional learning opportunities through Science. Below are resources and helpful guides for enabling your student to have the most productive experience with our platform throughout the year.

Contact Us

TOP RATED BY EDREPORTS

Grades 6-8



Caregivers

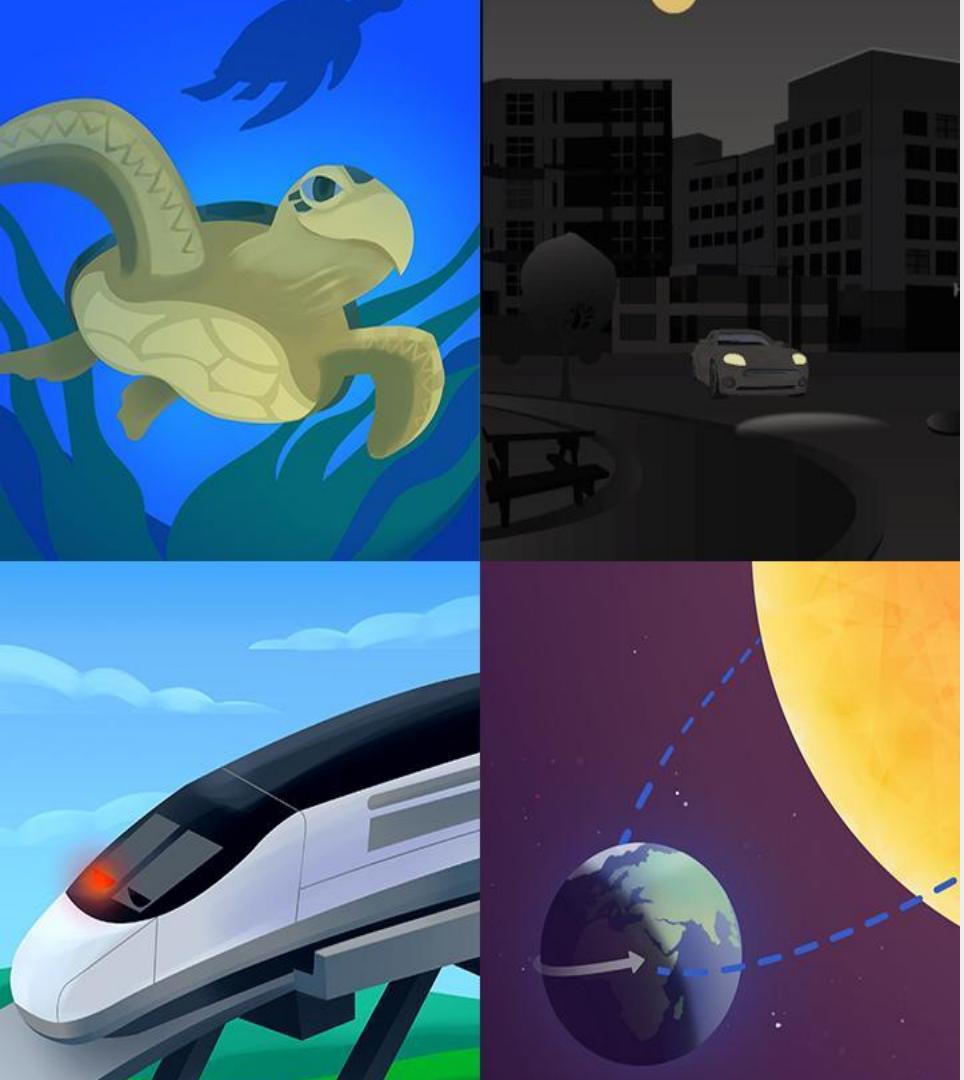
LAUSD Microsite- https://amplify.com/lausd-science

Welcome to Amplify Science!

This site contains supporting resources designed for the LAUSD Amplify Science adoption for grades TK–8.

- Access the Amplify Science Program Hub (To help orient you to the new design, watch this video and view this reference guide.)
- Find out more about Amplify Science@Home
- Share the Caregiver Hub (Eng/Span) with your families
- For LAUSD ES Teachers- Amplify Science & Benchmark Advance Crosswalk
- Instructional guidance for a Responsive Relaunch of Amplify Science in 21-22

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



Plan for the day: Part 1

- Introduction and Framing
- NGSS & 3D Learning
- Phenomenon-based Instruction
- Navigation & Unit Internalization
- Additional Resources
- Closing

Overarching goals

- ✓ Explain how students engage in phenomenon based and 3D learning to construct an understanding of the science concepts introduced in the unit *Pushes and Pulls*.
- ✓ Internalize the unit and apply your new understanding to plan for the diverse needs of your classroom and students

Additional resources and ongoing support

Customer Care

Seek information specific to enrollment and rosters, technical support, materials and kits, and teaching support, weekdays 7AM-10PM EST and weekends 10AM-6PM EST.

help@amplify.com

800-823-1969

Amplify Chat

Please provide feedback!

Type:

Strengthen

Session title:

Unit Internalization / Guided Planning

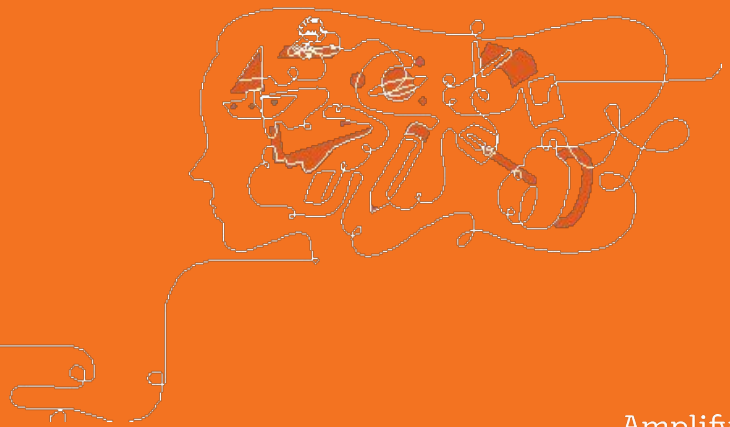
(Part 1)

Professional Learning Specialist name:

Jolene Hori

jhori@amplify.com

Part 2:
Guided Planning

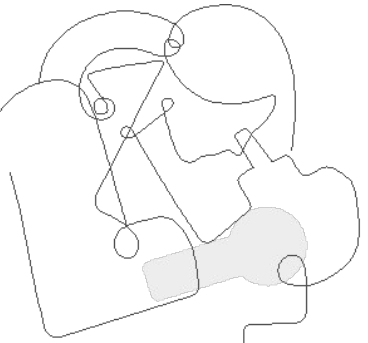


Amplify Science

Unit Internalization / Guided Planning

Grade K, Unit 2: Pushes and Pulls

Part 2



Los Angeles Unified School District
Date:
Presented by:

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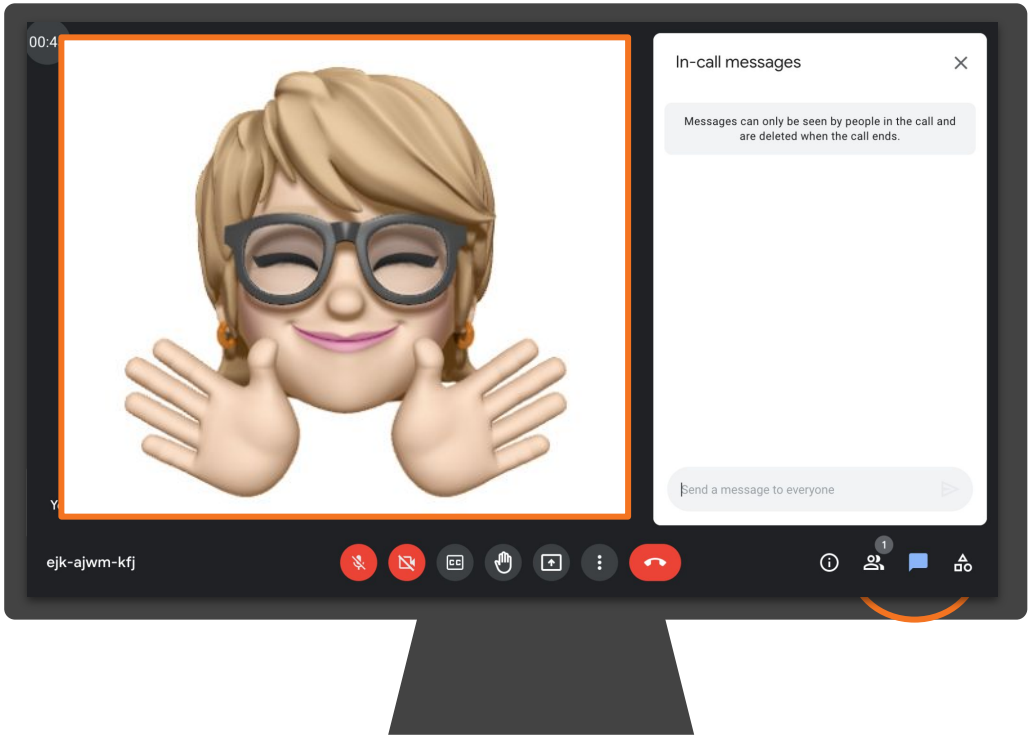
PLPG CERTIFIED PROVIDER

Ice Breaker!

Who do we have in the room today?

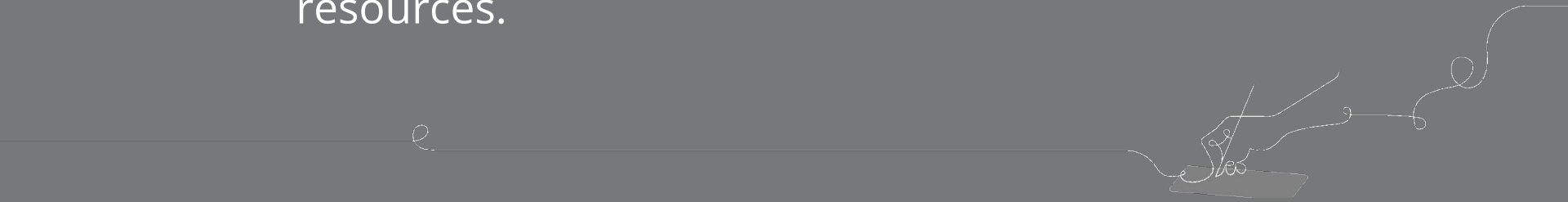
- **Question:** Now that we have gone through Part 1, which aspects of Amplify Science do you feel more comfortable with or have a greater understanding of?

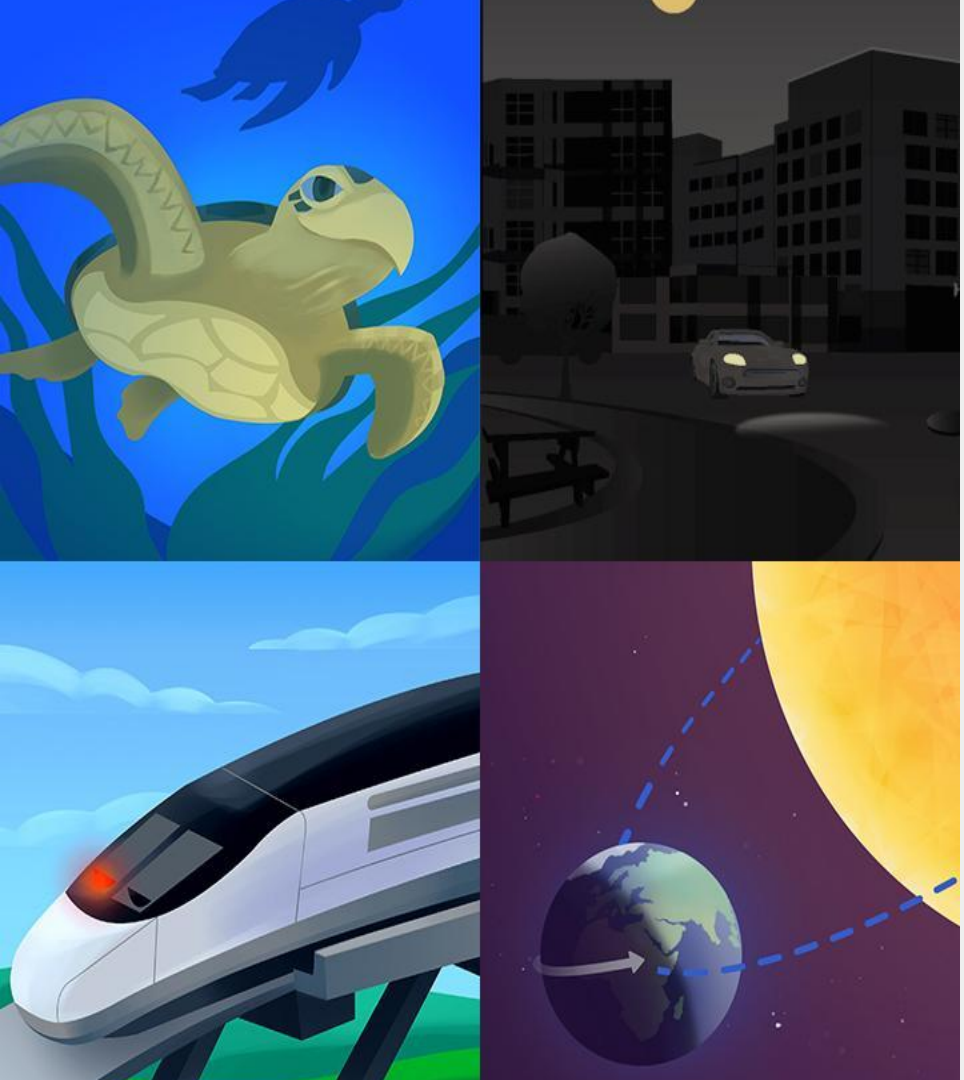


Overarching goals

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

- ❏ Describe what teaching and learning look like in Amplify Science.
- ❏ Prepare to teach using Amplify Science resources.





Plan for the day: Part 2

- Teaching and Learning in an Amplify Science Lesson
- Instructional Approach Reflection
- Planning a Lesson
- Closing

Pushes and Pulls

Initial Problem:
We want to create a pinball machine that lets us control the way a pinball moves. How can we create a pinball machine for our class?

Role: Pinball Engineers

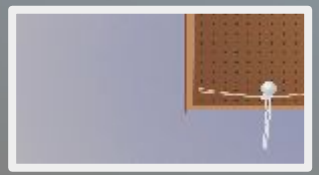
In this part, students will take on the role of Pinball Engineers as they explore what makes a ball start moving, change direction, or stop moving. How do we recognize forces all around us and the effects forces have on a ball.

A new problem:
Things all around us start moving, change direction, or stop moving. How do we recognize forces in the world?

AmplifyScience

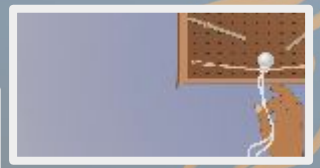
Coherent Storylines

How do we make a pinball start to move?



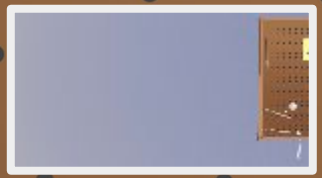
How do we make a pinball move as far as we want?

How do we make a pinball mover to a certain place?



How do we make a movig pinball change direction?

How can we make the pinball machine do all the things we want it to do?



Where are forces around us?

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Pushes and Pulls

Unit Question: Why do things move in different ways?

Students conduct tests on their own prototypes of a pinball machine (called Box Models) and use what they learn to solve the design problem of creating a Class Pinball Machine.

Explaining the phenomenon: Science Concepts

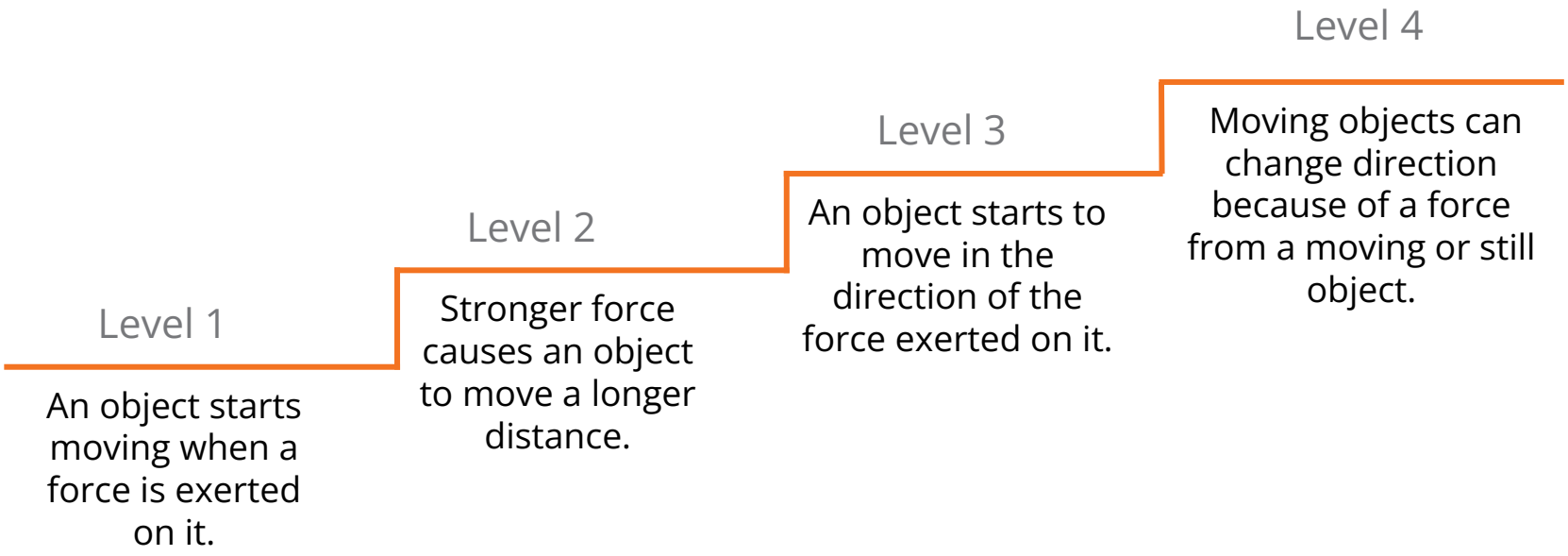
What **science concepts** do you think students need to understand in order to **explain the phenomenon?**

Let's take a look...

Progress Build

Pushes and Pulls

Assumed prior knowledge (preconceptions): There is no significant prior knowledge assumed. Students will certainly have experience with observing moving objects, including rolling balls, as well as making objects move in different ways. Students will have experience moving objects by pushing or pulling, but they likely have not thought carefully about how those objects do so.



K-5 Assessment System

Pre-Unit Assessment

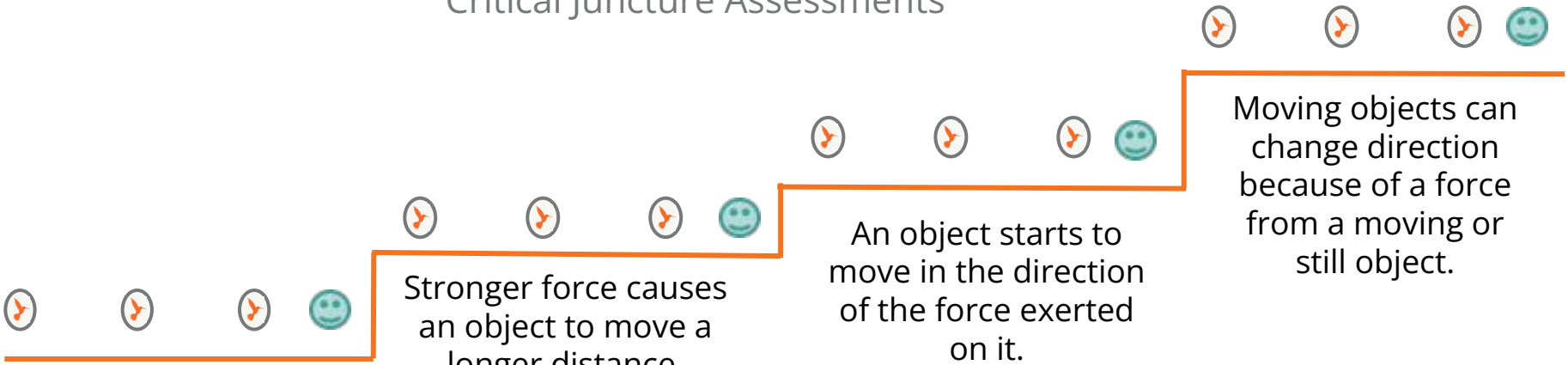
2.3, Act 1 & 2

3.3, Act 3

4.3, Act 2

End-of-Unit Assessment

Critical Juncture Assessments



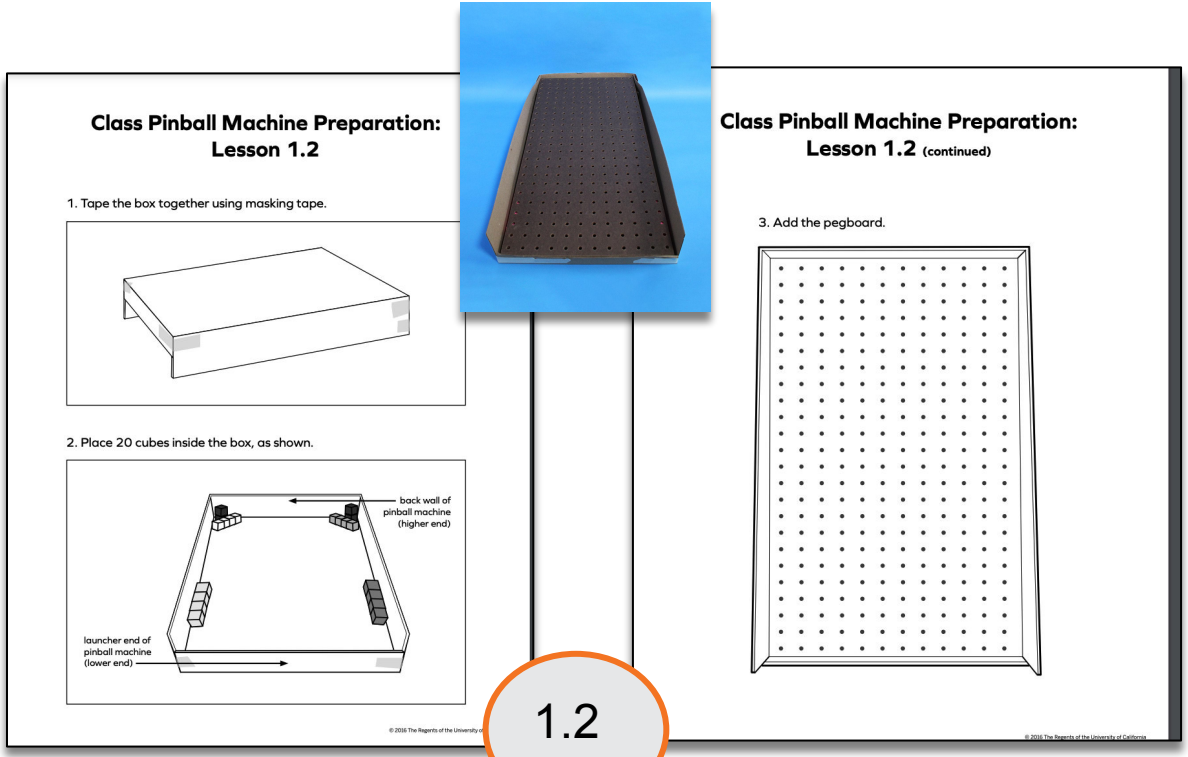
An object starts moving when a force is exerted on it.

Stronger force causes an object to move a longer distance.

An object starts to move in the direction of the force exerted on it.

Moving objects can change direction because of a force from a moving or still object.

Class Pinball Machine



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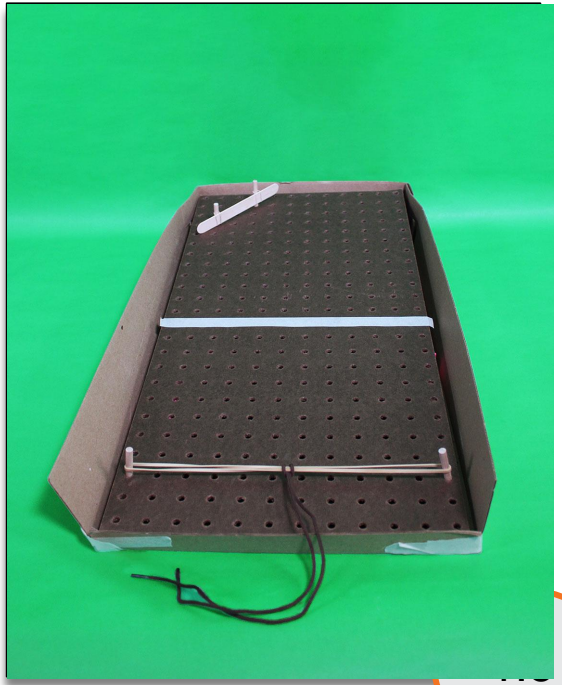
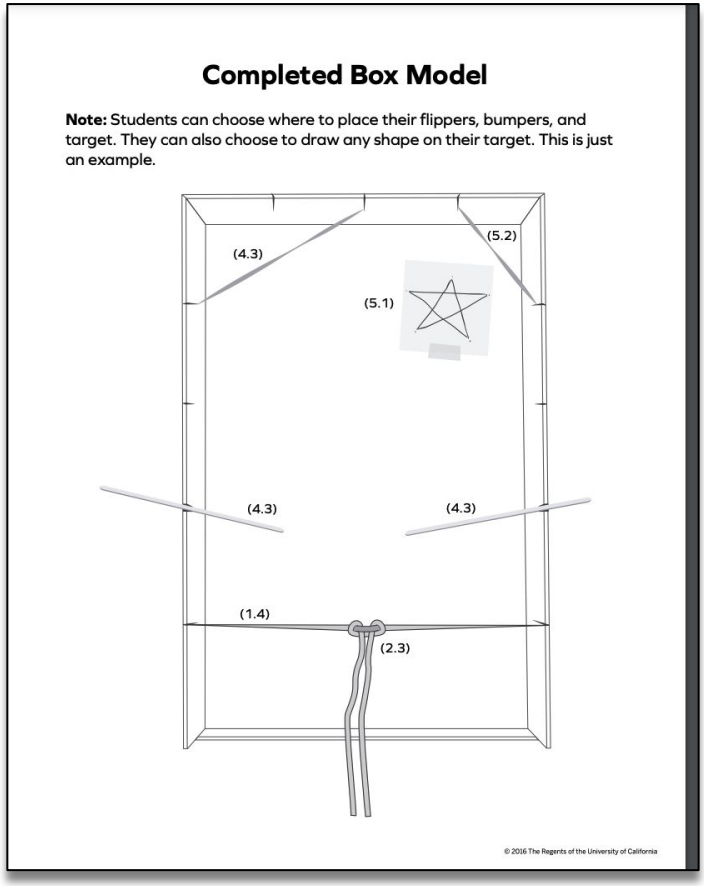


Student Pinball Machine

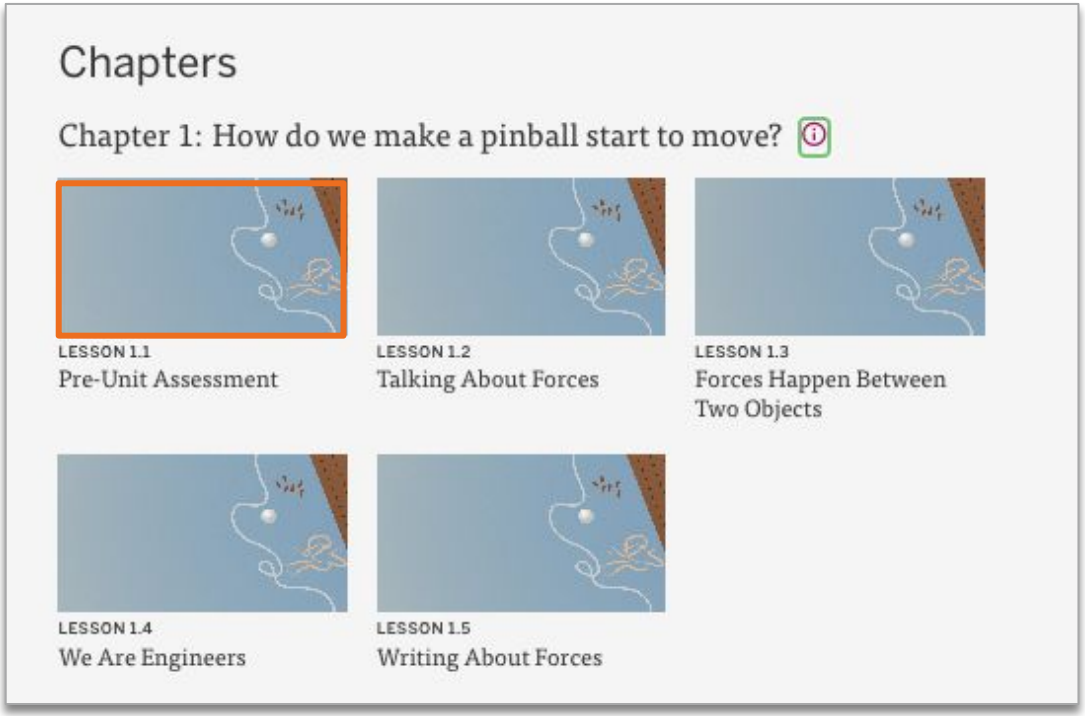


1.4

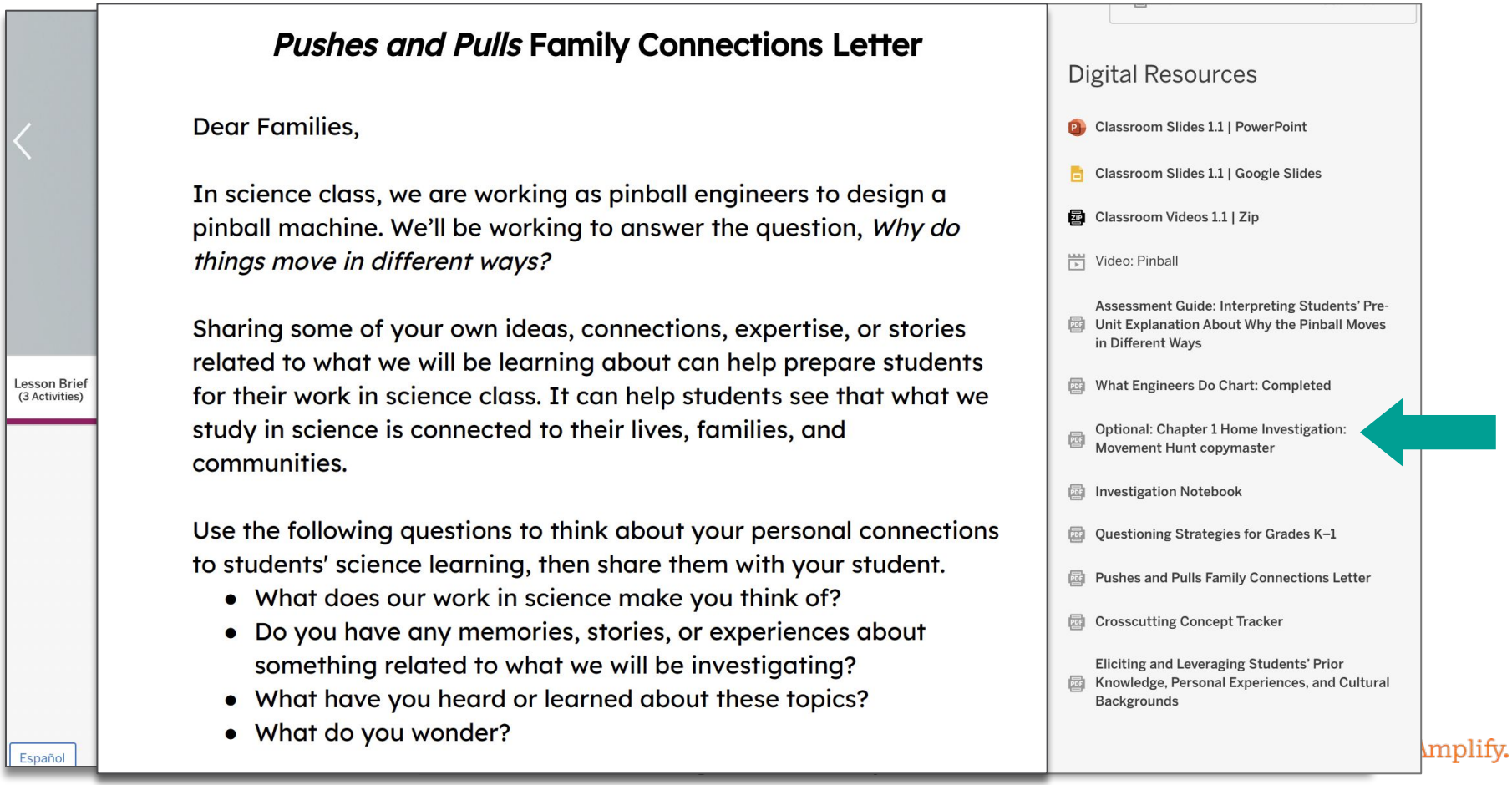
Amplify.

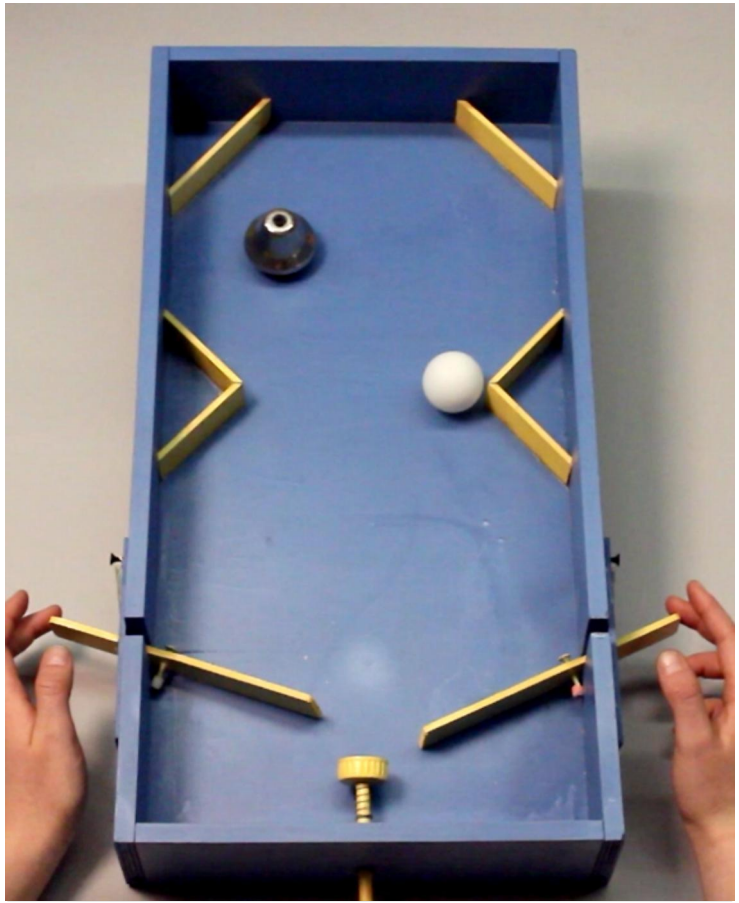
Beginning the Unit

The first lesson of every Unit is a pre-unit assessment.



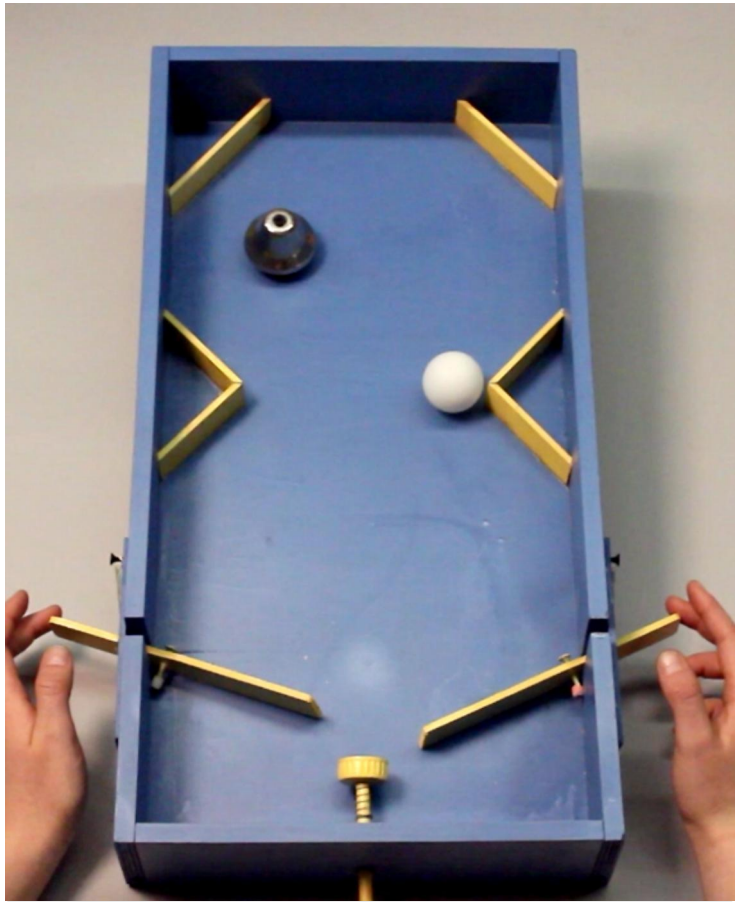
Pushes and Pulls Family Connection





I am going to show the video a second time.

This time, pay careful attention to the **different ways that the ball moves.**



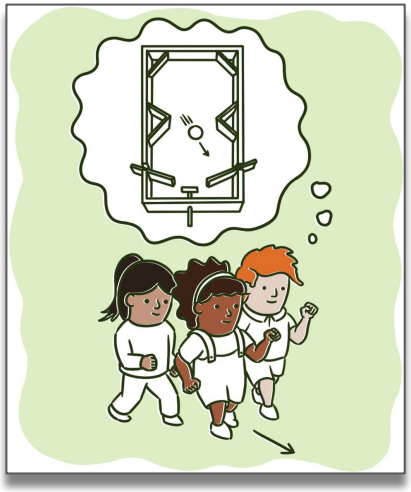
Let's talk about what we noticed.

What made the pinball **move in different ways** in the video?

Let's talk about what we noticed.

- I noticed the ball was not moving at the beginning, but then it started moving. What do you think made it start to move?

- I noticed the ball sometimes went a short ways and other times it went a long ways. What do you think made it move short ways or long ways?



What Engineers Do

Find out about a problem.

Movement Hunt

1.

Walk and whisper as you find objects you can move.

2.

Use only your hands. Make sure you are moving objects and not touching your classmates.

3.

Clean up! After you make an object start to move, put it back where you found it.

Let's think about the Movement Hunt.

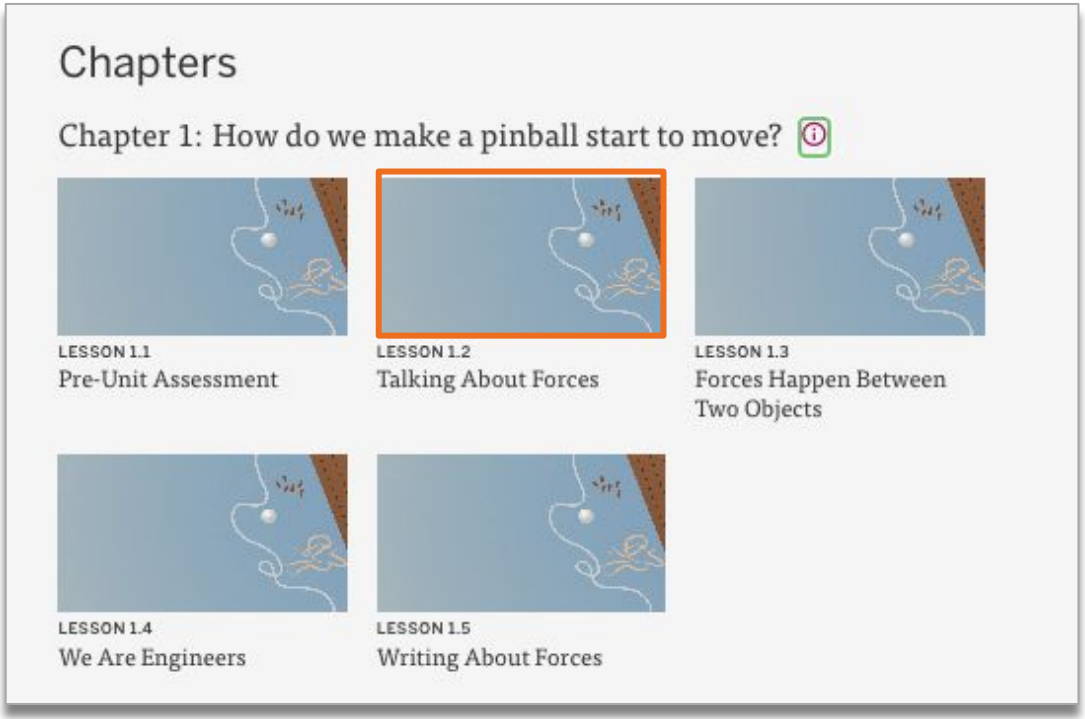
What was one object you made **start to move?**

What did you **do** to make it move?

Lesson 1.1

Beginning the Unit

Model Lesson: 1.2



Pushes and Pulls

Unit Question: Why do things move in different ways?

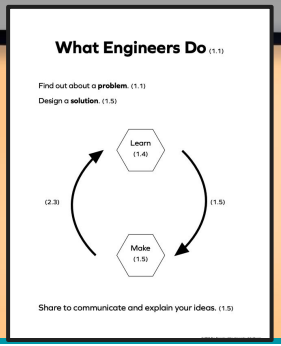
Chapter 1 Question: How do we make a pinball start to move?

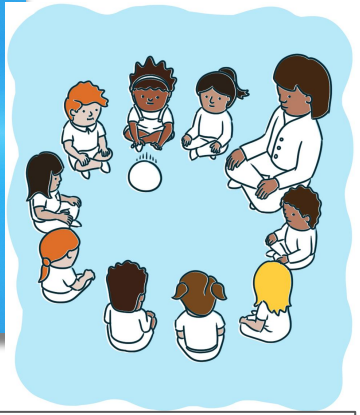
Investigation Question:
What makes an object start to move?

Concept

Vocabulary

object

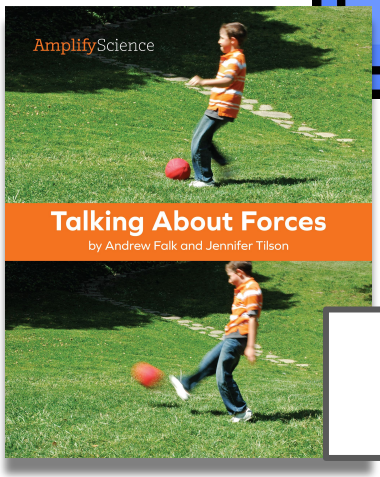




visualize

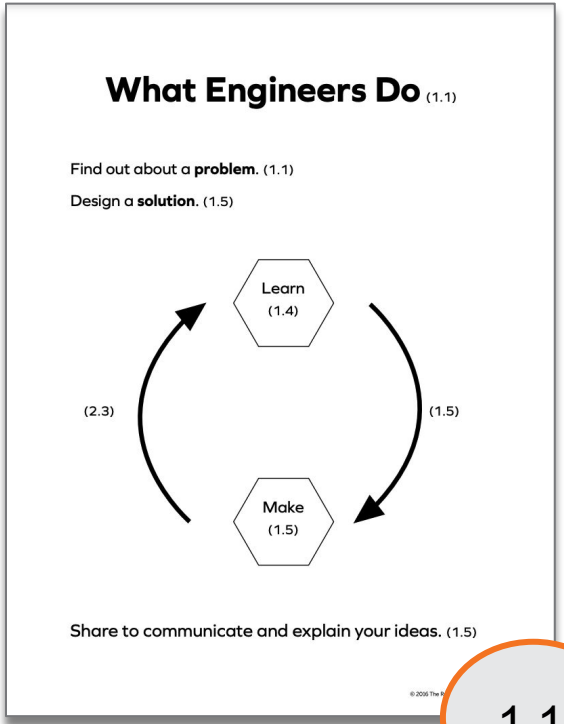
Investigation Question:
What makes a object start to move?

_____ because _____.



Sense-making strategy:
visualize

Charts to Prepare for Pushes and Pulls



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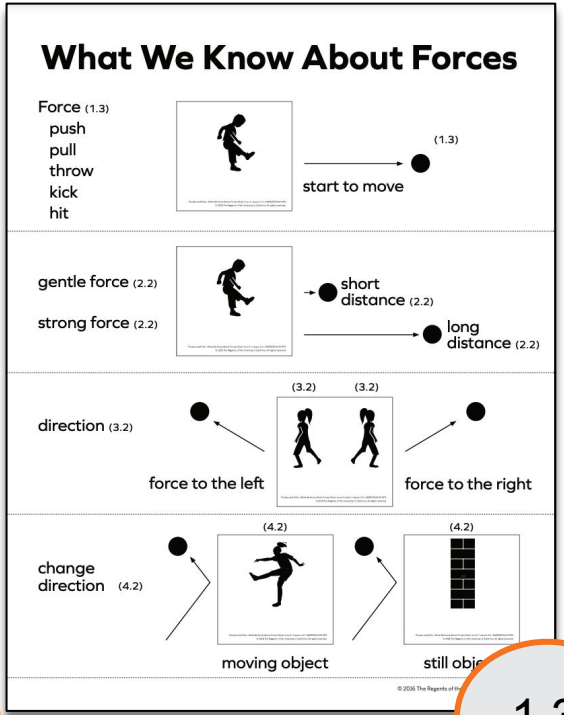
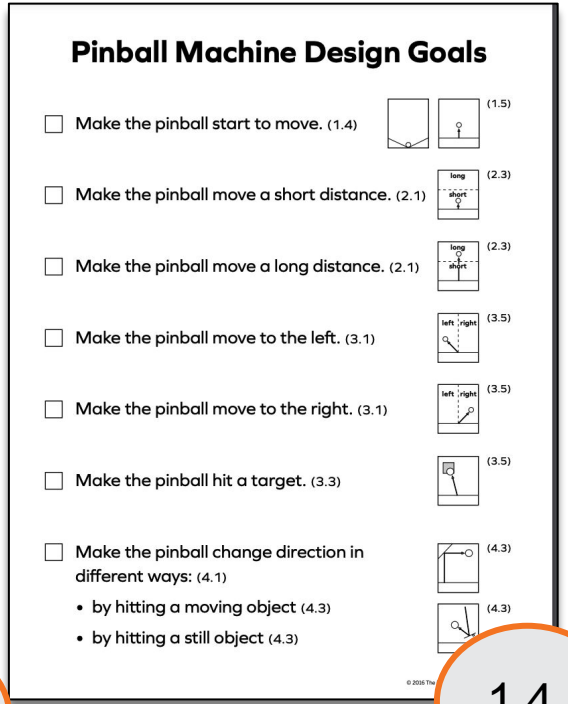


1.3



1.4

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Grade K | Pushes and Pulls

Lesson 1.2: Talking About Forces

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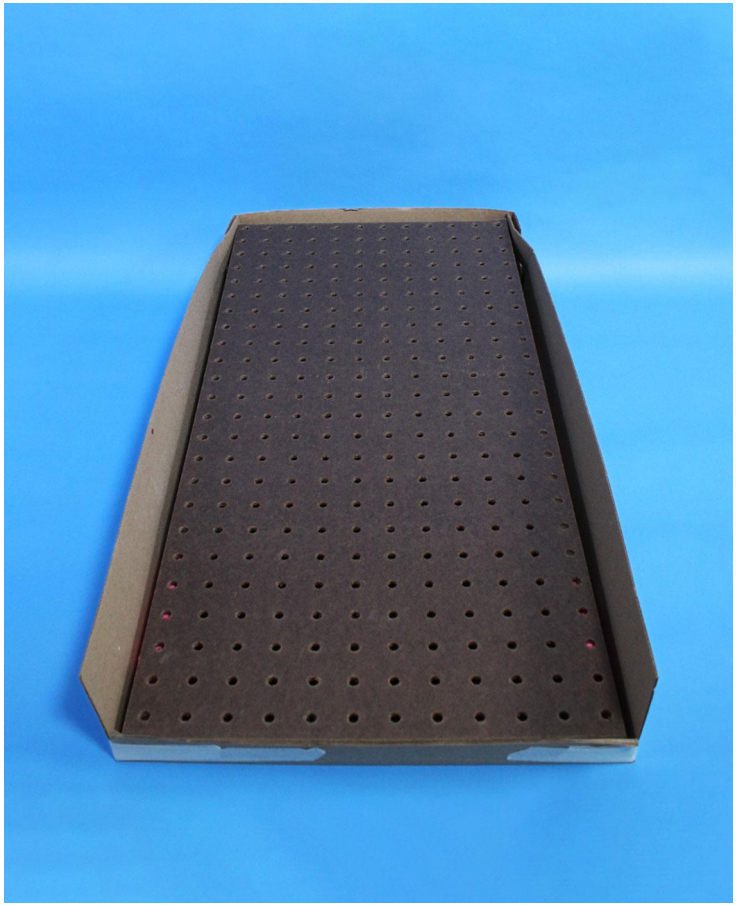
10 MIN

Activity 1

Exploring and Describing Movement

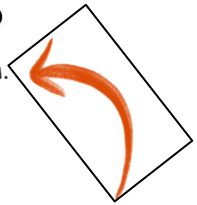


We are **engineers,** and we are working to design a **pinball machine** for our classroom.

We will build our pinball machine in this box.

What Engineers Do

Find out about a problem.



One thing engineers do is **find out about a problem.**

Our problem is that we need to figure out how to make this pinball machine so that it makes a pinball **start to move.**

Investigation Question:

What makes an object start to move?

In the last lesson, we made objects in the classroom start to move.

What are some **objects** we made move with our bodies?

How did we make those objects **start to move?**

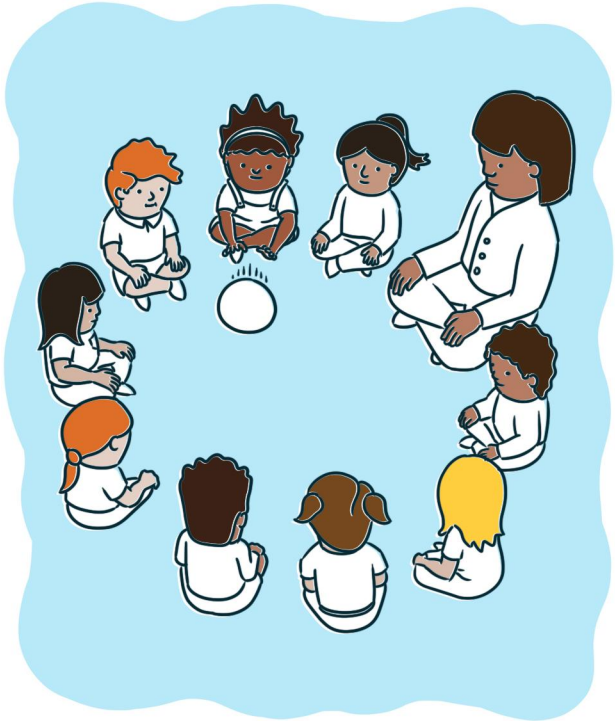
Today, we will play a game called **Rugball.**

This is a game we will play many times as we learn about **movement** and work as **engineers** to design a pinball machine.

Playing Rugball: Introduction

We are trying to start moving the ball.

- **Ask, "What did you just do?" (I pushed the ball to him. I rolled the ball.)**
- **Ask, "What just happened?" (The ball moved. The ball rolled across.)**



10 MIN

Activity 2

Visualizing Movement

In the Movement Hunt and when we played Rugball, we made **objects** move. I wonder if there are things other than people that can make things start to move.

We will look at pictures that show objects moving and **visualize** what is happening. I will **show you how.**

It does not look like the car works, so I do not think it can move on its own. I think the car has started to move because the tow truck is pulling it. Visualizing helped me figure out what made the car start to move.

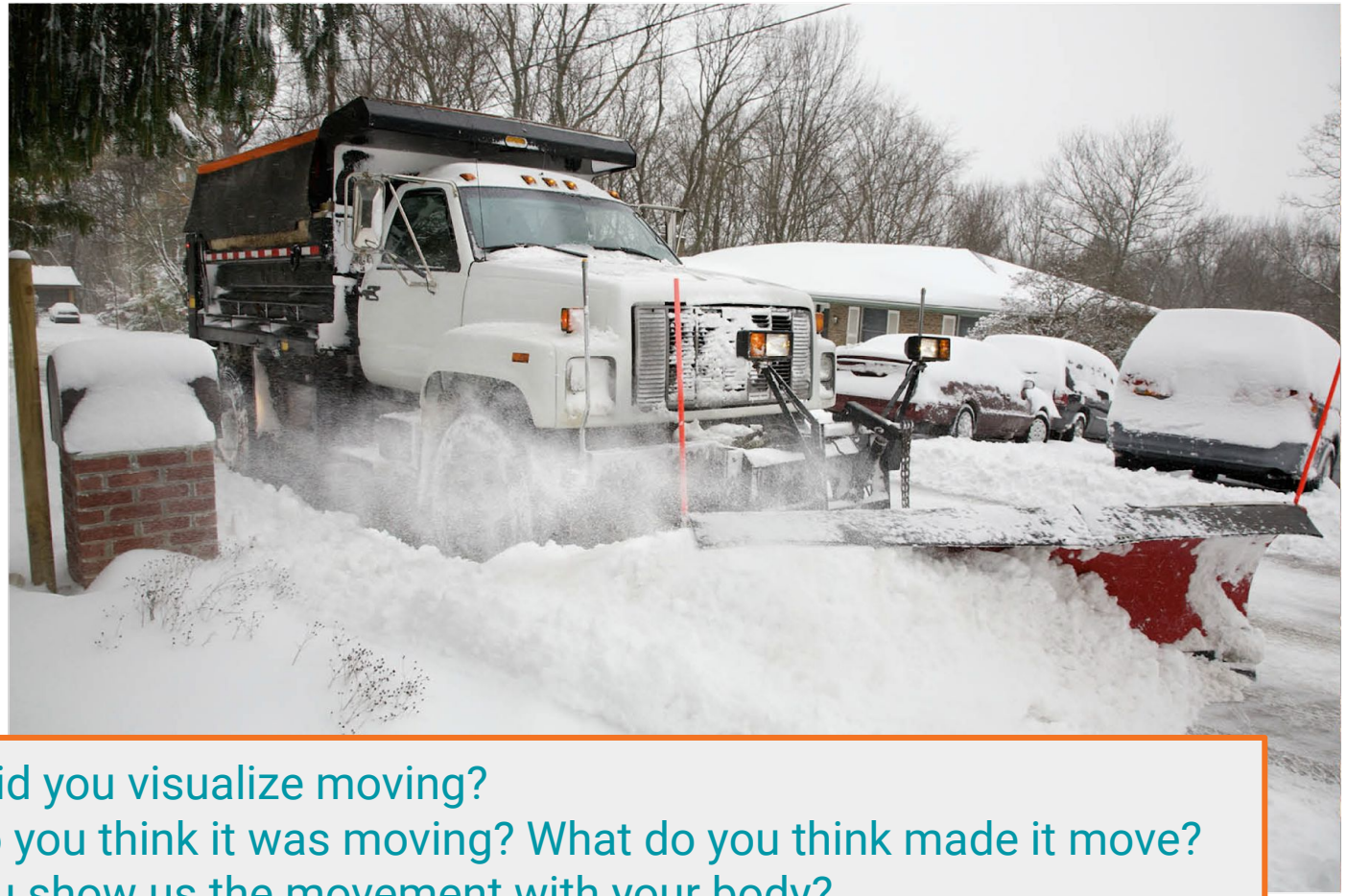
This is a picture. I cannot see anything moving.

I'll share how I **imagine the movement** to better understand what is happening.

I will show you some more pictures. For each one, **visualize** what is happening.

Think about **what is moving,** and **what is making that object move.**

You can also **act out** out what is happening with your body.



- What did you visualize moving?
- Why do you think it was moving? What do you think made it move?
- Can you show us the movement with your body?

Engineers work together to learn more about the things they study.

As you look at the pictures share your ideas with your partner and talk about how to answer this question: **What movements did you visualize in the picture?**

- What did you visualize moving?
- Why do you think it was moving? What do you think made it move?
- Can you show us the movement with your body?

- What did you visualize moving?
- Why do you think it was moving? What do you think made it move?
- Can you show us the movement with your body?

- What did you visualize moving?
- Why do you think it was moving? What do you think made it move?
- Can you show us the movement with your body?

Vocabulary

visualize

to make a picture in your mind

10 MIN

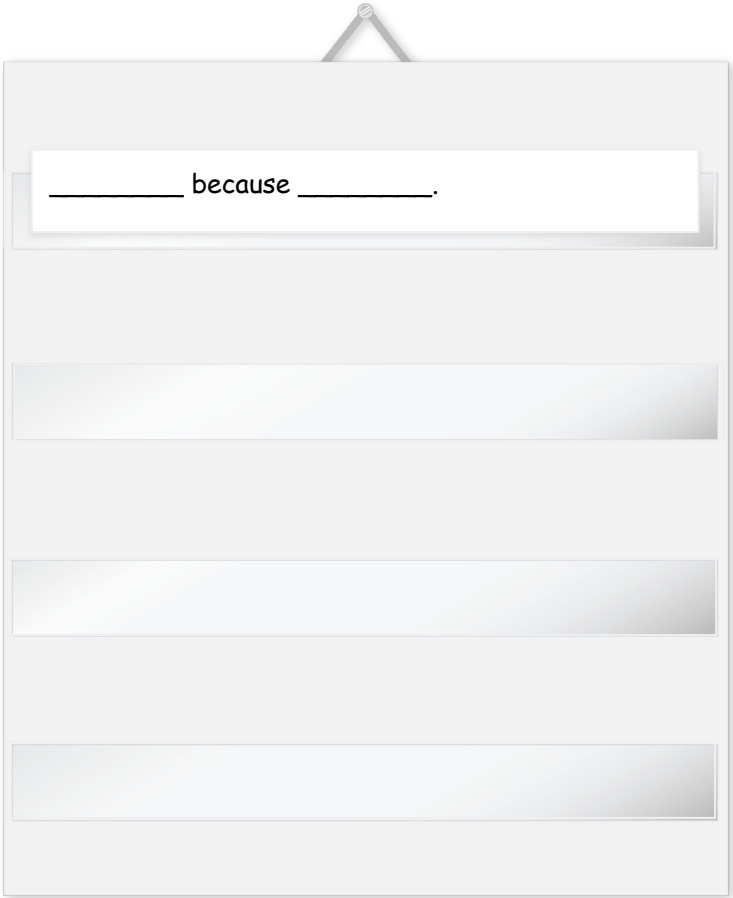
Activity 3

Explaining with Because

We explored making the rugball move and visualized how different objects were moving in pictures. Now, we are going to **try some movements** of our own to practice talking about them like scientists and engineers.

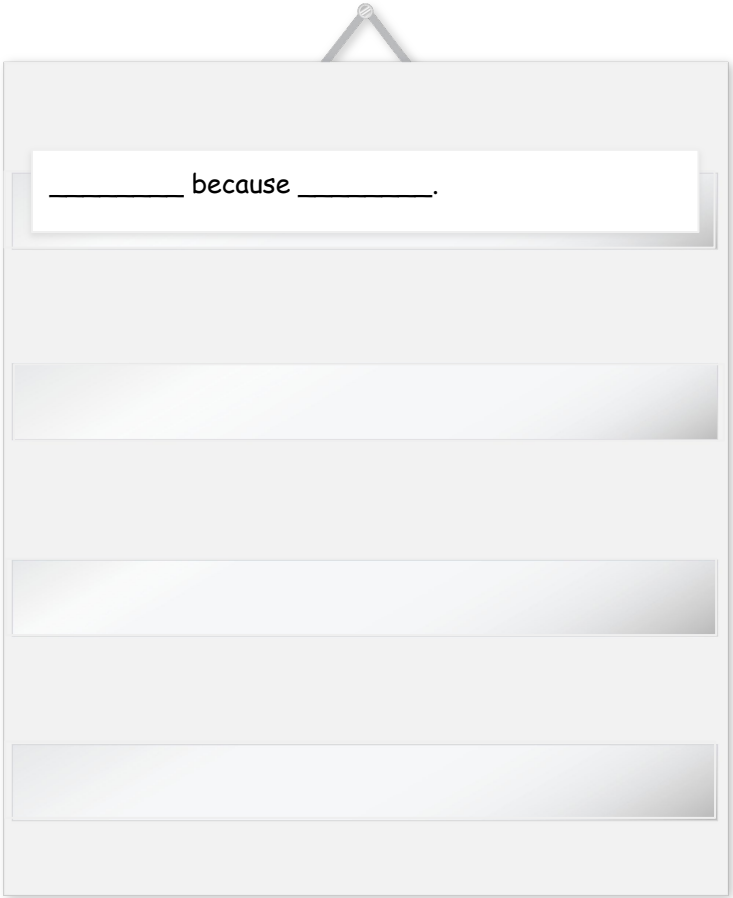
Scientists and engineers use the word **because** to explain why something happened.

I am going to **stand on one foot.** Watch my movements carefully.



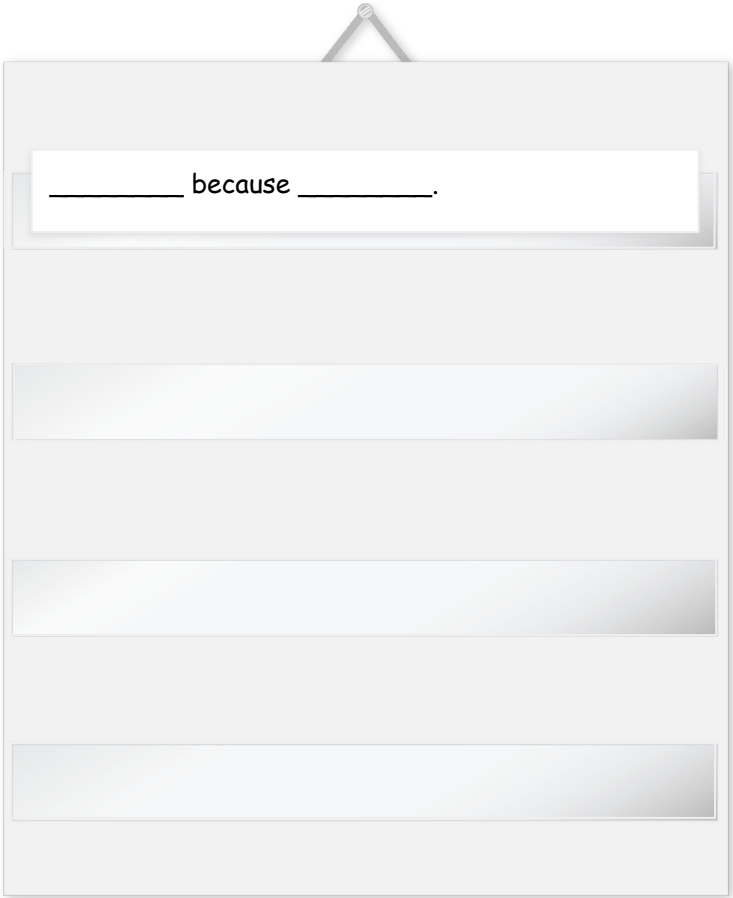
We can explain what happened and why with "because."

What happened when I tried to **balance?**



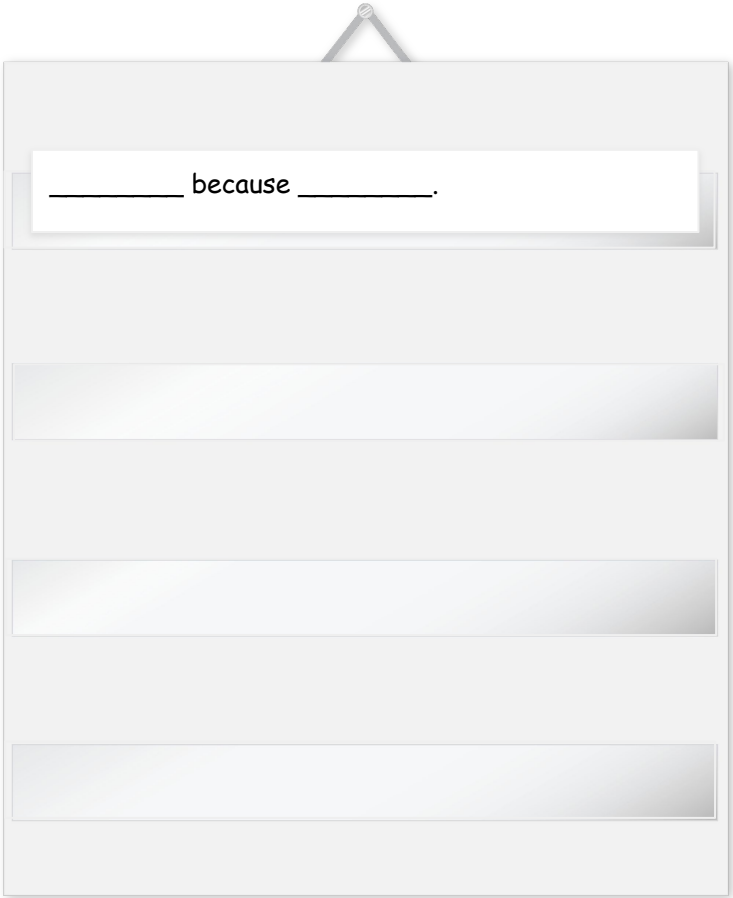
I tipped over **because** I stood on one foot.

The word **because** means that the first part of what I said made the second part happen.



Let's try a different movement together.

Run in place.

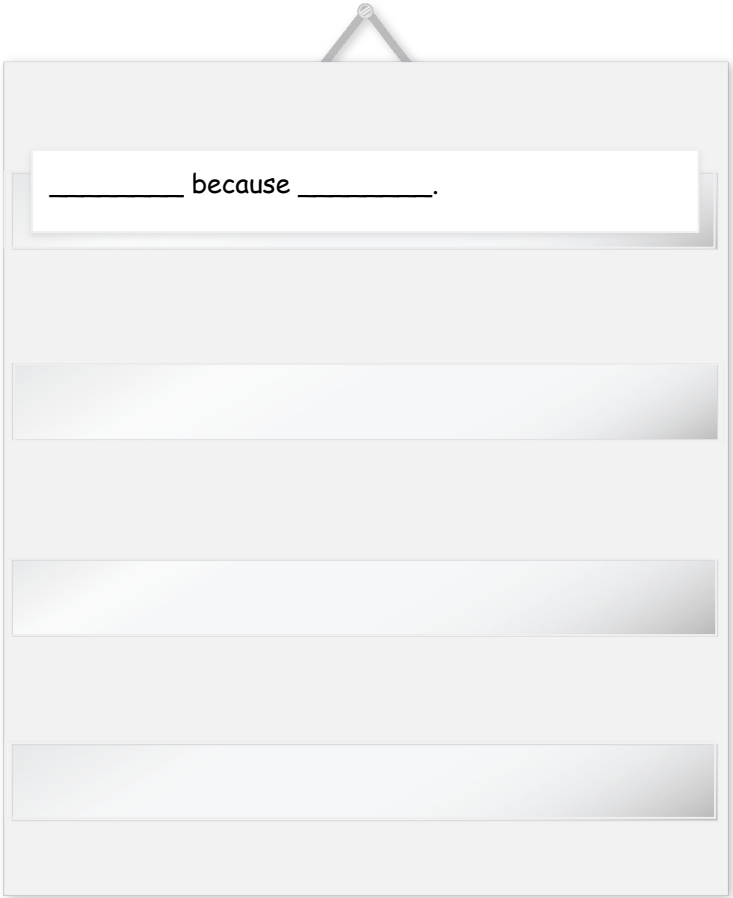


Let's make a sentence about it.

Raise your hand if you **feel tired** or **out of breath.**

Why do you think we are breathing hard?

"We are breathing hard because we ran in place."

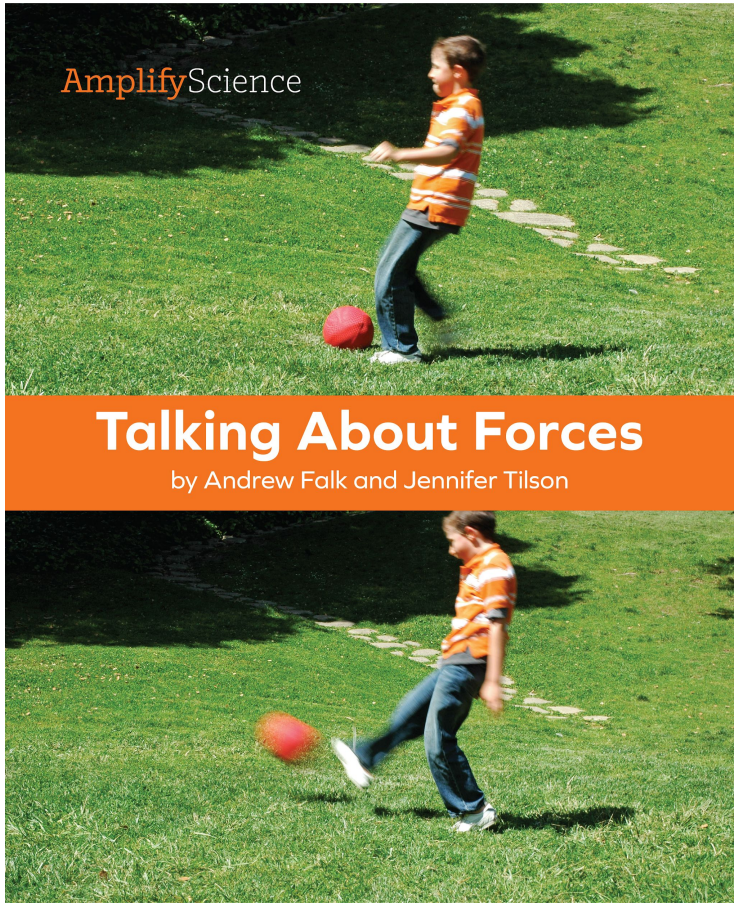


Let's try out a few more examples, and make sentences explaining what happened with **because.**

15 MIN

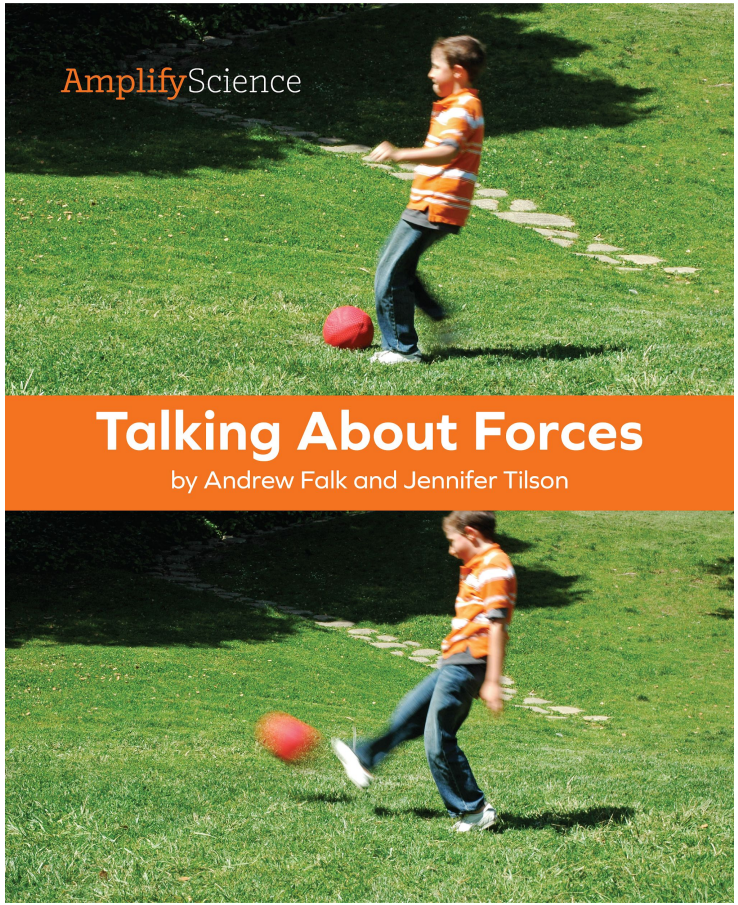
Activity 4

Reading: Talking About Forces



This book is called *Talking About Forces*. We will read to find out more about **forces.**

We will **visualize** what is happening in the pictures and words.



What do you notice on the cover of this book?

This book is about children who make objects start to move, and it tells us how scientists and engineers might explain what happens.

It was a beautiful day at the park! Everywhere you looked, there were kids making things move.

We have many ways of talking about what happens when one thing makes another thing move.

Scientists and **engineers** have their own way of **explaining** what is happening. They talk about **forces**. They say that when one thing makes another thing move, it **exerts** a force on it.

Let's see some examples!

4

Scott pushed Francis on the swing, and Francis moved. She sailed forward in the swing, high into the air.

What would a scientist or engineer say happened here?

5

In my mind, I can picture Scott using his hands on Francis's back to push her on the swing.

Here is what a scientist or engineer would say:

Francis moved because Scott exerted a force on her.

6

Faheem jumped into the wagon and asked for a ride. Francis pulled on the handle of the wagon, and the wagon rolled up the hill with Faheem in it!

What would a scientist or engineer say happened here?

7

P. 6
Pushing is exerting a force.

P. 7
In my mind, I can picture Francis using her hands to pull the wagon up the hill!

Here is what a scientist or engineer would say:

The wagon and Faheem moved because Francis exerted a force on the wagon.

8

Mia and Scott played catch in the field. When it was her turn to throw, Mia threw the ball and it flew away from her.

What would a scientist or engineer say happened here?

9

P. 8
Pulling is exerting a force.

P. 9
In my mind, I can picture Mia using her hands to throw the ball.

Here is what a scientist or engineer would say:

The ball moved because Mia exerted a force on the ball.

10

Another ball was sitting on the grass. Jess ran up and kicked the ball. Wham! The ball bounced away over the grass. Jess scored a goal!

What would a scientist or engineer say happened here?

11

P. 10
Throwing is exerting a force.

P.11
Talk to a partner and tell them how the ball moved.
What did you visualize?

Here is what a scientist or engineer would say:

The ball moved because Jess exerted a force on the ball.

12

The kids had fun playing in the park and making things move. A scientist or engineer would agree that they had fun playing in the park. A scientist or engineer might also say they exerted forces on lots of **objects** in the park!

Scientists and engineers know that any time you see an object start to move, it is because another object exerted a force on it. When you see one object start to move, look for the other object that made it move. Forces always happen between two objects.

13

P. 12
Kicking is exerting a force.

We are really starting to talk like **pinball engineers!**

In the next lesson, we will keep figuring out how **forces** work, so we can get ready to start working on our pinball machines.

End of Lesson

THE LAWRENCE HALL OF SCIENCE
UNIVERSITY OF CALIFORNIA, BERKELEY

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Pushes and Pulls

Unit Question: Why do things move in different ways?

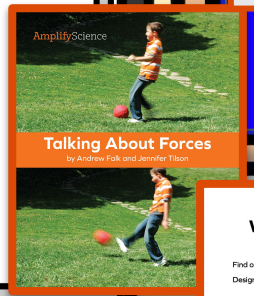
Chapter 1 Question: How do we make a pinball start to move?

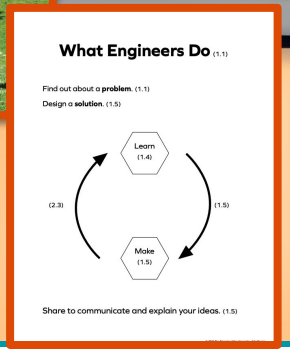
Investigation Question:
What makes an object start to move?

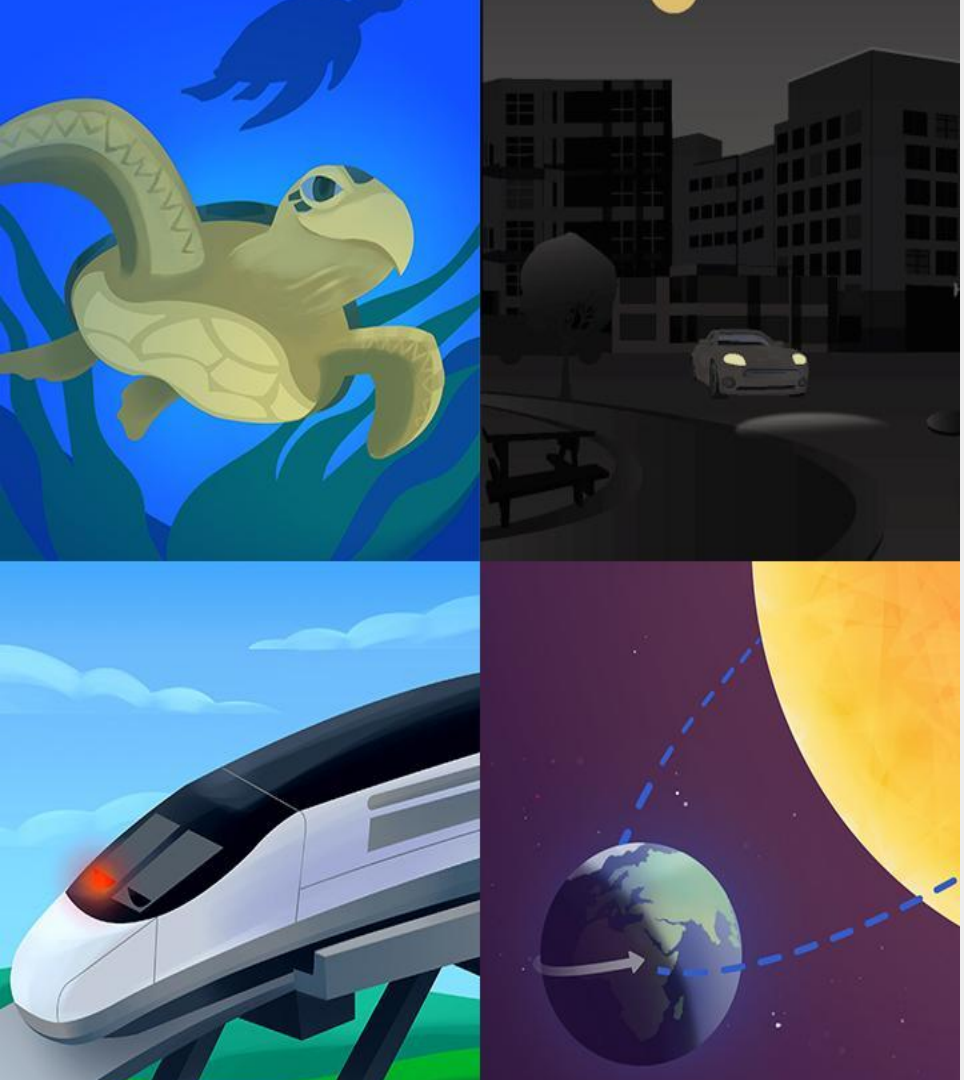
Concept

Vocabulary

- object
- visualize







Plan for the day: Part 2

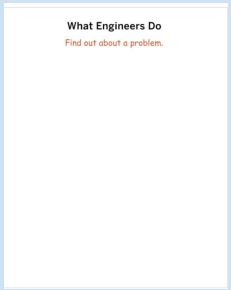
- Teaching and Learning in an Amplify Science Lesson
- Instructional Approach Reflection
- Planning a Lesson
- Closing

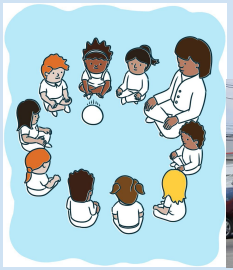
Gathering evidence

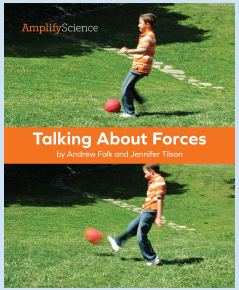
Pushes and Pulls 1.2

How do we make a pinball start to move?

What makes an object start to move?







What have students figured out so far?

Gathering evidence

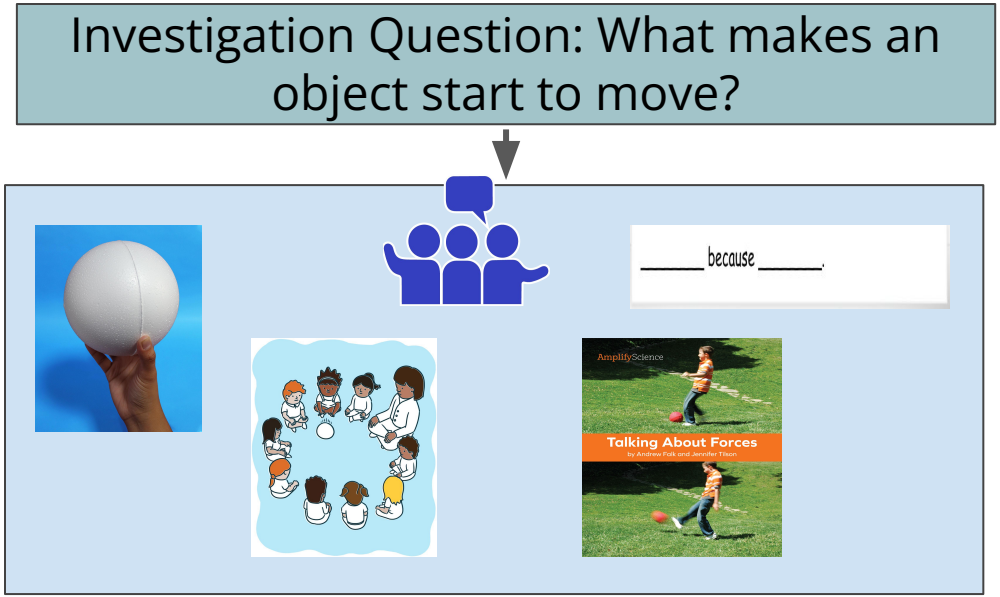
Pushes and Pulls 1.2

- The students talked about what engineers do
- The students played the rugball game
  - Using language to describe the action
- The students visualized things moving
- The students discussed cause and effect using a language frame.
- The students read “Talking About Forces”

Evidence sources work together

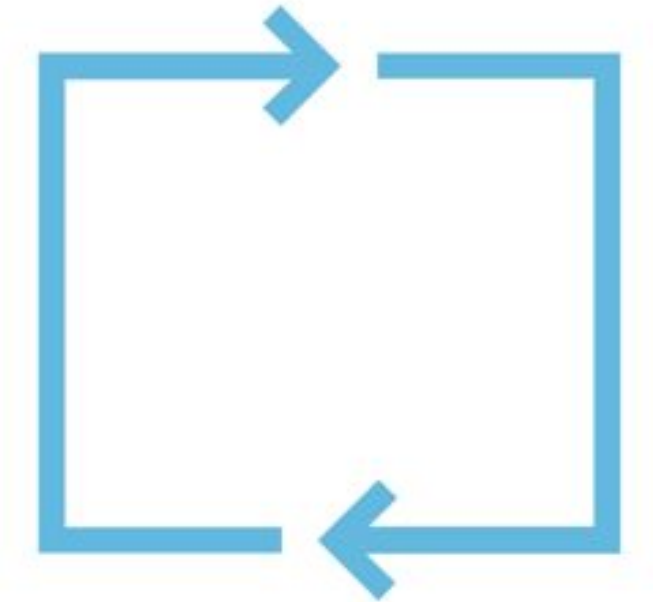
Investigating and discussing observations

How do these activities **work together** to support understanding of what makes an object move?



Multimodal learning

Gathering evidence over multiple lessons



Do,
Talk,
Read,
Write,
Visualize

Evidence sources work together

Teacher tip: Every evidence source plays an important role in student learning. Be sure to teach every activity in order!

Coherence Flowchart

A diagram of student learning

Phenomenon
(Chapter Question)

↓

Investigation Question

↓

Multiple sources of evidence

↓

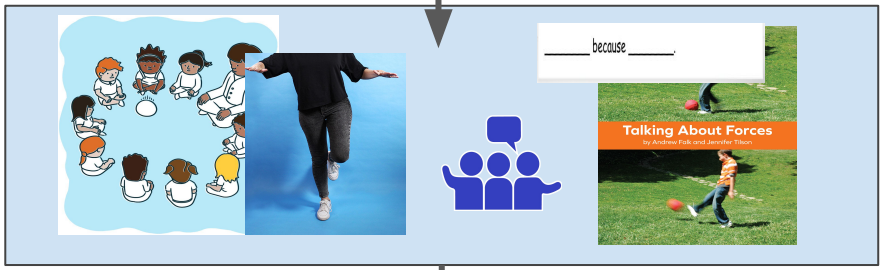
Key Concepts

Chapter Question: How do we make a pinball start to move?

↓

Investigation Question: What makes an object start to move?

↓

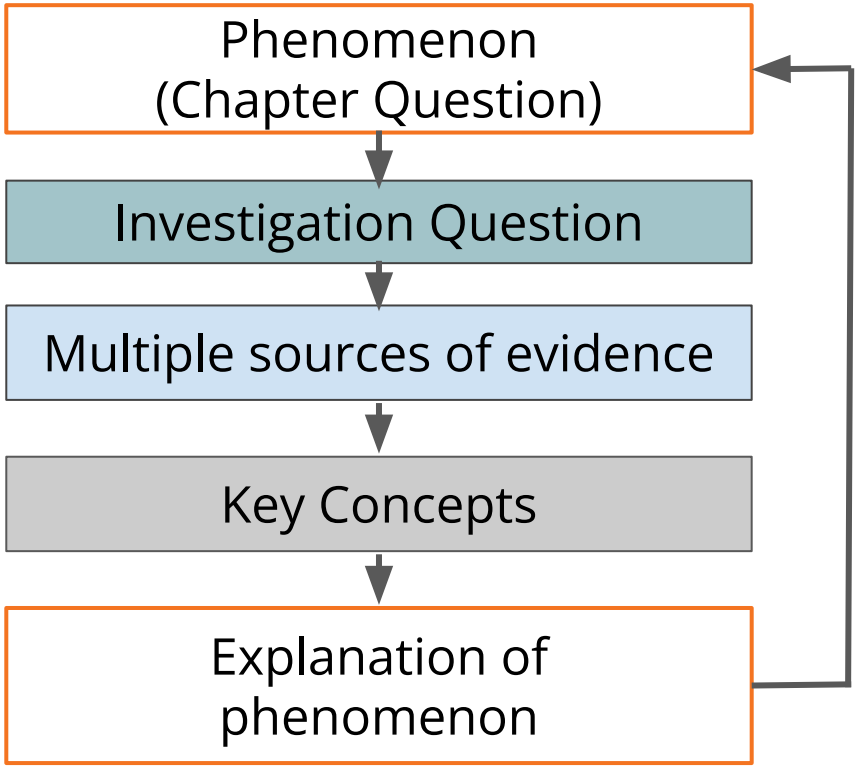


↓

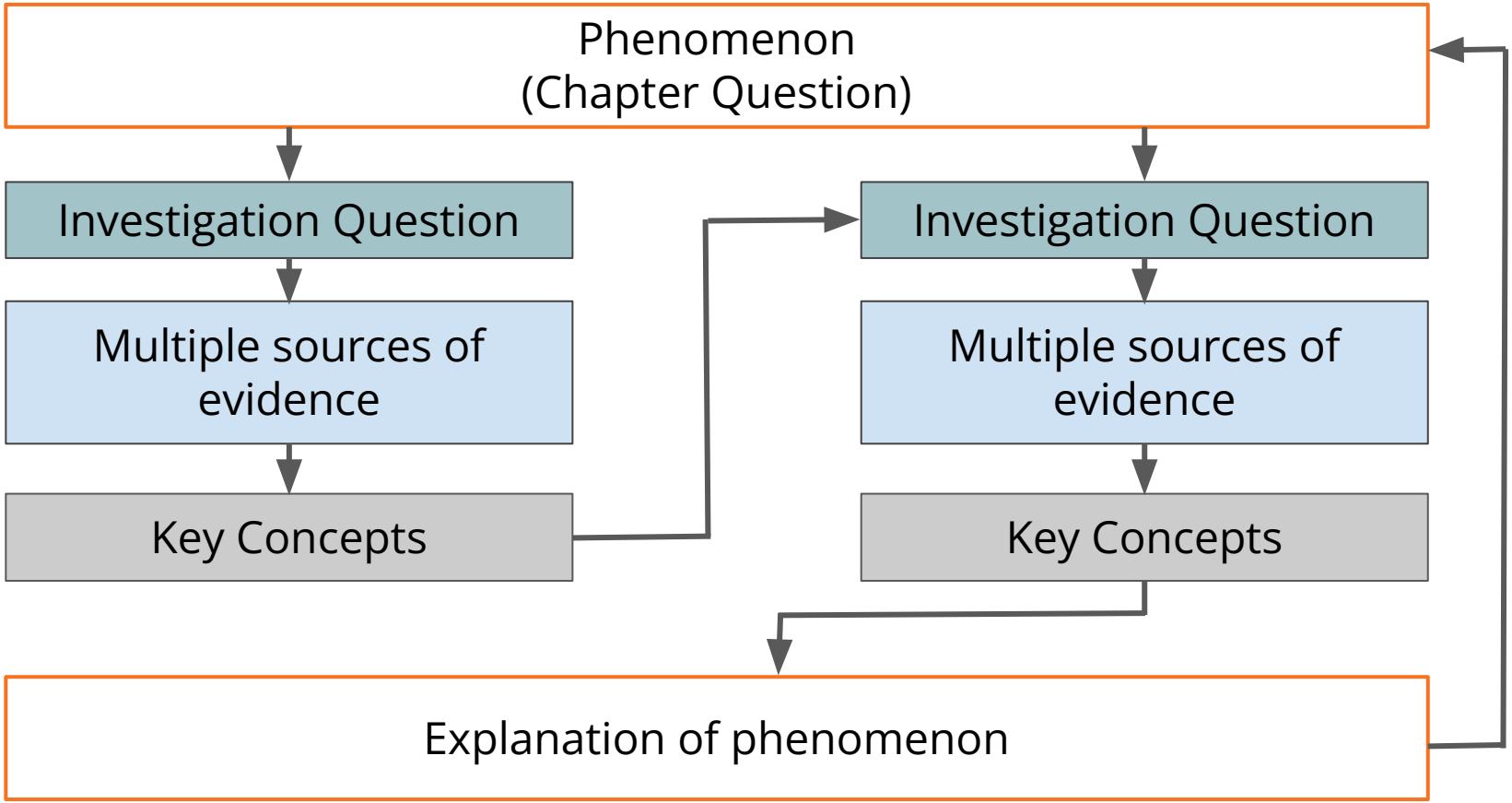
Students figure out: An object starts to move when another object exerts a force on it. Forces happen between two objects..

Coherence Flowchart

A diagram of student learning



Coherence Flowchart



Pushes and Pulls: Designing a Pinball Machine

Unit Design Problem

Problem students work to solve

We want to create a pinball machine that lets us control the way a pinball moves.
How can we create a pinball machine for our class?

Chapter-level Anchor Phenomenon
Chapter 1 Question

Sometimes a pinball starts to move.
How do we make a pinball start to move?

Investigative Phenomena
Investigation Questions

Sometimes an object starts to move.

What makes an object start to move? (1.1-1.4)

Evidence sources and reflection opportunities

- Investigate how to make objects start to move in a classroom Movement Hunt (1.1)
- Investigate making an object start to move in full-class Rugball routine (1.2)
- Use recognizable images of objects moving to visualize movement (1.2)
- Practice using cause and effect to explain everyday scenarios (1.2)
- Read Talking About Forces (1.2)
- Investigate how to make an object move by exerting a force on it using Forces Investigation materials (1.3)
- Use Explanation Language Frame to explain forces and movement in Forces Investigation (1.3)

Key concepts

- An object starts to move when another object exerts a force on it. (1.3)
- Forces happen between two objects. (1.3)

Application of key concepts to problem

- Design launchers to make a pinball start to move in individual student Box Models (1.4)
- Diagram Box Model launcher design (1.4)
- Add a launcher to make the pinball start to move in Class Pinball Machine (1.5)
- Shared Writing to explain the Chapter 1 Question (1.5)
- Revisit Talking About Forces to use Explanation Language Frame to explain how objects move in the text (1.5)

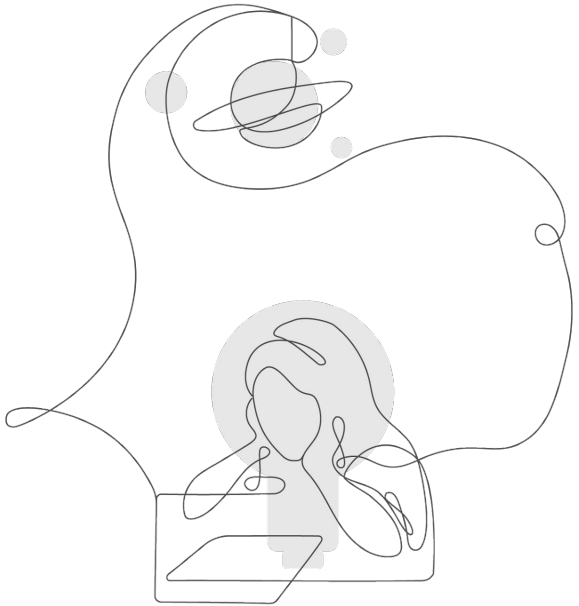
Explanation that students can make to answer the Chapter 1 Question

To make our pinball start to move, we must exert a force on the pinball. We can use a rubber band launcher to exert a force on the pinball.

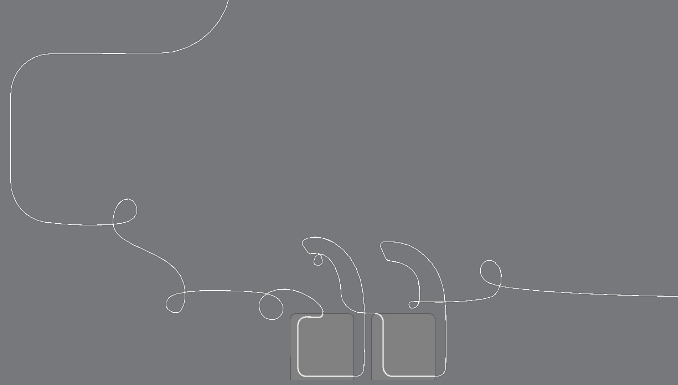
Explore the Coherence Flowchart

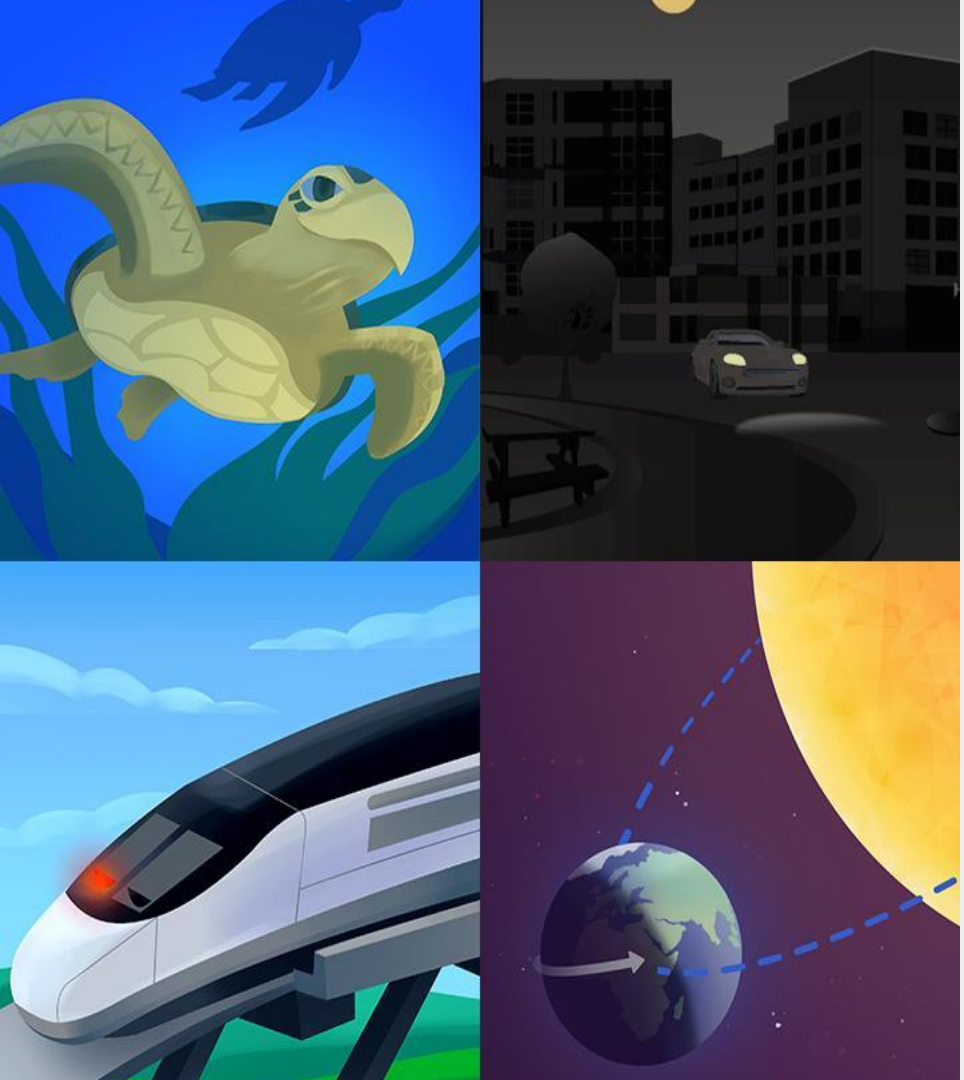
Skim the Chapter 1 Coherence Flowchart of your first unit.

How can the Coherence Flowchart serve you as a planning tool as you begin teaching Amplify Science?



Questions?





Plan for the day: Part 2

- Teaching and Learning in an Amplify Science Lesson
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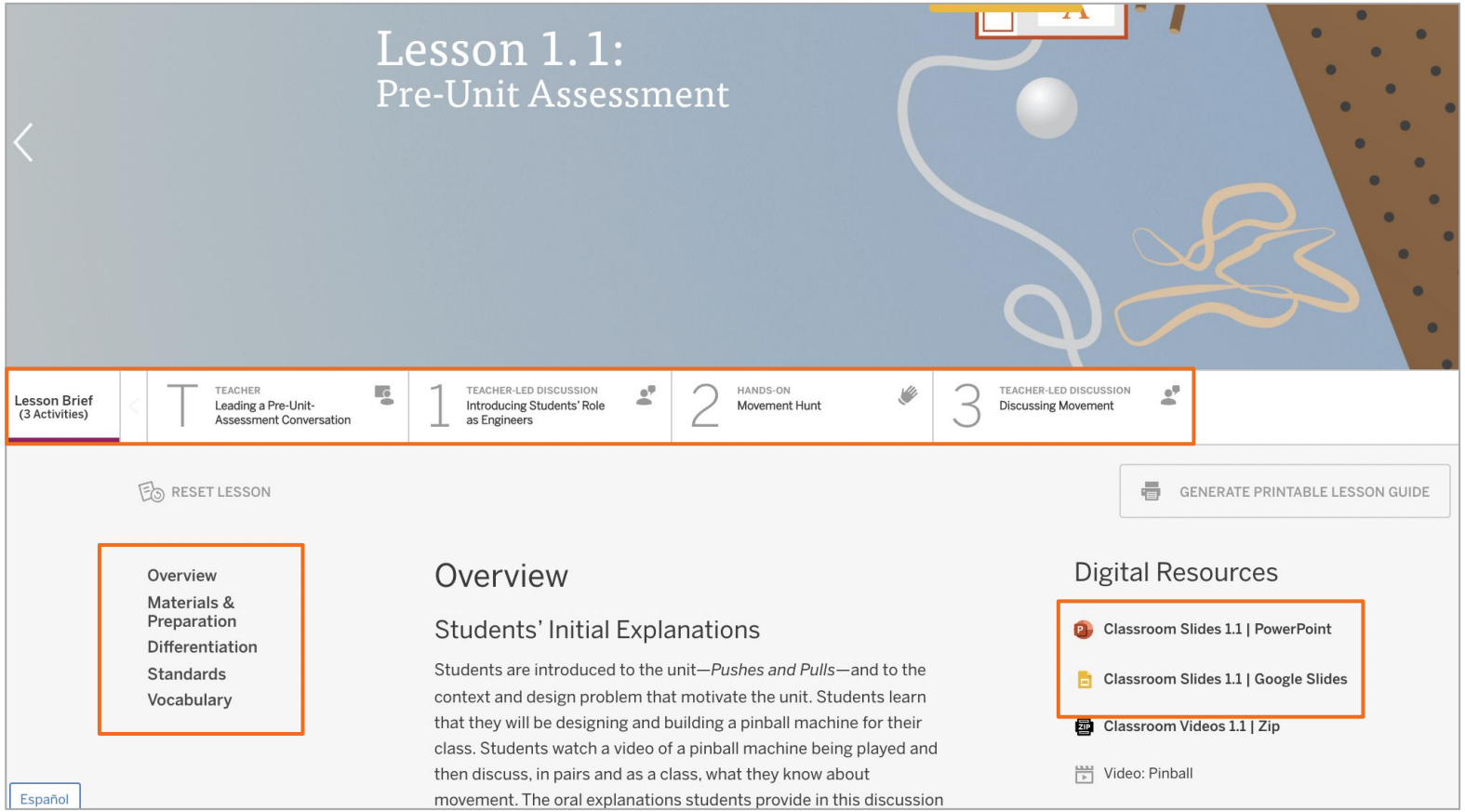
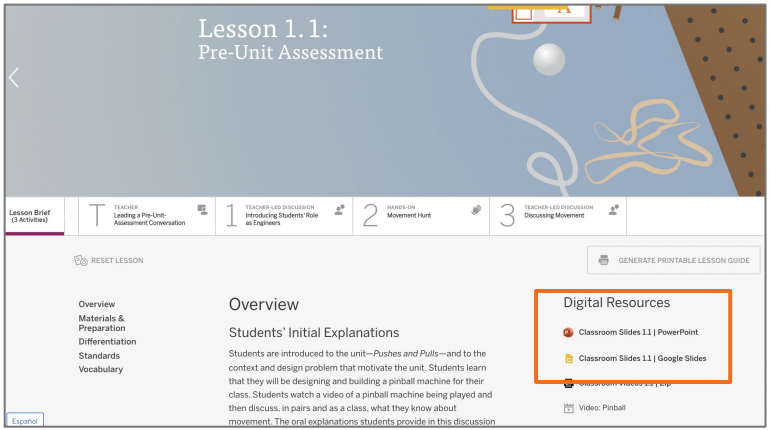
Navigate to the Lesson Brief



Preparing to teach

Classroom Slides

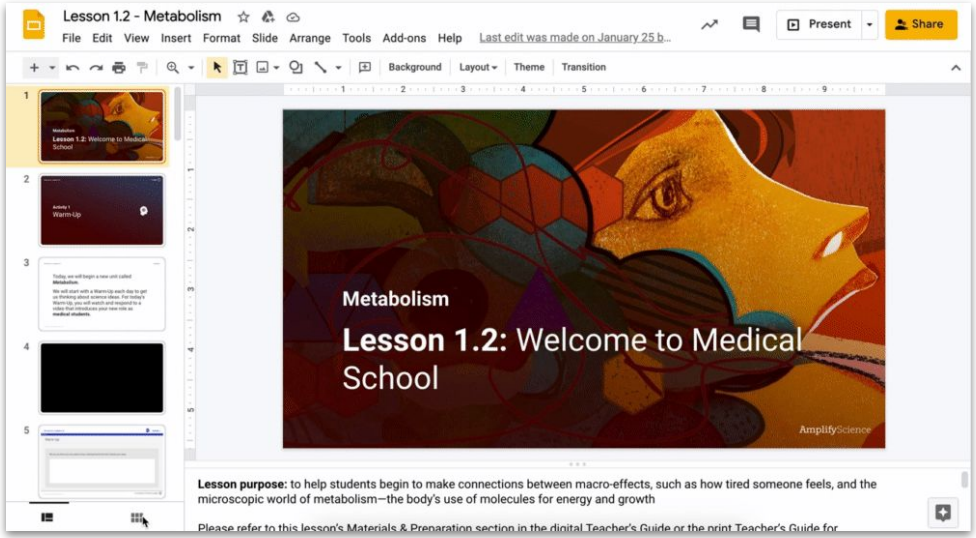
1. Open the **Classroom Slides** under the **Digital Resources**.
2. Read through the Classroom Slides including the **presenter notes** to gain a better understanding of the lesson.
3. **Consider:**
    - What features of the Classroom Slides will support you in teaching this lesson?



Using Classroom Slides as a planning tool

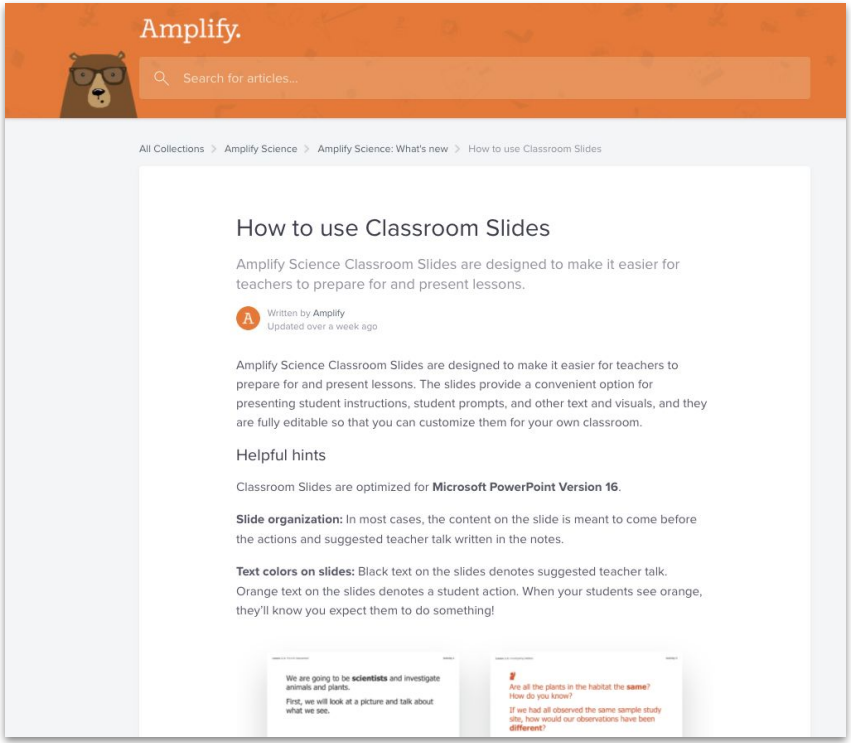
Teacher tip: Classroom Slides are a great visual summary of a lesson. Many teachers download and flip through a lesson's Classroom Slides deck to preview what happens in the lesson.

This is a useful first step for preparing to teach the lesson.



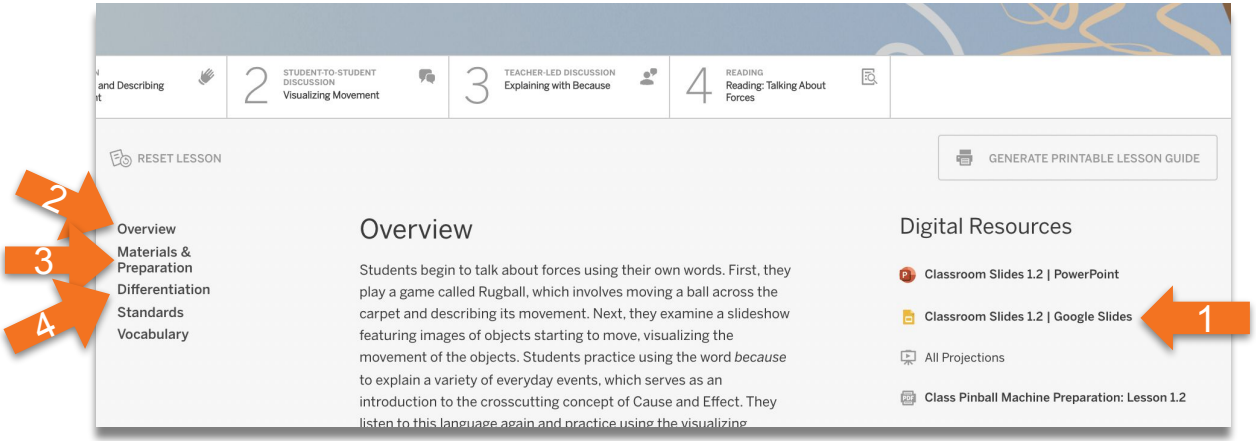
Teaching with Classroom Slides

This detailed guide on the Amplify Science Help Site includes tips for teaching with Classroom Slides and information about the different symbols and activity types you'll find in the slide deck.



4 Steps for Starting Your Lesson

1. Download **Classroom Slides** and review them.
2. Read the **Overview**.
3. Review the **Materials & Preparation** document.
4. Read the **Differentiation** document.



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

Lesson 1.2	Activity Overview	
What is the purpose of this lesson? The purpose of this lesson is to connect students' discoveries about movement with scientific language, which, in turn, prepares them for explaining forces when they build their Box Models to test how a pinball machine works.	**Activity 1 (10 min)**	**Exploring and Describing Movement**
What will students learn? •An object starts to move when another object exerts a force on it •Visualizing is making a picture in your mind and it can be used to notice forces. •Scientists often talk about how things are connected. •Scientists and engineers search for cause and effect relationships to explain natural events.	**Activity 2 (10 min)**	**Visualizing Movement**
3-D Statement (identify SEP, CCC, and DCI): Students observe ball movements to construct explanations through discussion, and by using a *because* Explanation Language Frame, to think about *cause and effect*. They obtain information from *Talking About Forces* about how scientists describe pushes and pulls using scientific language (cause and effect).	**Activity 3 (10 min)**	**Explaining with Because**
Student Resources: n/a	**Activity 4 (15 min)**	**4: Reading: Talking About Forces**
Assessment Opportunities: On-The-Fly, Activity 2	**Activity 5 (## min)**	

Remember to plan for…

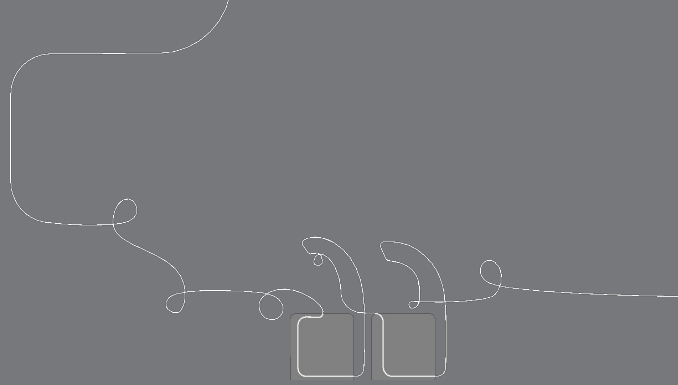
Student work:

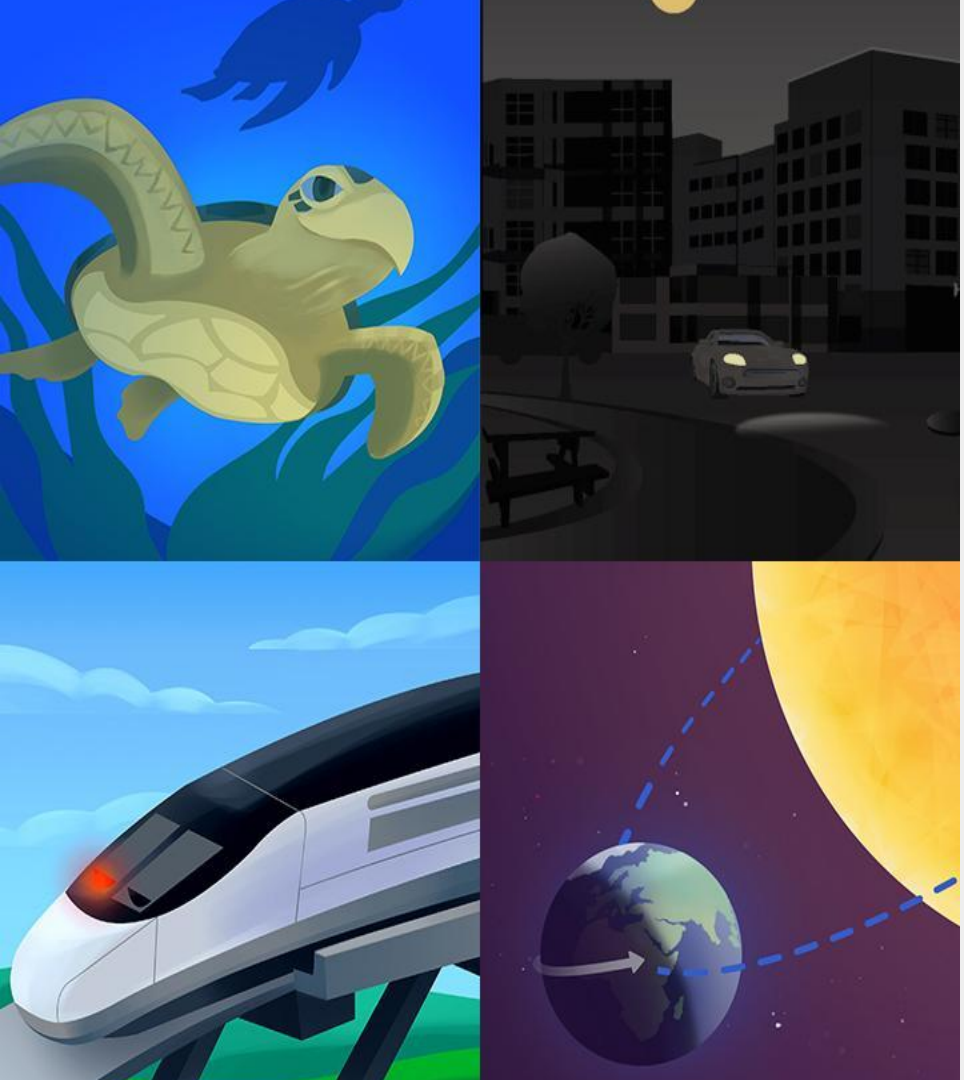
- How do you plan to collect evidence of student work?

Differentiation:

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

Questions?





Plan for the day: Part 2

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Additional resources

Welcome, caregivers!

—

We hope you enjoy learning more about Amplify Science and what students are learning in science this year.

Para acceder a este sitio en español haga clic aquí.

Amplify welcomes you and your learner to the Science program for the new school year. We are very excited to

TOP RATED BY EDREPORTS

Grades 6-8

[Caregivers]

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

Welcome to Amplify Science!

This site contains supporting resources designed for the LAUSD Amplify Science adoption for grades TK–8.

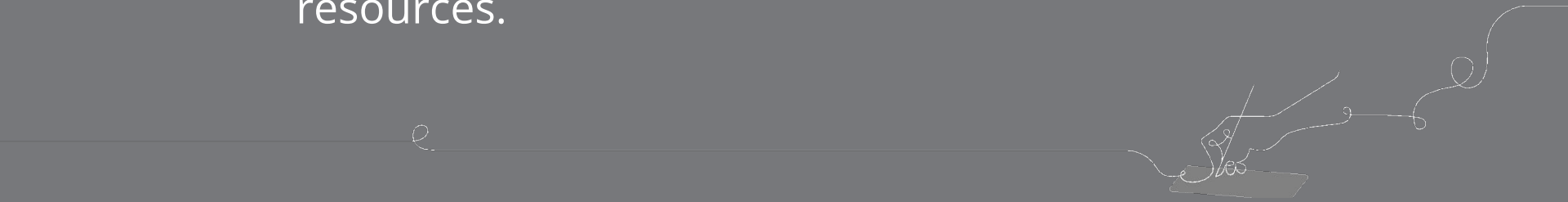
- Access the Amplify Science Program Hub (To help orient you to the new design, watch this video and view this reference guide.)
- Find out more about Amplify Science@Home
- Share the Caregiver Hub (Eng/Span) with your families
- For LAUSD ES Teachers- Amplify Science & Benchmark Advance Crosswalk
- Instructional guidance for a Responsive Relaunch of Amplify Science in 21-22

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

Overarching goals

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

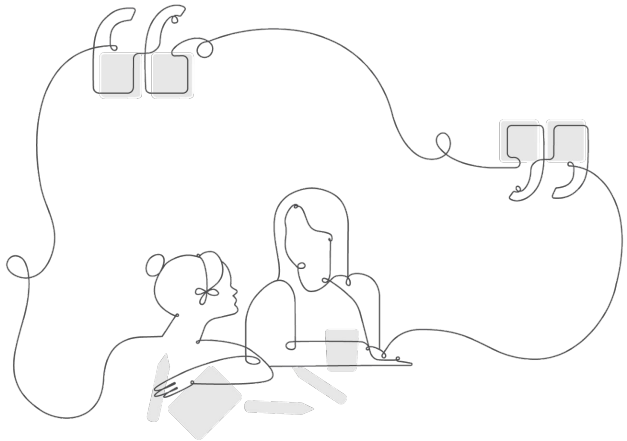
- ❏ Describe what teaching and learning look like in Amplify Science.
- ❏ Prepare to teach using Amplify Science resources.



Onsite Upcoming Professional Development!

Part 3: Unit 2 - with a focus on assessments

- December 3 (grades 3-6)
- December 10 (grades K-2)



Additional resources and ongoing support

Customer Care

Seek information specific to enrollment and rosters, technical support, materials and kits, and teaching support, weekdays 7AM-10PM EST and weekends 10AM-6PM EST.

help@amplify.com

800-823-1969

Amplify Chat

Please provide feedback!

Type:

Strengthen

Session title:

Unit Internalization / Guided Planning

Professional Learning Specialist name:

Jolene Hori

jhori@amplify.com

Please provide feedback!

LAUSD SURVEY

Presenter name:

Workshop title:

Part 1: Unit

Part 2: Guided Planning (Planning for a Lesson)

Modality:

Remote