Amplify Science

Unit Internalization / Guided Planning

Grade 2, Unit 2: Properties of Materials

Part 1

School/District Name: LAUSD Date: Presented by:





Ice Breaker!

Who do we have in the room today?

- Question 1: Which aspects of implementing the Standard Amplify Science curriculum are you most excited or hopeful about?
- **Question 2:** What do you feel most hesitant about?



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.



my.amplify.com

Amplify. MY ACCOUNT ADMIN REPORTS

LAUNCH PROGRAMS 💯 TERIN NGO 🔕

(i) mCLASS Educators: To view or make changes to your account go to mclass.amplify.com.

Hi, Terin



Programs & Licenses

Account Settings

Help Center 🗹



CKLA Hub



CKLA Resource Site



mCLASS Assessment

mCLASS Reporting



Reading 6-8



Reading K-5



Science



Vocabulary













Amplify. 12

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 *Inheritance and Traits.*
- 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
- Unit Internalization
- Additional Resources
- Closing



Amplify Science

Course curriculum structure

 Grade K Needs of Plants and Animals Pushes and Pulls Sunlight and Weather 	Grade 1Animal and Plant DefensesLight and SoundSpinning Earth	 Grade 2 Plant and Animal Relationships Properties of Materials Changing Landforms 	Key takeaways: • There are 22 lessons
Grade 3 Balancing Forces Inheritance and Traits Environments and Survival Weather and Climate 	Grade 4 • Energy Conversions • Vision and Light • Earth's Features • Waves, Energy, and Information	 Grade 5 Patterns of Earth and Sky Modeling Matter The Earth System Ecosystem Restoration 	 Lessons at grades 2-5 are 60 minutes long

Year at a Glance: Grade 2



Plants and Animal Relationships

Domain: Life Science

Unit type: Investigation

Student role: Plant scientists

Domain: Physical Science

Unit type: Engineering

Student role: Glue

Design

engineers

Domain: Earth and Space Science

Unit type: Modeling

Student role: Geologists



Properties of Matter



Changing Landforms

What are the digital components of Amplify Science Elementary?



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 Micrositehttps://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

	New! Lesson Prep Videos		
Program Introduction	Unit 1		
Learn more about Amplify Science	Cande W. Neede of Diante and Baimale		
LAUSD Training Sessions- Reference Materials	Grade K- Needs of Plants and Animals	Classroom Kits	
New! Lesson Prep Videos	Grade 1- Animals and Plant Defenses >		
Remote Learning Resources		Built for a class of	
Onboarding: What to expect	Grade 2- Plant and Animal Relationships >	36 students, with	
Onboarding videos Unpacking your first hands-on materials kit Looking for help?	Grade 3- Balancing Forces >	consumables for	
	Grade 4- Energy Conversions >		
	Grade 5- Patterns of Earth and Sky >		

LAUSD Schoology: Unit 1, 3-5 Lesson Prep Videos



Hands On Material Organization

Directions					
1. Open the Digital	Lesson Guides	Only page 7 from	m the Unit Landir	ng page or go the Print TE to page 31. (Chapter 1 Activities)	
2. Look for the less	ons with Hands	s On.			
HANDS-ON 🖋					
3. Note in the table	below.				
4. Review the mate	erials and prepa	ration to determine	ne if it can be pre	epared prior to the lesson or on the day of the lesson.	
5. Use this same p	rocedure for ea	ch Chapter. (Go	to the Chapter Ad	ctivities 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
-					
2					
		- 10-			

- Open Your Lesson Guides Only
- Start with **Chapter 1** and look for the **hands icon**
- Go into the lesson materials and prep

nit?

🔒 Printable Teacher Guide 🔺

Read more >

Chapters

LESSON 1.1

LESSON 1.4

Evidence

Pre-Unit Assessment

O Full Teacher's Guide

Lesson Guides Only

Unit Overview

able Resour

Teacher References ∨

Offline Preparation

Chapters





Questions?





Plan for the day: Part 1

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

NGSS - Three dimensional learning

Evaluate your knowledge

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





Science and Engineering Practices

- 1. Asking questions (for science) and defining problems (for ASKING A engineering)
 Developing and using models
 Planning and carrying out investigations

 - 4. Analyzing and interpreting data5. Using mathematics and computational thinking
 - 6. Constructing explanations (for science) and designing solutions (for engineering)
 - 7. Engaging in argument from evidence
 - 8. Obtaining, evaluating, and communicating information





Three-dimensional learning Reflection

In the video, how did students engage in three-dimensional learning to think like scientists?

Lesson 3.2

Students use a model to figure out the relationship between different parts of a habitat system in order to construct their understanding about how animals can help move seeds around a habitat (systems and system models).



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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.


Plan for the day: Part 1

- Introduction and Framing
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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
Chemical reactions	There's a reddish-brown substance in a town's tap water.

Next Generation Science Standards How might learning be different?

Topic-based	Phenomenon-based			
Chemical reactions	There's a reddish-brown substance in a town's tap water.			
Electric circuits	A flashlight won't turn on, even though it used to work.			
Natural selection	A population of newts has become more poisonous over time.			

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.



The principal heard that we're starting the *Properties of Materials* unit and thinks we can **help the school** with a **problem**.

I'll read a letter that the principal wrote us. As I read, think about what the problem is and what we will send the principal at the end of the unit.

∨ ∧ ⊠ ☆ 茴

Dear Second Grade Students,

Teachers have told me they are worried about some of the supplies at our school. One of the supplies we need to improve is our glue. I talked with a few teachers, and we decided that your second grade class will take on the challenge of designing a new glue for our school.

For the next few weeks, you will become glue engineers. You will make a new glue that can be shared with other classrooms. You will need to learn about glue and the ingredients needed to make glue. You will create your own glue recipes and test them. After that, you will use the evidence from your tests to make your glue even better.

Once you have a final recipe, you will share the recipe with your teacher and me. Thank you so much for your help!

Sincerely,

Your Principal

An **engineer** is a person who uses science knowledge to design something in order to **solve a problem**.

The problem we need to solve is **how to make a glue for our school**. We will take on the role of **glue engineers** as we design the glue.

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
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- Additional Resources
- Closing

K-5 Navigation structure

Year (each year includes 3-4 units)



Let's Go Live!



Amplify.

Navigation summary

- 1. CLICK the caret to select your grade-level.
- 2. Select your first unit.
 - a. You are now on the Unit Landing Page.
- 3. Expand the **Planning for the unit** menu.
 - a. Or scroll down below the lesson buttons.

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



Printable Resources

Unit Map

Planning for the Unit ^

Progress Build

Getting Ready to Teach

Science Background

Standards at a Glance

Teacher References ^

Lesson Overview

3-D Statements Assessment System

Assessments Books in This Unit

Apps in This Unit

Extensions **Offline Preparation**

Standards and Goals

Embedded Formative

Opportunities for Unit

Compilation

Materials and Preparation

- What's How can medicin 3-D Assessment Objectives **Coherence Flowcharts** 8 be esser propertie Copymaster Compilation **Crosscutting Concept Tracker** Read m Eliciting and Leveraging Students' Prior Knowledge, Investigation Notebook Personal Experiences, and Cultural Backgrounds Cha NGSS Information for Parents and Guardians
 - Print Materials (11" x 17") 63



Planning for the Unit ~ Teacher References ✓ **Offline Preparation**

be essential to life as we know i properties of its ingredients. In Read more >

medicines, paints, and building

Chapters

LESSON 1.1

Chapter 1: How can y

Pre-Unit Asses



Supporting Claims with Evidence

Printable Resources

- Multi-Language Glossary
- Print Materials (8.5" x 11")



Chapt







LESSON 1.5 Observing and Testing Ingredients



Observing Properties of

LESSON 1.3



LESSON 1.6 Evaluating Sticky Test Evidence

Key Unit Documents for Unit Planning



Printable Resources

Unit Map

Extensions

Planning for the Unit ^

Progress Build

Printable Resources What's How can medicin 3-D Assessment Objectives **Coherence Flowcharts** 8 be esser propertie Copymaster Compilation **Crosscutting Concept Tracker** Eliciting and Leveraging Students' Prior Knowledge, Investigation Notebook Personal Experiences, and Cultural Backgrounds Multi-Language Glossary NGSS Information for Parents and Guardians Print Materials (8.5" x 11") Print Materials (11" x 17") 63



LESSON 1.4 Supporting Claims with Evidence

LESSON 1.5 Observing and Testing Ingredients



Evaluating Sticky Test Evidence









Planning for the Unit ~ Teacher References ✓ **Offline Preparation**



medicines, paints, and building

be essential to life as we know i

properties of its ingredients. In

Read more >





Supporting Claims with Evidence

Core Unit Planning & Internalization

Unit Title:

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	Student Role:
your unit?	3
 Unit Question:	Relationship between the Unit Phenomenon and Unit
4	Question:

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

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

Unit Guide resources:

- Unit Overview
- Unit Map

1

6

7

• 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:

Properties of Materials

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	Student Role:		
How can we design a glue mixture that is better than what the school use now?	Glue Engineers		
Unit Question:	Relationship between the Unit Phenomenon and Unit		
How can you design a mixture for a certain purpose?	Question: In designing and creating a glue for school, students learn that the properties of a mixture may be a combination of the properties of the inaredients.		
By the end of the unit, students figure out	3		
Students figure out that the properties of a minimage ingredients.	xture may be the properties of the		
How do students engage with three-dimensional learning to figure out the p	henomenon/real-world problem in your unit?		
Students investigate and then analyze and i different properties of materials	nterpret data to determine		

1









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







Changing Landforms

Plant and Animal Relationships

Properties of Materials





ВАСК



Properties of Materials

Cience Practice Tools

1	2	3	4	5	6	7	8	9
.6 Sticky Test esults	2.2 Before and After	2.2 Can It Change Back?	2.3 Cornstarch Test Results	3.3 Strength Test Results	4.3 Ingredient Properties 1	4.3 Ingredient Properties 2	4.3 Mystery Mixtures 1	4.3 Mystery Mixtures 2
Student B	ooks							
1	2	2	Л	5	6			
	~	3		9	•			
an You Change It ack?	Handbook of Interesting Ingredients	Jelly Bean Engineer	Jess Makes Hair Gel	What If Rain Boots Were Made of Paper?	Ideas and Inventors			
📔 Libros par	a estudiantes							
	2	2		-				
	2	3	4	•	D			
Se puede revertir?	Manual de ingredientes interesantes	Ingeniero de jelly beans	Jess prepara gel para el cabello	¿Qué sucedería si las botas para lluvia estuvieran hechas de papel?	Ideas y personas que inventan cosas			



HANDBOOK OF Interesting Ingredients

by Jacqueline Barbe



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

Caregivers

LAUSD Micrositehttps://amplify.com/lausd-science

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Plan for the day: Part 1

- Introduction and Framing
- NGSS & 3D Learning
- Phenomenon-based Instruction
- 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 *Inheritance and Traits*.
- Internalize the unit and apply your new understanding to plan for the diverse needs of your classroom and students

Closing reflection

Based on our work in Part 1, share:

Head: something you'll keep in mind

Heart: something you're feeling

Feet: something you're planning to do

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





Amplify Chat



Please provide feedback!

Type:

Strengthen

Session title:

Unit Internalization / Guided Planning (Part 2)

Professional Learning Specialist name:

Insert name

(insert email, if you would like)

Welcome to Amplify Science!

or use Demo Account

- 1. Go to learning.amplify.com
- 2. Select Log in with Amplify
- If you're already logged in with other Google accounts, click
 Use another account
- 4. Enter teacher demo account credentials
 - xxxxxxx@pd.tryamplify.net
 - Password: xxxx
- 5. Explore as we wait to begin

Do Now: Log in through your Schoology account

Welcome to Amplify



Amplify Science

Standard Curriculum Relaunch / Guided Planning

Grade 2: Properties of Materials

Part 2

School/District Name: LAUSD Date:, Presented by:









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?


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- **Be fully present:** Unplug and immerse yourself in the moment.
- **Physical needs:** Stand up, get water, take breaks.

Part 2: Guided Planning





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

Properties of Materials

Problem: How can we design a glue mixture that is better than what the school uses now?

Role: glue engineers

Students take on the role of glue engineers and use engineering design practices to create a glue for use at their school.

Coherent Storylines



Can heating an ingredient make a better glue?

How can you

make a sticky glue? What ingredients can be used to make a glue that is sticky and strong?



What is the glue recipe that best meets our design goals?

Properties of Materials

Unit Question: How can you design a mixture for a certain purpose?

Students conduct hands-on investigations to observe properties of a variety of possible glue ingredients and learn how certain materials respond to heating and cooling; they engage in digital card sorts to apply their understanding of how properties of ingredients affect properties of mixtures; and they search for useful information about each ingredient in the unit's reference book

Explaining the phenomenon: Science Concepts

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



Explaining the phenomenon: Science Concepts

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

Progress Build

Properties of Materials

Assumed prior knowledge (preconceptions): It is expected that students will have a basic familiarity with the idea that stuff is made from other stuff (chocolate milk is made from milk and chocolate sauce; a desk is made of wood and metal; a toy is made of metal and plastic).

Level 4





Beginning the Unit

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

Chapters

Chapter 1: How can you make a sticky glue? ①







LESSON 1.1 Pre-Unit Assessment

LESSON 1.2 What If Rain Boots Were Made of Paper?

LESSON 1.3 Observing Properties of Glue



LESSON 1.4 Supporting Claims with Evidence



LESSON 1.5 Observing and Testing Ingredients



LESSON 1.6 Evaluating Sticky Test Evidence



LESSON 1.7 Jelly Bean Engineer



LESSON 1.8 Using Evidence to Plan Glues



LESSON 1.9 Making Our First Glue



Properties of Mate



Name [.]	Date:	
	Dute.	LESSON GUIDE
Properties of Materials Family Con	nections Homework	
 Choose a member of your household and te investigating in science class. Ask them about their experiences, ideas, and 	II them about what we are d questions related to our	es
investigations. 3. Write notes about what you learn.		d Ideas pymaster
Summary of our investigation you can share: In science class, we are working as glue engineers to figure out how to design a glue mixture that meets a set of design goals. We will be answering the question, <i>How can you design a mixture for a certain purpose</i> ?		tudents' Pre- ₂s of on Notebook
 Ask questions such as: What does our investigation make you th Do you have any memories, stories, expe something like what we're investigating? What have you heard or learned about the What do you wonder about what we are i 	ink of? rtise, or experiences about ese topics? nvestigating?	2–5 nnections Prior and Cultural
Write notes here about what you learn:		
with different properties.		
Students learn:		Am

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Beginning the Unit

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

Chapters

Chapter 1: How can you make a sticky glue? ①







LESSON 1.1 Pre-Unit Assessment

LESSON 1.2 What If Rain Boots Were Made of Paper?

LESSON 1.3 Observing Properties of Glue



LESSON 1.4 Supporting Claims with Evidence



LESSON 1.5 Observing and Testing Ingredients



LESSON 1.6 Evaluating Sticky Test Evidence



LESSON 1.7 Jelly Bean Engineer



LESSON 1.8 Using Evidence to Plan Glues



LESSON 1.9 Making Our First Glue



Preparing for Lesson 1.2

Lesson Brief

Read the **Overview**.

Lesson at a Glance - Pacing

Lesson at a Glance

1: Introducing the Design Challenge 10 min.) A fictional letter from the principal introduces students to a problem for which they must design a solution. Students receive their Investigation Notebooks, learn some of the ways that engineers use notebooks, and read important safety guidelines they will use when they conduct investigations throughout the unit.

2: Predicting as a Reading Strateg / (15 min.) Students are introduced to the barding comprehension strategy of predicting and the teacher models how to use the strategy in reading the first pages of the book.

3: Reading: What If Rain Boots Were Made of Paper (25 min.) Students apply the strategy of predicting as they read the unit's first book, What If Rain Boots Were Made of Paper?, with a partner. This activity provides an On-the-Fly Assessment of students' initial thinking about predicting.

4: Reflecting on Materials and Propertie (5 min.) Students reflect on key vocabulary and concepts that were introduced and explored throughout the lesson.

5: Keeping Track of New Ideas (5 min.) Students are introduced to the purpose of posting new things the class learns.

Preparing for Lesson 1.2

Lesson Brief

Review the Materials & Preparation document.



Digital Resources

- Classroom Slides 1.2 | PowerPoint
- Classroom Slides 1.2 | Google Slides
- All Projections
- Letter from the Principal
- D Partner Reading Guidelines
- Properties of Materials Investigation Notebook, pages 2–5

Preparing for Lesson 1.2

Lesson Brief

Review the Materials & Preparation document.

Materials & Preparation

Materials

For the Classroom Wall

- Unit Question: How can you design a mixture for a certain purpose?
- section headers: Key Concepts, Vocabulary
- key concept: Properties include how materials smell, look, taste, feel, and sound.
- · vocabulary: design, material, predict, property

For the Class

- 1 sheet of chart paper*
- masking tape*
- marker*
- 1 copy of What If Rain Boots Were Made of Paper?

For Each Pair of Students

• 1 copy of What If Rain Boots Were Made of Paper?

For Each Student

• Properties of Materials Investigation Notebook (pages 1-5)

*teacher provided

Preparation

Before the Day of the Lesson

1. Gather the following materials for the classroom wall:

- Unit Question: How can you design a mixture for a certain purpose?
- section headers: Key Concepts, Vocabulary
- key concept: Properties include how materials smell, look, taste, feel, and sound.
- vocabulary: design, predict, material, property
- Read What If Rain Boots Were Made of Paper? Familiarize yourself with the book that students will read in this lesson.
- 3. Create the Partner Reading Guidelines. On chart paper, create these guidelines. (See Digital Resources for what the poster should look like.) Keep the guidelines posted throughout the unit. If you don't have enough wall space, you'll need to take the poster down and repost it during the reading lessons. Alternatively, you could download the PDF and project the guidelines in each reading lesson.
- 4. Review the Letter from the Principal (in Digital Resources). The engineering design challenge that the class sets out to solve in this unit is how to make a good glue. In order to set up a problem for which making a good glue is the solution, we have provided a model letter from a school principal, describing the need for this glue and requesting help from the students. Having a purpose for designing glue adds authenticity to the activity and mirrors what engineers do—solve problems by designing things. Some teachers may choose to provide even more context by creating their own projectable letter on school letterhead and using the actual principal's name: they may even invite the principal to come talk to the class. Others choose to handle it as a problem a fictional school has—how would they solve it? Decide how you want to handle the problem.

Properties of Materials Classroom Wall





Grade 2 | Properties of Materials

Lesson 1.2: What If Rain Boots Were Made of Paper?



Activity 1 Introducing the Design Challenge



Unit Question

How can you design a mixture for a certain purpose?

The principal heard that we're starting the *Properties of Materials* unit and thinks we can **help the school** with a **problem**.

I'll read a letter that the principal wrote us. As I read, think about what the problem is and what we will send the principal at the end of the unit.

~ ∧ ♡ ☆ 茴

Dear Second Grade Students,

Teachers have told me they are worried about some of the supplies at our school. One of the supplies we need to improve is our glue. I talked with a few teachers, and we decided that your second grade class will take on the challenge of designing a new glue for our school.

For the next few weeks, you will become glue engineers. You will make a new glue that can be shared with other classrooms. You will need to learn about glue and the ingredients needed to make glue. You will create your own glue recipes and test them. After that, you will use the evidence from your tests to make your glue even better.

Once you have a final recipe, you will share the recipe with your teacher and me. Thank you so much for your help!

Sincerely,

Your Principal

An **engineer** is a person who uses science knowledge to design something in order to **solve a problem**.

The problem we need to solve is **how to make a glue for our school**. We will take on the role of **glue engineers** as we design the glue.



to try to make something new that solves a problem



Properties of Materials: Designing Glue

Engineers use **notebooks** to keep track of what they do and what they observe. They write and draw about the ideas they have and what they have learned.

Investigation Notebook



Activity 2 Predicting as a Reading Strategy



We will investigate this question over the next few lessons:

What can be noticed about different materials?

In this lesson, we will be **reading** about **different materials**.

Readers often use a **strategy** called **predicting** to help them understand what they are about to read. Predicting is a strategy that you probably use a lot.



to use what you already know to decide what you think might happen

AmplifyScience

What If Rain Boots Were Made of Paper?

by Kevin Beals and P. David Pearson illustrated by Tim Haggerty



Before we read this book, let's practice **predicting** what the book will be about or what we'll learn.

We can use the **title**, **pictures**, **text**, **format**, and **story elements**.

AmplifyScience

What If Rain Boots Were Made of Paper?

by Kevin Beals and P. David Pearson illustrated by Tim Haggerty



What do you **predict** that the book might be about?



I'll read page 3 out loud.

As I read, I'll think about ways I might change my prediction.



Paper rain boots would be a problem. That's why rain boots are made of **rubber**.

- Rubber bends, so it's easy to slip rain boots on our feet.
- Rubber is strong, so it lasts a long time.
- Rubber keeps out water, so our feet stay dry.

Rubber is a great **material** for making rain boots. Maybe we should make everything out of rubber! Now I'll read page 4.

Let's think about what we are learning as we read and make a new prediction. **Predicting** helps readers understand new ideas and think about what they are going to learn or what might happen next.

Readers don't just predict before they read. They continue to **make and adjust their predictions** as they go along.


What If Rain Boots Were Made of Paper?

by Kevin Beals and P. David Pearson illustrated by Tim Haggerty



What do you **predict** the book will be about?



Activity 3 Reading: What If Rain Boots Were Made of Paper?



Partner Reading Guidelines

- 1. Sit next to your partner and place the book between you.
- 2. Take turns reading.
- 3. Read in a quiet voice.
- **4.** Be respectful and polite to your partner.
- **5.** Ask your partner for help if you need it. Work together to make sure you both understand what you read.

AmplifyScience

What If Rain Boots Were Made of Paper?

by Kevin Beals and P. David Pearson illustrated by Tim Haggerty



Read the book with your partner.

As you read, check your predictions and share any new predictions with your partner.



Turn to page 3 and follow along as we reread the book.

I'll call on students to share the reading as we go along.

We'll stop and talk about the book as we read.



Paper rain boots would be a problem. That's why rain boots are made of **rubber**.

- Rubber bends, so it's easy to slip rain boots on our feet.
- Rubber is strong, so it lasts a long time.
- Rubber keeps out water, so our feet stay dry.

Rubber is a great **material** for making rain boots. Maybe we should make everything out of rubber!





6

Maybe metal candy is not such a great idea. That's why candy is made of sugar.

- Sugar isn't good for our teeth, but eating sugar is better than biting metal!
- Sugar tastes sweet.
- Sugar breaks apart in our mouths and in our bellies.

Sugar is a great material for making candy. Could sugar be the best material for making everything?

What if books were made of sugar?

Could we write in them?

Would the pages stick together? Could we turn the pages without breaking them? Would your little brother try to eat them?



8



Maybe sugar books are not such a great idea! I guess that's why books are made of paper.

- It's easy to write on paper.
- Paper pages don't stick together.
- Paper is thin but strong, so we can turn the pages without breaking them.
- Your little brother would not like to eat a paper book.

Paper is a great material for making books. Maybe we should make everything out of paper!

Maybe we should make rain boots out of paper. Wait! We already thought about that.

- Paper is not good for making boots, but rubber is.
- Rubber is not good for making pans, but metal is.
- Metal is not good for making candy, but sugar is.
- Sugar is not good for making books. What is?

When you **design** something, it's important to pick a material that will work.



10

Some materials are just right for making certain things.

- Glass makes good windows.
- Cloth makes good hats.
- Wood makes good tables.
- Brick makes good houses.

Some materials are silly for making certain things.

- You wouldn't use stone to make boats.
- You wouldn't use clay to make food.
- You wouldn't use cloth to make cars.
- You wouldn't use milk to make clothes.

Sometimes things sound silly, but they work really well. Rubber candy sounds silly, but maybe it isn't so silly. A long time ago, people did use rubber for making candy. They designed gum!







5 MIN (L

Activity 4 Reflecting on Materials and Properties



AmplifyScience

What If Rain Boots Were Made of Paper?

by Kevin Beals and P. David Pearson illustrated by Tim Haggerty



We are going to look back at a couple of **important words** in What If Rain Boots Were Made of Paper?



the stuff that makes up everything

What materials are used to make cars? What materials are used to make bottles?



Every material has different **properties**. Properties include how materials look, feel, smell, taste, sound, and mix with other materials.

Hardness is a property of most kinds of metal. Being able to bend easily is a property of rubber.

A material's properties make it great for some uses . . . and not so good for other uses.

Turn to page 14. Let's think about the word "properties" as we read.

What were some of the silly examples of materials we read about?

Why were they silly?

Key Concept

Properties include how materials smell, look, taste, feel, and sound.



something about a material that you can see, hear, smell, taste, or feel

2

What is a **material** you see used in one or more objects in the classroom?

What are the **properties** of that material?

What do its properties make that material good for?



Activity 5 Keeping Track of New Ideas



We will continue posting important **words**, **images**, and **ideas** to the **classroom wall**. You can refer to the wall to remember the new things we're learning.

Before we begin designing our glue, we need to **learn more about materials and their properties**. Lesson 1.2: What If Rain Boots Were Made of Paper?

End of Lesson





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Properties of Materials Classroom Wall





Plan for the day: Part 2

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

Gathering evidence

Properties of Matter, 1.2



What have students figured out so far?

Evidence sources work together Investigating and discussing observations

How do these activities **work together** to support understanding of how different substances are different?

Investigation Question: What can be noticed about different materials? What if candy were made of met-What If Rain Boots Nould we be able to chew it Were Made of Paper? Kevin Beals and P. David Pe

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!





A diagram of student learning





Students figure out: What can be noticed about different materials

Coherence Flowchart

A diagram of student learning



Coherence Flowchart



Unit Design Problem	Properties of Materials: D	esigning Glue	
Problem students work to solve	We want to make a glue mixture that is How can we design a glue mixture that	better than what the school uses now. is better than what the school uses now	?
		÷	
Chapter-level Anchor Phenomenon Chapter 1 Question	Different glue mixtures have different p How can you make a sticky glue? (intro	roperties. Some are stickier than others. oduced in 1.3)	
Investigative Phenomena Investigation Questions	There are different materials in the world with different properties. What can be noticed about different materials? (1.2-1.3)	Different materials and substances act differently from each other when tested. How can you tell if substances are different? (1.4)	Properties of mixtures can change. How can the properties of a mixture change? (1.5-1.7)
Evidence sources and reflection opportunities	 Read What If Rain Boots Were Made of Paper? (1.2) Reflect on materials and properties (1.3) Brainstorm uses and properties of a good glue (1.3) Observe mystery glues (1.3) 	 Observe properties of dry mystery glues and analyze results of mystery glue sticky tests (1.4) Write arguments about whether mystery glues are the same or 	 Observe dry glue ingredients (1.5) Make and observe mixtures (1.5) Graph and analyze sticky tests results (1.6) Read <i>Jelly Bean Engineer</i> (1.7) Properties of mixtures can change when other ingredients are added. (1.5) Properties of substances are the same whether you have a small amount or a large amount. (1.7) Engineers test their designs to find out whether they meet their design goals. (1.7)
Key concepts	 Properties include how materials smell, look, taste, feel, and sound. (1.2) Different materials have different properties. (1.3) You can tell if materials and substances are different by observing their properties. (1.3) 	 You can tell if materials and substances are different by observing their properties or by testing them. (1.4) 	
Phenomena Investigation Questions	Different ingredients result in different properties of a mixture Which ingredients should we use (or not use) in our glue? (1.8-1.9)*		
Application of key concepts to problem	 Write design arguments for the ingredients Make Glue #1 (1.9) Write a comparison of partners' glues (1.9) 	that make the best glues (1.8)	
Explanation that students can make to answer the Chapter 1 Question	Glue is a mixture of several ingredients suc ingredients and how they are combined, yo By understanding materials and observing properties you are seeking.	ch as flour, water, and cornstarch, and deper ou can create different glues. Some glues mi and testing different recipes, you can choose	nding on the properties of those ght be stickier or stronger than others. e the ingredients that provide the

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

- 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)	
• The Regents of the University of California. All rights reserved.	Activity 5 (##min)	

Lesson <u>1.2</u>		Activity Overview
What is the purpose of this lesson? To introduce students to their role as glue engineers and to provide an opportunity for students to begin exploring the properties of materials through the book What If Rain Boots Were Made of Paper?	Activity 1 (10 min)	Introducing the Design Challenge
What will students learn? Materials are the stuff that things are made of. Materials have properties. Properties include how materials smell, look, taste, feel, and sound. Materials have properties that make them good for some uses and NOT so good for others. Engineers design things to solve problems. Good readers make predictions about what they are going to read or learn.	Activity 2 (15 min)	Introducing the Design Challenge
3-D Statement (identify SEP, CCC, and DCI): Students obtain information about how materials with different properties are suited to different uses. (patterns) by reading the book What if Rain Boots were Made of Paper?	Activity 3 (25 min)	Reading: What If Rain Boots Were Made of Paper?
Student Resources: For each pair of students – 1 copy of What If Rain Boots Were Made of Paper? Properties of Materials Investigation Notebook (pages 1–5)	Activity 4 (5 min)	Reflecting on Materials and Properties
Assessment Opportunities: On-the-Fly, Activity 2 Ithe University of California. All rights reserved.	Activity 5 (5 min)	Keeping Track of New Ideas

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?

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.
- 5. If you have time, navigate to **Lesson 1.3** and repeat steps 1-4.



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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









Caregivers

LAUSD Micrositehttps://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.





Closing reflection

Based on our work today in Part 2, share:

Head: something you'll keep in mind

Heart: something you're feeling

Feet: something you're planning to do

Onsite Upcoming Professional Development!

Part 3: Unit 2 - with a focus on assessments

- December 3 (grades 3-6)
- December 10 (grades TK-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





Amplify Chat



Please provide feedback!

Type:

Strengthen

Session title:

Unit Internalization / Guided Planning

Professional Learning Specialist name:

Insert name

(insert email, if you would like)

Please provide feedback! LAUSD SURVEY

Presenter name:

Workshop title:

Part 1: Unit

Part 2: Guided Planning (Planning for a Lesson)

Modality:

Remote

