

Amplify Science

The Assessment System

Grade 2, Unit 2: Properties of Materials

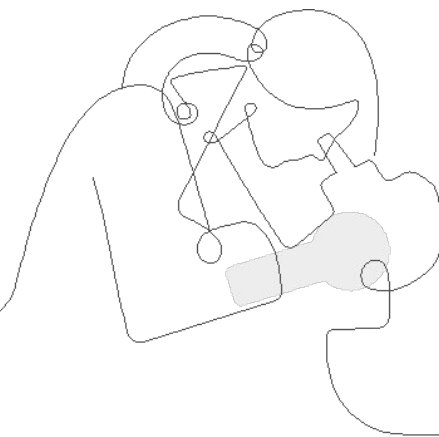
Part 3

Strengthen workshop

School/District Name

Date

Presented by Your Name



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

Schoolology



LOS ANGELES UNIFIED SCHOOL DISTRICT

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COURSES GROUPS RESOURCES TOOLS

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LMS App Center

The LMS App Center provides a catalog of District-approved digital content and learning tools (including digital components of adopted textbooks) that are available for classroom teachers and students to access within the learning management system, Schoolology.

For information on District-approval policies and procedures, please visit: udipplausd.net.

- To search the full list of digital learning tools, click "Submit".
- To search by Publisher Name or Textbook Title, type in a word associated to your adopted publisher, then click "Submit".
- To narrow your search with filters such as Content Area, Grade Level, or Content Type, select from the dropdown menu, then click "Submit".

To learn more about using the LMS App Center, please refer to the following video overview.

Publisher Name Starts With

Content Area All

Grade Level All

Content Type All

Textbook Title Starts With

Submit

All Amplify Products



LMS App Center

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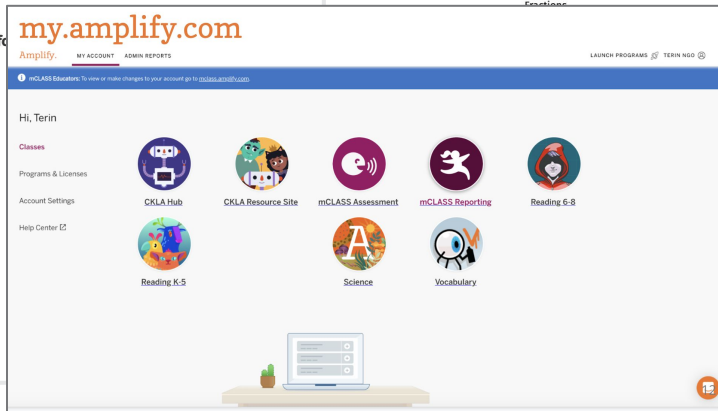
To learn more about using the LMS App Center, please refer to the following video overview.

Search Again

Amplify

Content Area: ELA
Grade Level: ES
Content Type: Supplemental
Integration Type: App (Left Navigation)
Purchase Type: District and School
[Getting Started Guide](#)
Other Info: School licenses required
mCLASS
CKLA
Amplify Reading
Amplify Science
Creative

Vendor Support Desk:
P: 800.823.9969
E: help@amplify.com
S: amplify.com/support/
Textbook Title(s):
NA



my.amplify.com

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Hi, Terin

Classes

Programs & Licenses

Account Settings

Help Center C2

CKLA Hub CKLA Resource Site mCLASS Assessment mCLASS Reporting Reading 6-8

Reading K-5 Science Vocabulary

op is for only)

Vendor Support Desk:
P: 800.823.9969
E: help@amplify.com
S: amplify.com/support/
Textbook Title(s):
NA

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.

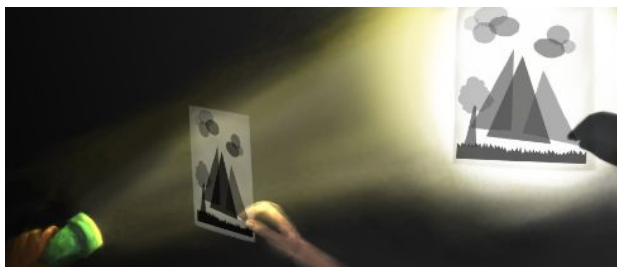
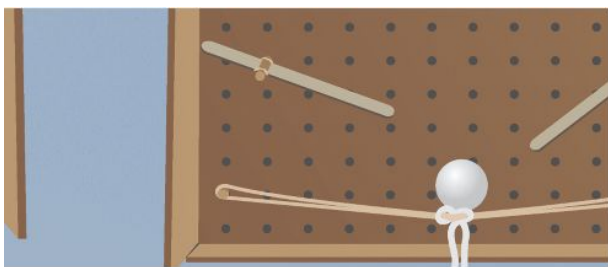
1 = Extremely Uncomfortable

2 = Uncomfortable

3 = Mild

4 = Comfortable

5 = Extremely Comfortable



Plan for the day

- Introduction
- Assessment System
- Progress Build
- Assessments
- Model Lesson
- Planning
- Closing

Overarching goals

- ❑ Describe the structure and purpose of the Amplify Science Assessment System
- ❑ Plan for the strategic use of assessment resources to analyze and respond to student work

Let's connect
this goal to
our students



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.

Opening reflection

Why do we assess our students?

What is **challenging** about assessing our students?



Participant
Notebook

<https://bit.ly/3Ph1T9Z>

Opening Reflection: Assessment

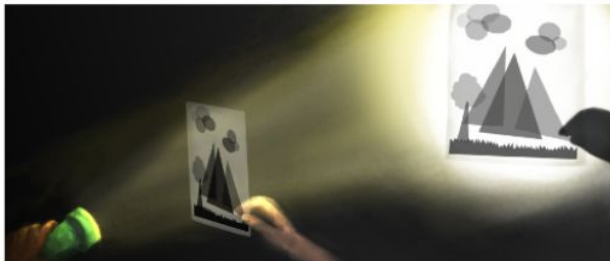
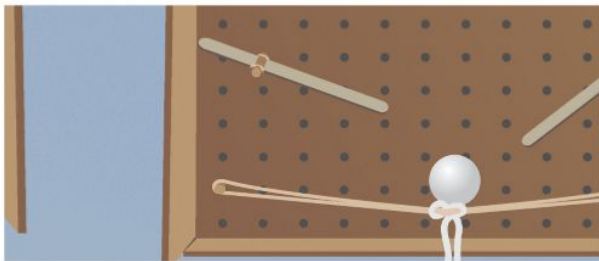


Why do we assess our students?



Why do we assess our students?



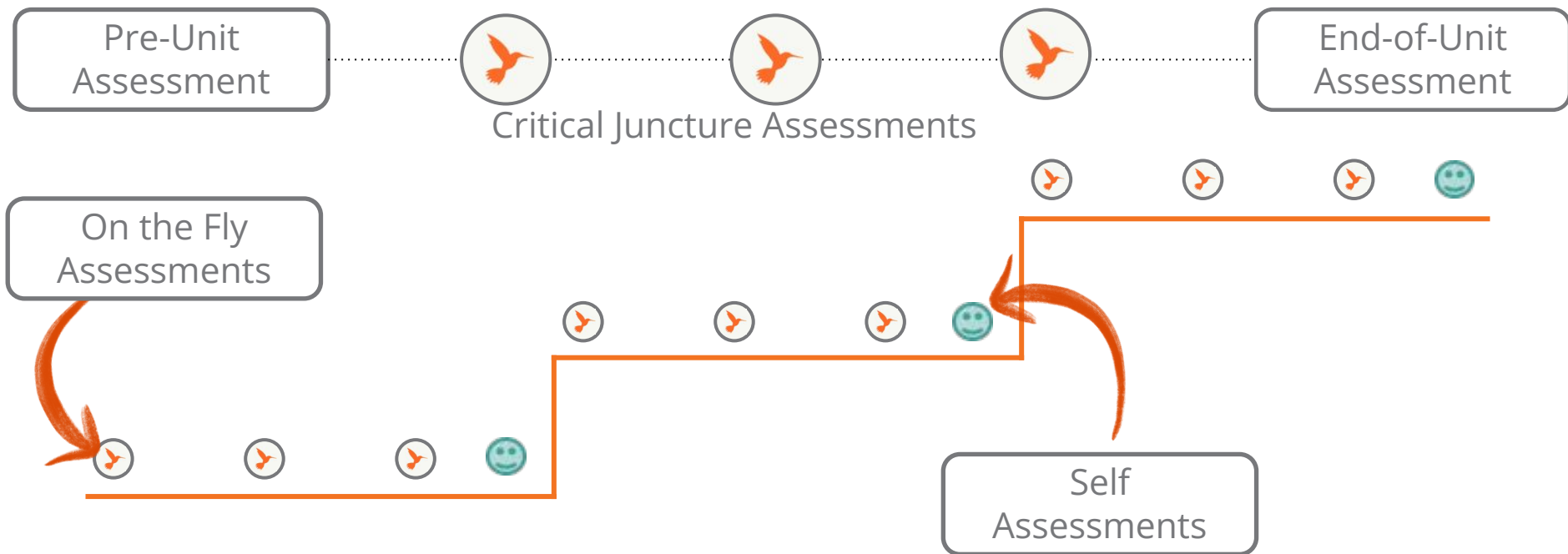


Plan for the day

- Introduction
- **Assessment System**
- Progress Build
- Assessments
- Model Lesson
- Planning
- Closing

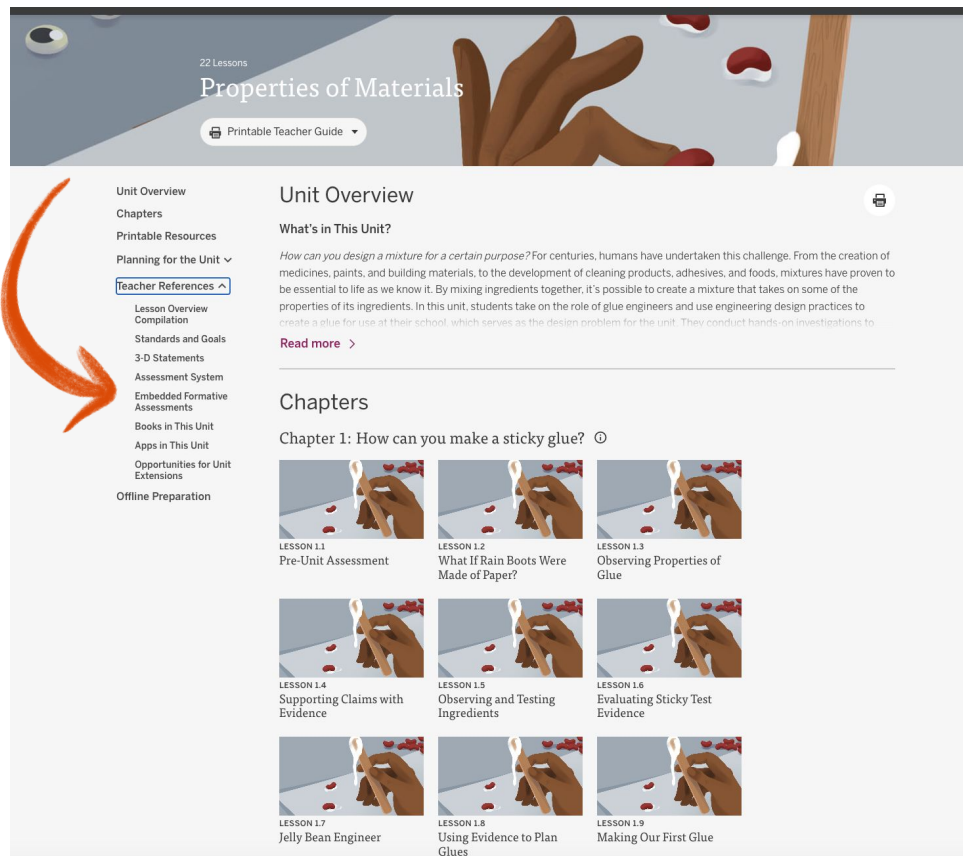
K-5 Assessment System

Pg. 4



Assessment System Document

Properties of Materials



22 Lessons

Properties of Materials

[Printable Teacher Guide](#)

- Unit Overview
- Chapters
- Printable Resources
- Planning for the Unit ▾
- Teacher References ▾**
- Lesson Overview Compilation
- Standards and Goals
- 3-D Statements
- Assessment System
- Embedded Formative Assessments
- Books in This Unit
- Apps in This Unit
- Opportunities for Unit Extensions
- Offline Preparation

Unit Overview










What's in This Unit?

How can you design a mixture for a certain purpose? For centuries, humans have undertaken this challenge. From the creation of medicines, paints, and building materials, to the development of cleaning products, adhesives, and foods, mixtures have proven to be essential to life as we know it. By mixing ingredients together, it's possible to create a mixture that takes on some of the properties of its ingredients. In this unit, students take on the role of glue engineers and use engineering design practices to create a glue for use at their school, which serves as the design problem for the unit. They conduct hands-on investigations to

[Read more >](#)

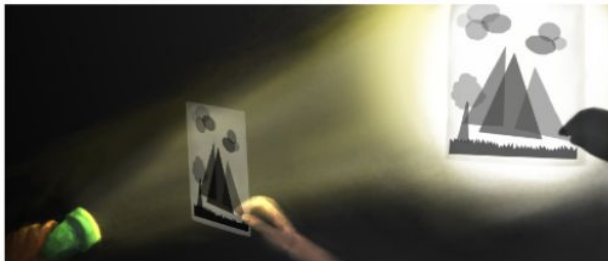
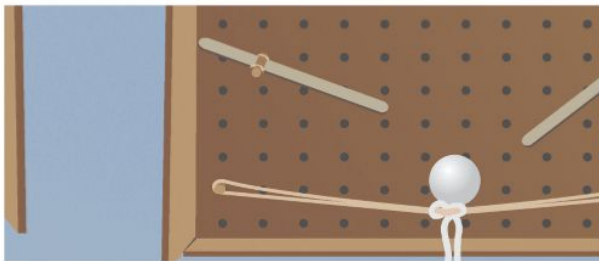
Chapters

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

 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

Questions?





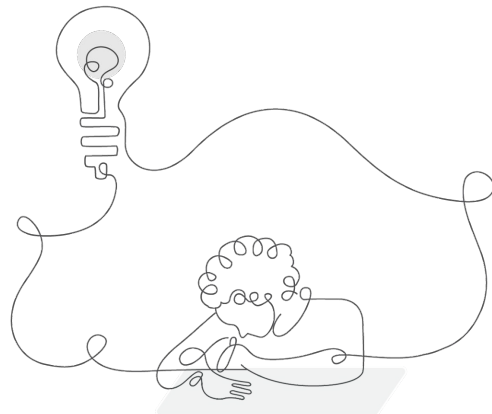
Plan for the day

- Introduction
- Assessment System
- **Progress Build**
- Assessments
- Model Lesson
- Planning
- Closing

Reviewing the unit phenomenon

Properties of Materials

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



Properties of Materials

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

Role: Glue engineers

As glue engineers, students are challenged to create a glue for use at their school that meets a set of design goals. Students present an evidence-based argument stating why their glue mixture would solve their school's need for a better glue.

Properties of Materials

Unit Question

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

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. Students conduct tests that yield quantifiable results, graph their data, analyze and interpret results, and then use that evidence to iteratively design a series of glue mixtures, each one better than the one before. Students are able to speak knowledgeably about their choices and argue for how a particular glue mixture best meets their design goals, with evidence from a variety of sources.

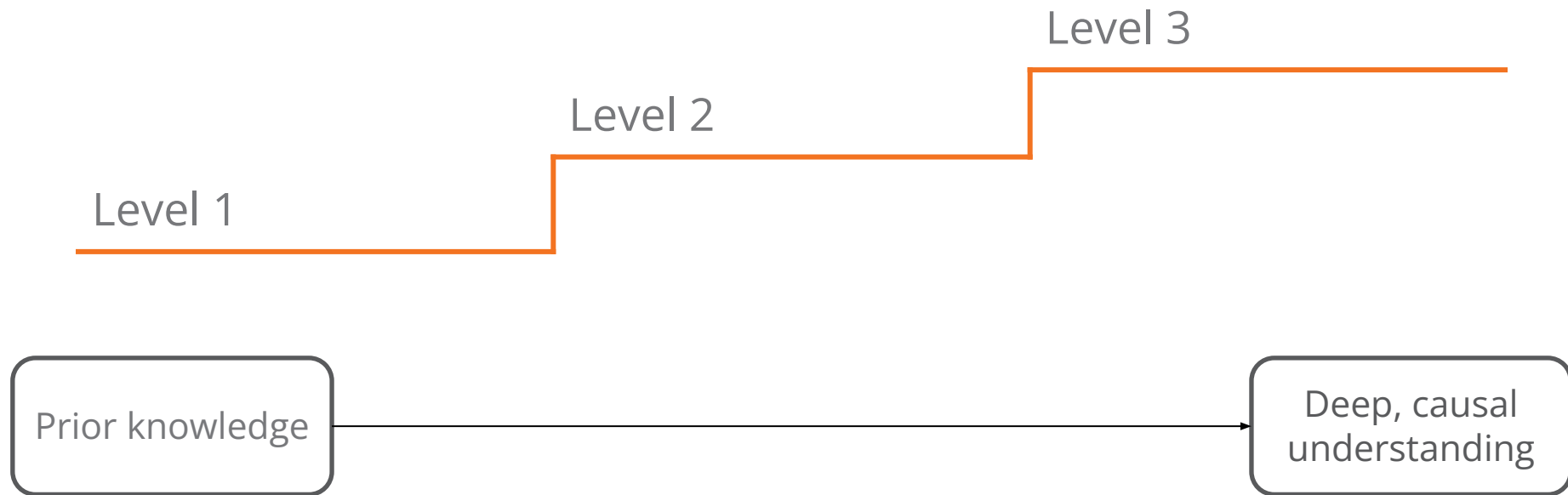
Explaining the phenomenon: Science Concepts

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

Progress Build

A unit-specific learning progression

Pg. 4



Progress Build analysis

Work time

Read and analyze your unit's Progress Build.

The screenshot shows the 'Properties of Materials' unit overview page. The header includes '22 Lessons' and a 'Printable Teacher Guide' button. A sidebar on the left lists navigation options: Unit Overview, Chapters, Printable Resources, Planning for the Unit (highlighted with a blue box and an orange arrow), Unit Map, Progress Build, Getting Ready to Teach, Materials and Preparation, Science Background, Standards at a Glance, Teacher References, and Offline Preparation. The main content area is titled 'Unit Overview' and 'What's in This Unit?'. It contains a paragraph about designing a mixture and a 'Read more' link. Below this is a 'Chapters' section with 'Chapter 1: How can you make...'. The 'Progress Build Analysis' overlay on the right provides a structured space for analysis, starting with 'Directions' and three numbered steps. It includes four levels of analysis: Level 3, Level 2, Level 1, and Level 0 (preconceptions/prior knowledge). Each level has a large orange-bordered box for drawing and two text boxes for reflection. The page number '8' is visible at the bottom right of the overlay.

22 Lessons

Properties of Materials

Printable Teacher Guide

- Unit Overview
- Chapters
- Printable Resources
- Planning for the Unit**
- Unit Map
- Progress Build
- Getting Ready to Teach
- Materials and Preparation
- Science Background
- Standards at a Glance
- Teacher References
- Offline Preparation

Unit Overview

What's in This Unit?

How can you design a mixture for a certain purpose? Medicines, paints, and building materials, to name a few, are essential to life as we know it. By mixing different substances, you can create materials with specific properties. In this unit, students will explore the properties of various materials and learn how to combine them to create a glue for use at their school, which is a practical application of their learning.

[Read more](#)

Chapters

Chapter 1: How can you make...

LESSON 1.1
Pre-Unit Assessment

LESSON 1.2
What If R...
Made of I...

Progress Build Analysis

Directions:

- Open the Progress Build document in the Planning for the Unit section of the Unit Guide.
- START WITH THE BOX AT THE BOTTOM OF THIS PAGE, and summarize each Progress Build level. Feel free to draw if that's more helpful.
- In between the provided boxes, reflect on how the ideas build from one level to the next by answering the two questions given.

Level 3

What new ideas are added in level 3?

How do those new ideas build on and connect to level 2?

Level 2

What new ideas are added in level 2?

How do those new ideas build on and connect to level 1?

Level 1

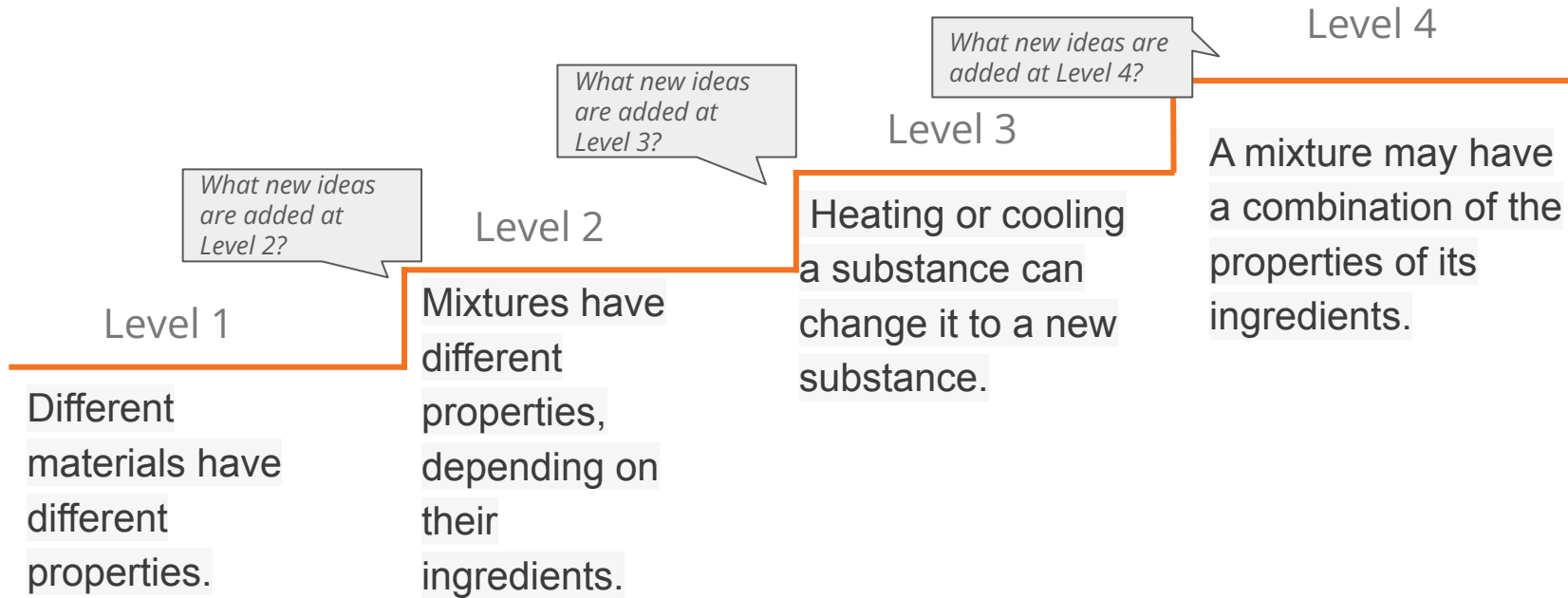
Level 0 (preconceptions/prior knowledge)

8

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).



Logging in (demo account)

Safari or Chrome

1. Go to **learning.amplify.com**
2. Select **Log in with Google**
3. If you're already logged in with other Google accounts, click **Use another account**
4. Enter teacher demo account credentials

- xxxxxxxx@pd.tryamplify.net
- Password: xxxx

Steps 1-2

Welcome to **Amplify**

G Log In with Google

C Log In with Clever

A. Log In with Amplify

SSO login

Step 3

Choose an account to continue to Amplify Curriculum Delivery Application

T Teacher Lambertsen
t.lambertsen@tryamplify.net

S Sophia Lambertsen
slambertsen@tryamplify.com

U Use another account

To continue, Google will share your name, email address, language preference, and profile picture with Amplify Curriculum Delivery Application. Before using this app, you can review Amplify Curriculum Delivery Application's [privacy policy](#) and [terms of service](#).

Step 4

Sign in with Google

Sign in to continue to Amplify Curriculum Delivery Application

Email or phone

Forgot email?

To continue, Google will share your name, email address, language preference, and profile picture with Amplify Curriculum Delivery Application. Before using this app, you can review Amplify Curriculum Delivery Application's [privacy policy](#) and [terms of service](#).

Create account

Next

Sign in with Google

Hi Teacher

n nationalsc20@pd.tryamplify.net

Enter your password

☐ Show password

To continue, Google will share your name, email address, language preference, and profile picture with Amplify Curriculum Delivery Application. Before using this app, you can review Amplify Curriculum Delivery Application's [privacy policy](#) and [terms of service](#).

Forgot password?

Next

Progress Build analysis

Group work time

- With your group or partner, create a visual representation of one level of the progress build.

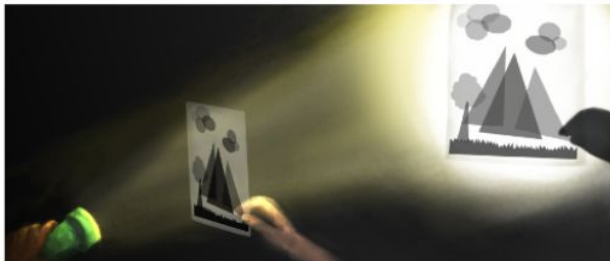
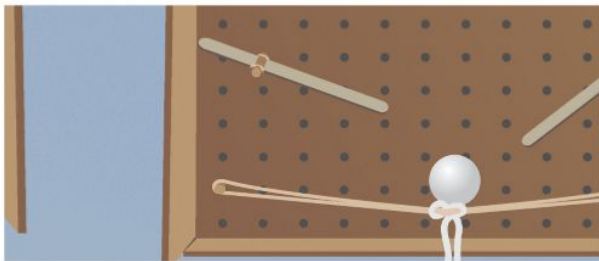


Progress Build analysis

Gallery Walk



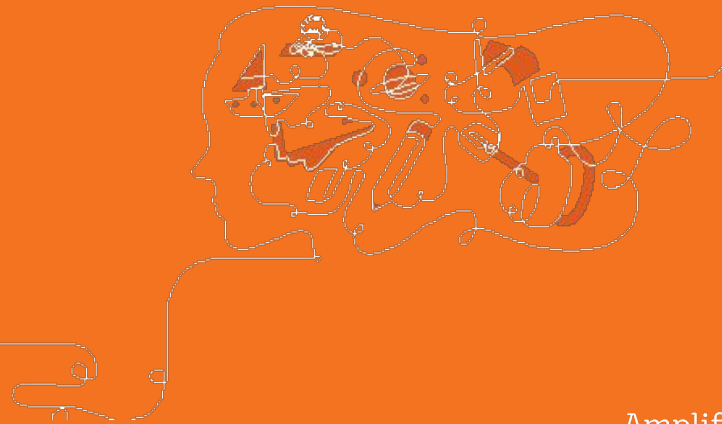
Break



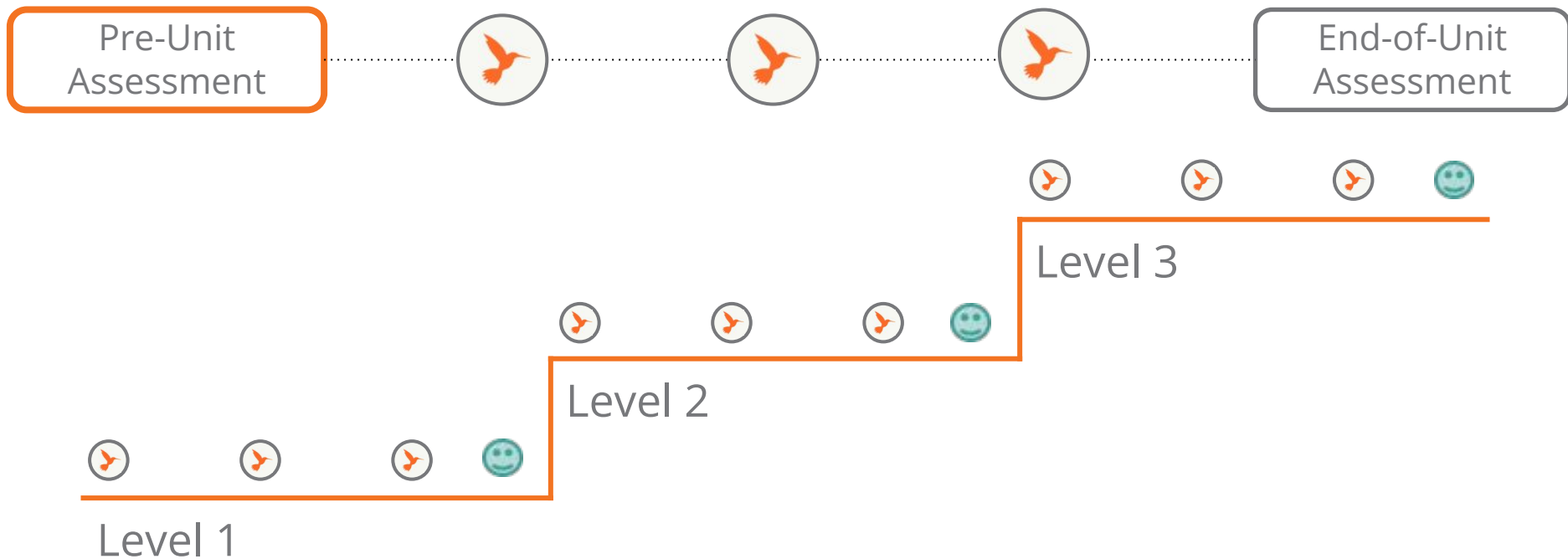
Plan for the day

- Introduction
- Assessment System
- Progress Build
- **Assessments**
- Model Lesson
- Planning
- Closing

Pre-Unit Assessment



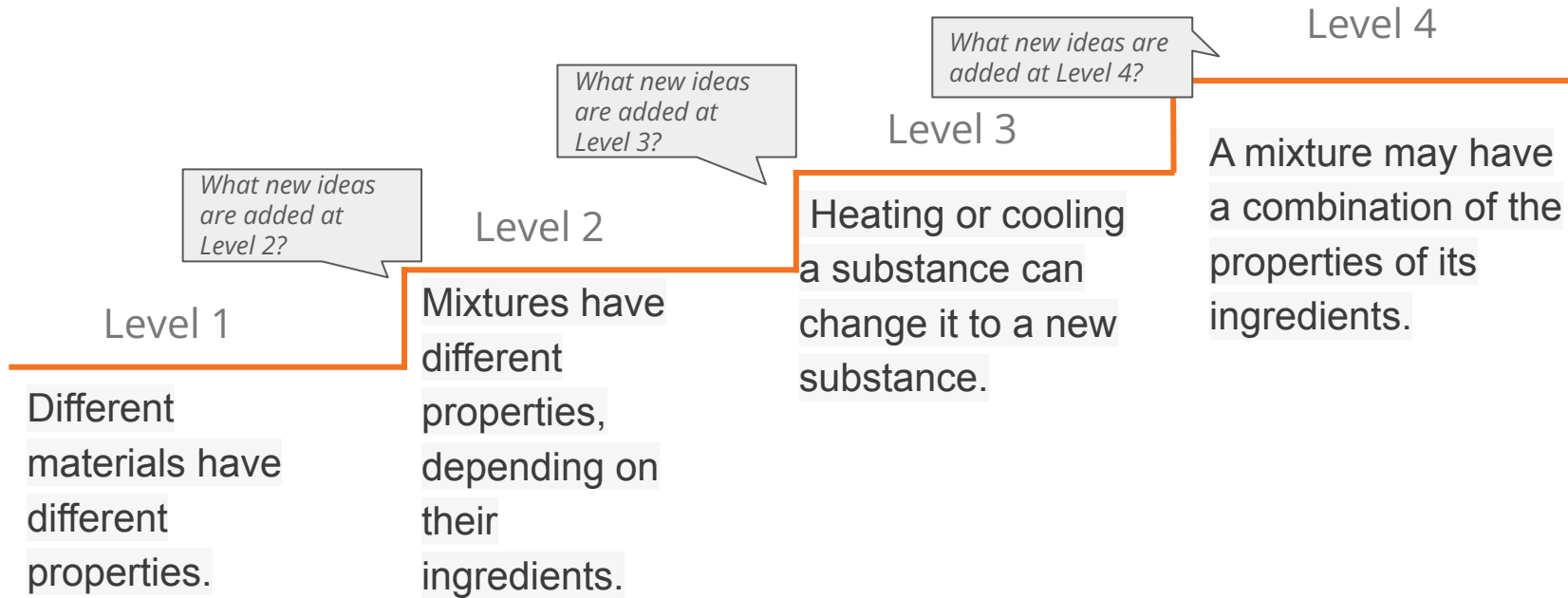
Pre-Unit Assessment



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).



Pre-Unit Assessment

Lesson 1.1

Locate the Assessment Guide in Lesson 1.1 of your unit and skim it.

Open up the classroom slides and see how the pre-unit assessment is embedded in the lesson.

Lesson 1.1:
Pre-Unit Assessment

[Printable Lesson Guide](#)

RESET LESSON

Overview

Students' Initial Explanations

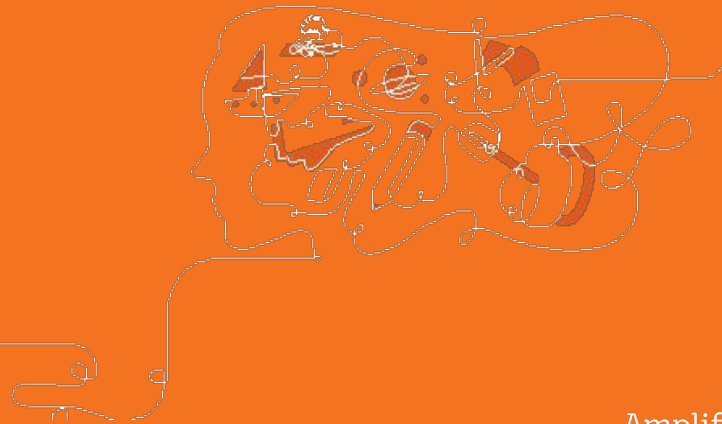
Working in groups of four, students examine four substances: cornstarch, salt, flour, and cinnamon. They are first asked to describe the properties of each substance, and then they are asked to choose two substances and predict what properties a mixture of those substances would have. Next, students are presented with a mystery mixture of two of the substances and use their knowledge of the properties of substances to determine which two substances are included in the mixture. The oral explanations students provide in this lesson serve as a Pre-Unit Assessment for formative purposes, designed to reveal students' initial understanding of some of the unit's core content, both unit-specific science concepts and the crosscutting concept of Cause and Effect, prior to instruction. As such, students' explanations offer a baseline from which to measure growth of understanding over the course of the unit. These explanations can also provide the teacher with insight into students' thinking as they begin this unit. This three-dimensional assessment will allow the teacher to draw connections to students' experiences and to watch for preconceptions that might get in the way of students' understanding.

Unit Design Problem: We want to make a slue mixture that is better

Digital Resources

- [Classroom Slides 1.1 | PowerPoint](#)
- [Classroom Slides 1.1 | Google Slides](#)
- [Pre-Unit Writing: Observations and Ideas About Properties and Mixtures copymaster](#)
- [Pre-Unit Assessment Questions](#)
- [Assessment Guide: Interpreting Students' Pre-Unit Explanations About Properties of Substances and Mixtures](#)
- [Properties of Materials Investigation Notebook](#)
- [Questioning Strategies for Grades 2-5](#)
- [Properties of Materials Family Connections Homework](#)
- [Eliciting and Leveraging Students' Prior Knowledge, Personal Experiences, and Cultural Backgrounds](#)
- [Crosscutting Concept Tracker](#)

Formative Assessments

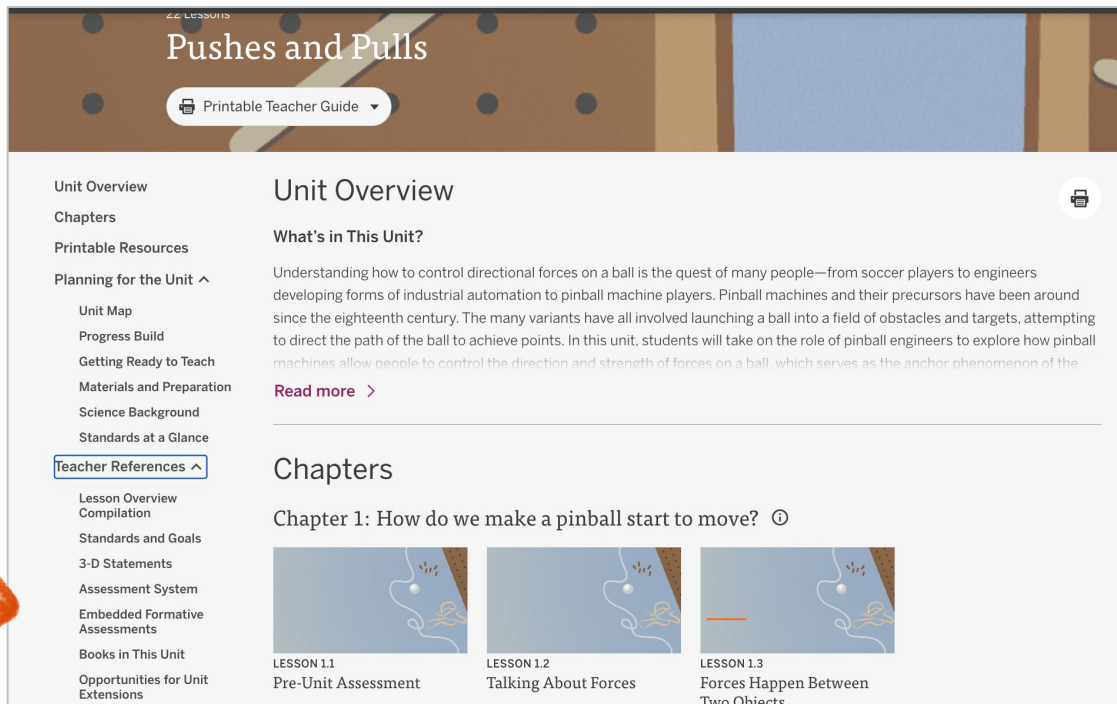


K-5 Assessment System



Formative Assessment Document

Properties of Materials



LESSON 1.3

Pushes and Pulls

Printable Teacher Guide

- Unit Overview
- Chapters
- Printable Resources
- Planning for the Unit ^
 - Unit Map
 - Progress Build
 - Getting Ready to Teach
 - Materials and Preparation
 - Science Background
 - Standards at a Glance
 - Teacher References ^**
 - Lesson Overview
 - Compilation
 - Standards and Goals
 - 3-D Statements
 - Assessment System
 - Embedded Formative Assessments
 - Books in This Unit
 - Opportunities for Unit Extensions

Unit Overview


What's in This Unit?

Understanding how to control directional forces on a ball is the quest of many people—from soccer players to engineers developing forms of industrial automation to pinball machine players. Pinball machines and their precursors have been around since the eighteenth century. The many variants have all involved launching a ball into a field of obstacles and targets, attempting to direct the path of the ball to achieve points. In this unit, students will take on the role of pinball engineers to explore how pinball machines allow people to control the direction and strength of forces on a ball, which serves as the anchor phenomenon of the


[Read more >](#)

Chapters


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



LESSON 1.1
Pre-Unit Assessment



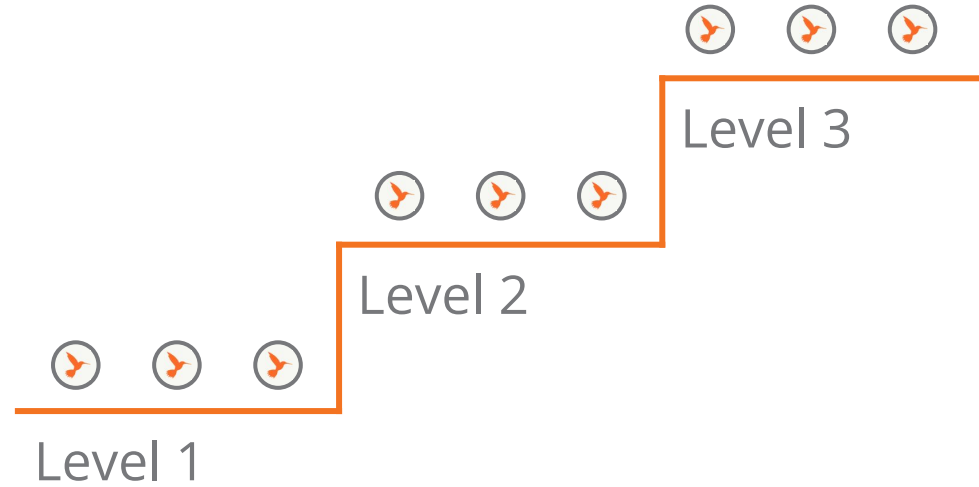
LESSON 1.2
Talking About Forces



LESSON 1.3
Forces Happen Between
Two Objects

On-the-Fly Assessments

- Track student progress within a Progress Build level
- Embedded into instruction
- Assessment resource includes “Look for” and “Now what”
- Incremental build towards the Critical Juncture



Formative assessment information

Locating assessment resource

Full text of assessment

- Embedded Formative Assessments document
- Instructional guide
- Classroom Slides notes


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

4 TEACHER-LED DISCUSSION
Reflecting on Materials and Properties

5 TEACHER-LED DISCUSSION
Keeping Track of New Ideas

Reading: What If Rain Boots Were Made of Paper?

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



Read the book with your partner.

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

ON-THE-FLY

Teacher action:

Circulate and listen to students' predictions.

On-the-Fly Assessment 1:

Making Predictions While Reading

Look for: Students will have many opportunities to learn about and use the reading comprehension strategy of predicting. During this partner reading activity, you may want to note whether students are able to use what they already know, along with clues in the text, to make predictions about what they will learn. You might also check in as they are reading to see if students are adjusting their predictions as they go along and the evidence they are using to support their predictions.

Now what? If students are struggling with making predictions or if they are not citing evidence for their predictions, you may provide sentence frames for them:

- I predict _____ because _____.
- I am changing my prediction of _____ because _____.

As they read other books in this unit, students will have many other opportunities to practice applying the strategy of making predictions.

reading.

Formative assessment information

Locating assessment resources

Full text of assessment

- Embedded Formative Assessments document
- Instructional guide
- Classroom Slides notes

The screenshot displays the Learning Amplify web interface. At the top, a navigation bar includes a 'Lesson Brief (4 Activities)' tab and a sequence of numbered activity tabs: 1. TEACHER-LED DISCUSSION: How Do Plants Get Water and Sunlight?, 2. HANDS-ON: Exploring Roots and Leaves, 3. HANDS-ON: Measuring Roots and Leaves, and 4. STUDENT-TO-STUDENT DISCUSSION: Debriefing Plant Parts. The fourth tab is currently selected. Below the tabs, the assessment title 'Debriefing Plant Parts' is shown, followed by a description: 'Students share their observations and discuss initial ideas about how plants get their parts to get sunlight and water to grow. (15 min)'. Below this, there are three tabs: 'Step-by-step' (selected), 'Teacher Support', and 'My Notes'. The 'Step-by-step' tab contains the following content:

1. Debrief student observations. Solicit students' observations about leaves and roots.

What did you observe about the leaves? What was similar or different between the leaves of different plants?

What did you observe about the roots? What was similar or different between the roots of different plants?

Accept all responses. Prompt students to describe the plant parts in detail, including their shape and color.

2. Introduce evidence. Post the evidence vocabulary card.

We think that roots and leaves look different on different plants. We think this because we observed different plants and saw that the shape and size of roots and leaves of different plants are different.

What we observed is our evidence. Evidence is information that supports an answer to a question.

3. Remind students of the Think-Draw-Pair-Share routine and explain directions. Remind students about the purpose for the Roots and Leaves Investigation. Let students know that they will now use the Think-Draw-Pair-Share routine to discuss their ideas about what the roots and leaves might do for a plant. Remind them that you'll ask a question, and they will follow four steps.

- **Think.** After you ask a question, you'll say, "Think," and students will think silently about the question for about 1 minute.
- **Draw.** When you say, "Draw," students will draw in their notebooks.
- **Pair.** When you say, "Pair," students will discuss their ideas and drawings with their partners.
- **Share.** When you say, "Share," students will stop talking and raise their hands to share an idea—their own idea or their partner's idea—with the class.

4. Project notebook page 26. Have students turn to page 26. Think-Draw-Pair-Share: What Do Plant Parts Do? in their notebooks.

At the bottom left, there is a language selector button labeled 'Español'. At the bottom right, there is an orange circular icon with a white envelope symbol.

Classroom slides

Lesson 1.2

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

[Printable Lesson Guide](#)

DISCUSSION
Reading

3

READING
Reading: What If Rain Boots Were Made of Paper?

4

TEACHER-LED DISCUSSION
Reflecting on Materials and Properties

5

TEACHER-LED DISCUSSION
Keeping Track of New Ideas

[RESET LESSON](#)

Overview
Materials & Preparation
Differentiation
Standards
Vocabulary
Unplugged?

Overview

Students are introduced to their role as glue engineers after the class receives a letter from the principal of your school requesting their help in designing glue for school use. Students begin exploring properties of materials through the book *What If Rain Boots Were Made of Paper?* This playful book invites students to think about what everyday things are made of and why. As they learn the meanings of the words *property* and *material*, students consider a variety of silly examples in the book and reflect on how they might use materials to design things. In addition to introducing students to the concepts of properties and materials, this lesson also provides students with a larger context for understanding that engineers design materials and a reason for students to be interested in the properties of materials. Students also receive their Investigation Notebooks and learn some of the ways that engineers use notebooks.

Unit Design Problem: We want to make a glue mixture that is better than what the school uses now.

Chapter-level Anchor Phenomenon: Different glue mixtures have

Digital

[Class](#)

[Class](#)

[Letter](#)

[Partn](#)

[Prope](#)

[Note](#)

Chapters

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



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



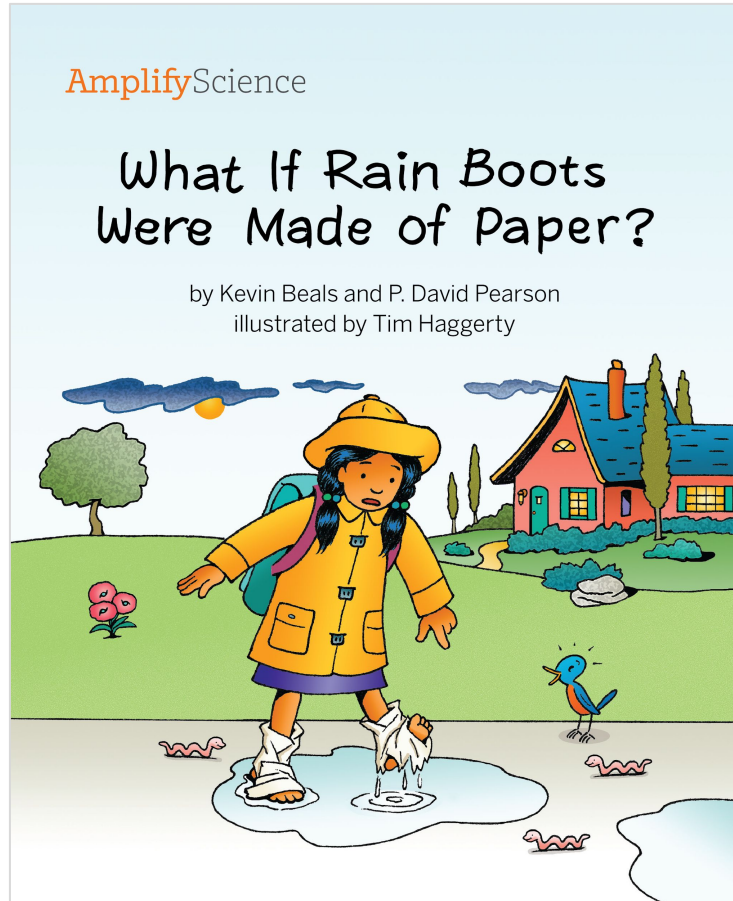
LESSON 1.7
Jelly Bean Engineer



LESSON 1.8
Using Evidence to Plan Glues

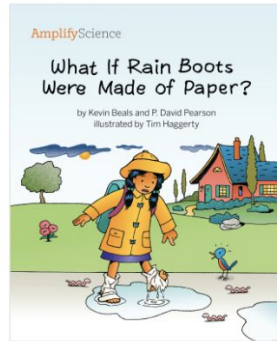


LESSON 1.9
Making Our First Glue



Read the book with your partner.

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



Read the book with your partner.

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

ON-THE-FLY

Teacher action:

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On-the-Fly Assessment 1:

Making Predictions While Reading

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- I am changing my prediction of _____ because _____.

As they read other books in this unit, students will have many other opportunities to practice applying the strategy of making predictions.

Embedded Formative Assessment

On-the-Fly, Lesson 1.2

On-the-Fly Assessment 1:

Making Predictions While Reading

Look for 2 **Look for** Students will have many opportunities to learn about and use the reading comprehension strategy of predicting. During this partner reading activity, you may want to note whether students are able to use what they already know, along with **Look for 1** clues in the text, to make predictions about what they will learn. You might also check in as they are reading to see if students are adjusting their predictions as they go along and the evidence they are using to support their predictions.

Now what? If students are struggling with making predictions or if they are not citing evidence for their predictions, you may provide sentence frames for them:

- I predict _____ because _____.
- I am changing my prediction of _____ because _____.

As they read other books in this unit, students will have many other opportunities to practice applying the strategy of making predictions.

On the Fly Assessment

Work time

- Explore the On-the-Fly Assessment you have been assigned
- Go the slide deck for that lesson
- Create a chart about the On-the-Fly:
 - What is the activity?
 - What is the look for?
 - How will you address the Now What?



Lesson 1.2: What If Rain Boots Were Made of Paper? Activity 3

AmplifyScience

What If Rain Boots Were Made of Paper?

by Lauren R. Kline
Illustrated by Tim Regan

Read the book with your partner.

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

Partner activity

Circulate and listen to students' predictions.

On-the-Fly Assessment 1:

Making Predictions While Reading

Look for: Students will have many opportunities to learn about and use the reading comprehension strategy of predicting. During this partner reading activity, you may want to note whether students are able to use what they already know, along with clues in the text, to make predictions about what they will learn. You might also check in as they are reading to see if students are adjusting their predictions as they go along and the evidence they are using to support their predictions.

Now what? If students are struggling with making predictions or if they are not citing evidence for their predictions, you may provide sentence frames for them:

- I predict _____ because _____.
- I am changing my prediction of _____ because _____.

As they read other books in this unit, students will have many other opportunities to practice applying the strategy of making predictions.

Group 1 - 1.4 Activity 4
Group 2 - 1.5 Activity 3
Group 3 - 1.6 Activity 2
Group 4 - 1.8 Activity 4

Gallery Walk

Group Share Out

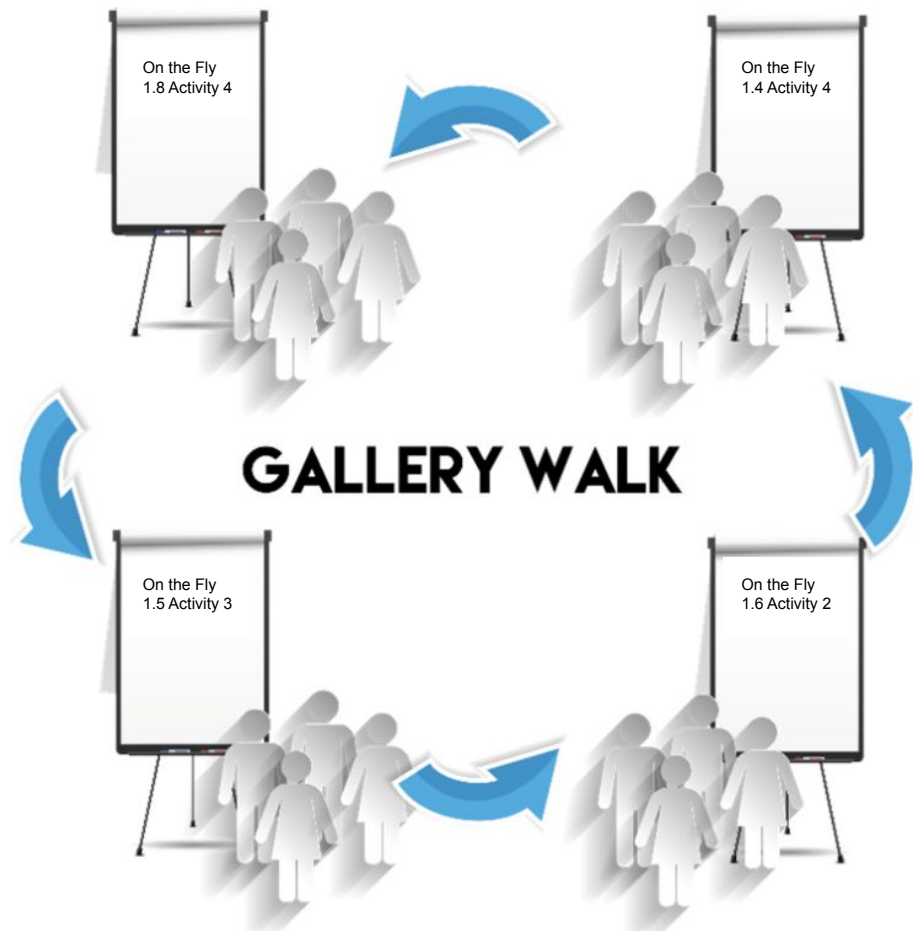
Group 1 - 1.4 Activity 4

Group 2 - 1.5 Activity 3

Group 3 - 1.6 Activity 2

Group 4 - 1.8 Activity 4

What are your takeaways?



Formative assessment information

Possible student responses

- Within assessments:
 - “Look fors” (OtF)
 - “Assess Understanding” (CJ)
- Possible responses within the Instructional Guide
- Digital resources
 - Assessment Guides
 - Teacher References

Writing About Mystery Glue

Students write about whether or not the two Mystery Glues are the same substance and provide evidence to support their claims.(20 min)

EMBEDDED FORMATIVE ASSESSMENT

INSTRUCTIONAL GUIDE

Step-by-step

Teacher Support

Possible Responses

My Notes

Investigation Notebook

Providing Evidence: Mystery Glues A and B (page 10)

Claim: No, Glue A and Glue B are different substances.

How do you know? What is your evidence?

I think Glue A and Glue B are different substances because Glue A is thick and Glue B is runny.

Collecting formative assessment data

Create a system that's easy for you to use.

Grade :

Lesson

Look for 1:

Look for 2:

[illegible]

K-1 Clipboard Assessment Tool

The Clipboard Assessment Tool offers a support for collecting data for the On-the-Fly and Critical Juncture Assessments that align to each Progress Build level in the unit.

Chapter 3: Clipboard Assessment Tool

x = incorrect
✓ = correct

Progress Build Level 2: The longer that sunlight shines on the surface, the warmer it gets.

Question to ask students	Students who understand . . .
Lesson 3.3, Activity 4: Why is the playground surface warmer in the afternoon than it was in the morning?	should say that it is warmer because <u>sunlight has been shining on it for a long or longer time</u> (than in the morning).
Lesson 3.4, Activity 1: Has the sunlight been shining on the rock for a longer time in this picture than in the other one, or for a shorter time?	should walk to the <u>shorter</u> yard if the picture shows the surface when it is cooler than in the other picture, or walk to the <u>longer</u> yard if the picture shows the surface when it is warmer than in the other picture.
Lesson 3.4, Activity 2: Walk to the time of day when: • ① the surface is cold. • ② the surface is warm. • ③ the surface is hot. • ④ sunlight is not shining on the surface. • ⑤ sunlight has been shining on the surface for a long time. • ⑥ sunlight has been shining on the surface for a short time.	<p>① should walk to <u>nighttime</u>. ② should walk to <u>morning</u>. ③ should walk to <u>afternoon</u>. ④ should walk to <u>nighttime</u>. ⑤ should walk to <u>afternoon</u>. ⑥ should walk to <u>morning</u>.</p> <p>M = Morning A = Afternoon N = Nighttime</p>

3 Images
1. Lizard (L)
2. Feet (F)
3. Chocolate (C)

Student's name	Notes	* CJ * 2	
		Lesson 3.3, Act 1	Lesson 3.4, Act 2
Student A	"There are no clouds in the sky."	L = x F = x C = x	① x M ④ x M ② x N ⑤ x N ③ ✓ ⑥ ✓
Student B	"Because kids played on it."	L = x F = x C = x	① x M ④ ✓ ② x N ⑤ x N ③ ✓ ⑥ ✓
Student C		L = ✓ F = x C = ✓	① ✓ ④ ✓ ② x A ⑤ ✓ ③ ✓ ⑥ ✓

Additional formative assessment information

On-the-Fly Assessments

In addition to assessing concepts in the Progress Build, some On-the-Fly Assessments provide data about:

- Science and Engineering Practices
- Crosscutting Concepts
- Literacy skills
- Student collaboration

NGSS connection: This formative assessment reveals student knowledge and use of Practice 7: Engaging in Argument from Evidence (ARG-P6: Construct an argument with evidence to support a claim.).

Additional 3-D Assessment Opportunities

To assess students on the idea that matter can be classified by its observable properties (DCI PS1.A) and on the crosscutting concept of Patterns, look for students to provide information about the properties of the two substances as evidence that the two substances are different. Look for students to describe observable properties for each substance, and to set up a comparison of them being similar or different.

NGSS connection: This formative assessment reveals student knowledge and use of Practice 7: Engaging in Argument from Evidence (ARG-P6: Construct an argument with evidence to support a claim.).

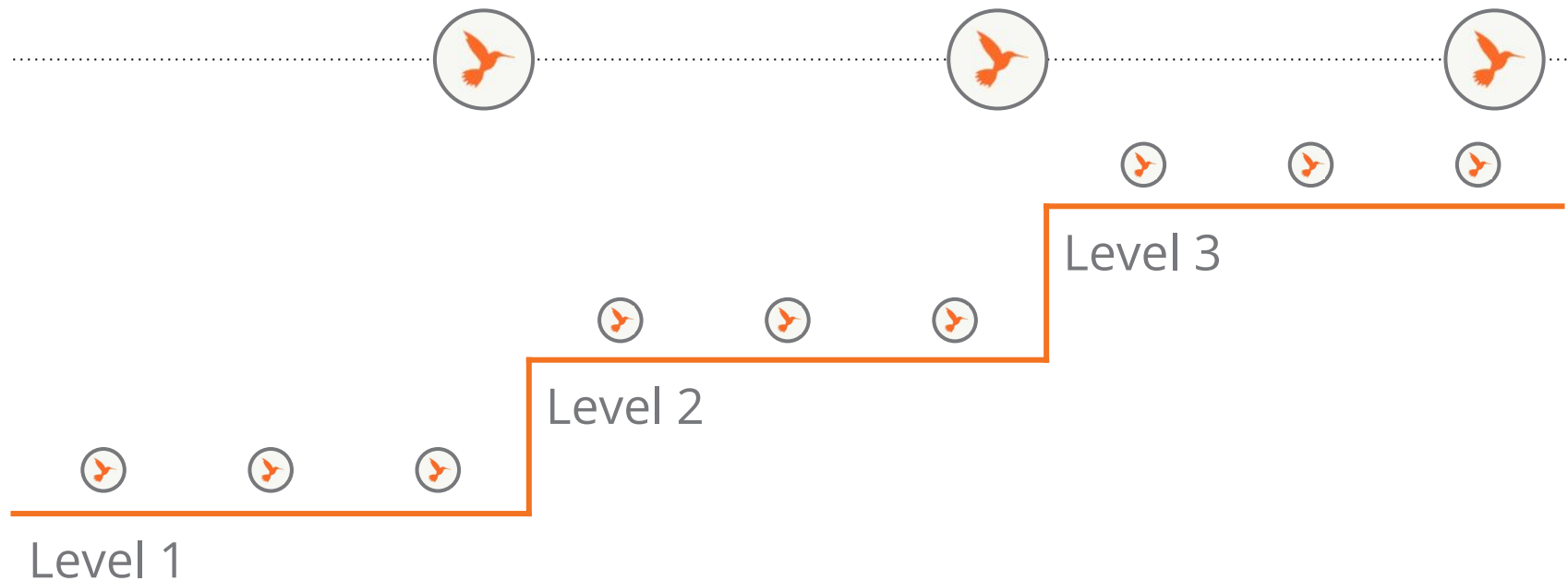
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Questions?

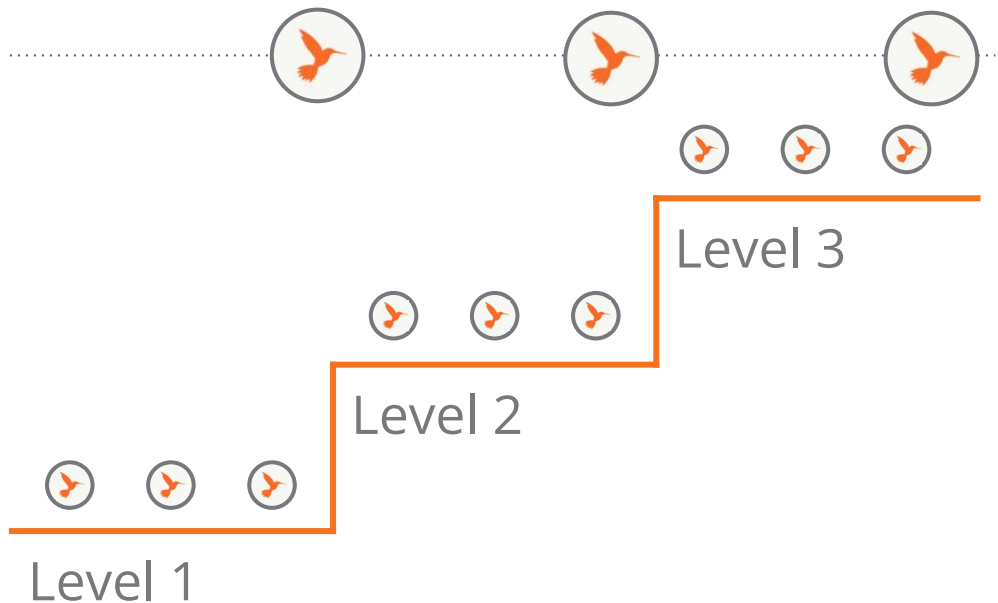


Critical Juncture Assessments

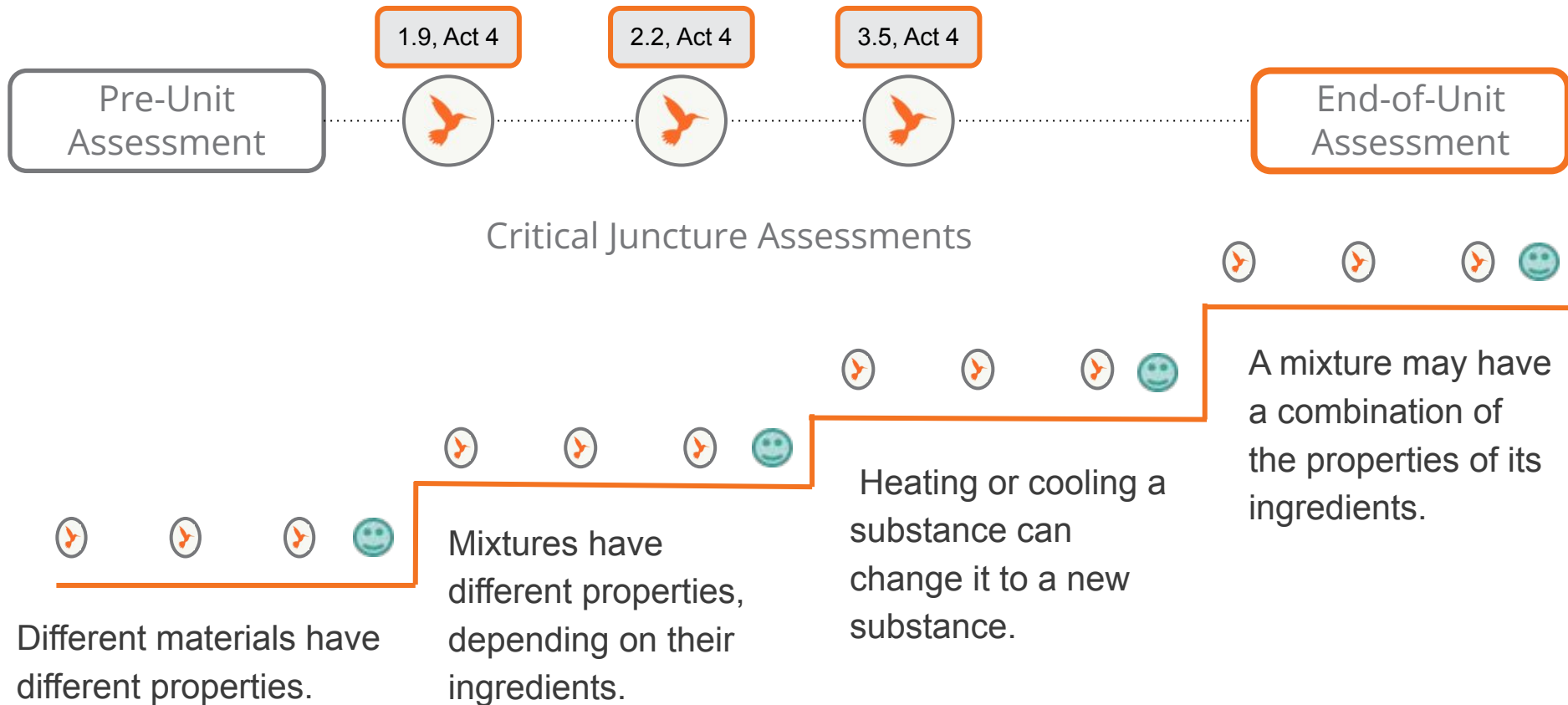


Critical Juncture Assessments

- Track student progress between Progress Build levels
- Embedded into instruction
- Assessment resource includes “Assess Understanding” and “Tailor Instruction”



K-5 Assessment System



Critical Juncture Assessment

Lesson 1.9, Activity 2

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



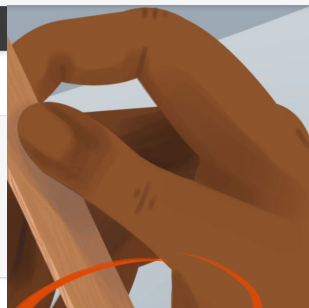
LESSON 1.1
Pre-Unit Assessment



LESSON 1.2
What If Rain Boots Were
Made of Paper?



LESSON 1.3
Observing Properties of
Glue



LESSON 1.6
Evaluating Sticky Test
Evidence



LESSON 1.9
Making Our First Glue

Science California > Properties of Materials > Lesson 1.9

Lesson Brief
(4 Activities)

1

TEACHER-LED DISCUSSION
Preparing to Make Glue



2

HANDS-ON
Making Our First Glue



3

STUDENT-TO-STUDENT
DISCUSSION
Applying Vocabulary with
the Word Relationship



4

WRITING
Critical Juncture: Writing
About Glues



Critical Juncture: Writing About Glues

Students complete a short writing activity in which they compare their mixture to that of a partner. (20 min)



Step-by-step

Teacher Support

Possible Responses

My Notes

1. Explain that students will be working with a partner to observe glue mixtures. Refer to Ambrose Lee, the jelly bean engineer, and his colleagues to remind students that engineers often work in teams. Explain that one way in which engineers work in teams is to learn about one another's work.

Sharing ideas and comparing how well different proposals for solutions meet the criteria is something engineers do to get ideas for improving their designs. Remember, there is always more than one possible solution.

Embedded Formative Assessment

Critical Junction Lesson 1.9

Tailor instruction: The following are instructional suggestions for students who don't yet understand that **different mixtures may have different properties, depending on their ingredients**:

- **Compare more mixtures:** Have students choose another partner to work with and repeat the same task. Ask students to discuss the similarities and differences between the properties of both glue mixtures. Then, ask students to determine if the glues are the same or different. Ask students to compare the ingredients they used when answering the next question: What makes your glue mixtures the same or different?
- **Review students' understanding of mixtures with the Word Relationships routine.** Remind students of the Word Relationships routine. Explain to students that they will have cards with the following vocabulary words: *properties*, *observe*, *ingredients*, *mixtures*, and *different*. (Create new Word Relationships Cards with the words *mixture* and *different*. Reuse the *properties*, *observe*, and *ingredients* cards from Word Relationships Set 1 and Set 2.) Point out that students can use these words to help them answer questions. Invite students to form pairs. Pass out a new set of word cards to each pair. Have students take turns answering each question, using the word cards. Write each of the following questions on the board and read it out loud.
 - 1) "What can you observe with your senses about the mixtures?" [I can observe the properties.]
 - 2) "How do you make a mixture?" [You make a mixture by adding ingredients together.]
 - 3) "How can you tell mixtures apart?" [Different mixtures have different properties.]

Circulate and check for understanding. It is important that students begin to generalize their ideas about why certain mixtures would be the same or different. Students should conclude that if the mixtures are different, the ingredients that were combined to make the mixtures were different.

- **Reference Jelly Bean Engineer:** Remind students how Ambrose Lee, the jelly bean engineer, used a variety of ingredients in his jelly bean mixtures to create different jelly bean flavors and textures. Sometimes Ambrose's jelly beans needed to have specific properties and he had to add different ingredients to make his jelly beans have these properties. Ask students to think about some of the ways that Ambrose used ingredients to change the properties of his jelly bean flavors and textures. Students might point out the following: different ingredients are used to make jelly beans softer, flavored syrups and sugar are used to coat the jelly beans to make the shells shiny, and oils from limes are used to flavor lime jelly beans.

Critical Juncture Assessment

Lesson 1.9, Activity 4

Lesson Brief
(4 Activities)

1TEACHER-LED DISCUSSION
Preparing to Make Glue

2HANDS-ON
Making Our First Glue

3STUDENT-TO-STUDENT
DISCUSSION
Applying Vocabulary with
the Word Relationship

4WRITING
Critical Juncture: Writing
About Glues

RESET LESSON

Overview
Materials &
Preparation
Differentiation
Standards
Vocabulary
Unplugged?

Overview

Using the plans they created last lesson, each student creates a mixture of the ingredients they think will make a great sticky glue. They set up sticky tests to determine whether their glues meet the design goal of needing to be sticky. At the end of the lesson, there is a Critical Juncture in which pairs of students are challenged to observe and compare each others' wet glues. Based on their observations of the properties of each glue, students decide whether the glues are the same or different. They then complete a short writing activity in which they compare their mixture to that of a partner. This assessment will reveal students' readiness to move on to Chapter 2 by determining whether they have gained this foundational understanding: If mixtures have different properties, they have different ingredients; if their properties are the same, they probably have the same ingredients. At the end of the lesson, students engage in the Word Relationships routine. This culminating lesson of Chapter 1 provides students the opportunity to finally design a recipe for a

EnglishEspañol

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



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

Digital Resource

Classroom Slides 1

Classroom Slides 1

Design Cycle poster

Tray Setup: Making

Properties of Glue

Design Cycle poster

Properties of Materials Investigation
Notebook, pages 24–28

Name: _____ Date: _____

Comparing Glue Mixtures

Directions:

1. Read each of the questions below.
2. Then, record your answers.

What ingredients did you use in your glue? List each ingredient and its properties.

Ingredient	Properties

What are the properties of your mixture?

26 Properties of Materials—Lesson 1.9

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Properties of Materials—Lesson 1.9

27

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Complete the Comparing
Glue Mixtures writing
activity.

Name _____ Date _____

Comparing Glue Mixtures

Directions:

1. Read each of the questions below.
2. Then, record your answers.

What ingredients did you use in your glue? List each ingredient and its properties.

Ingredient	Properties

What are the properties of your mixture?

26 Properties of Mixture—Lesson 1.9

Properties of Mixture—Lesson 1.9

27



**Complete the Comparing
Glue Mixtures writing
activity.**

CRITICAL JUNCTURE

Tailor instruction: The following are instructional suggestions for students who don't yet understand that **different mixtures may have different properties, depending on their ingredients:**

- **Compare more mixtures:** Have students choose another partner to work with and repeat the same task. Ask students to discuss the similarities and differences between the properties of both glue mixtures. Then, ask students to determine if the glues are the same or different. Ask students to compare the ingredients they used when answering the next question: What makes your glue mixtures the same or different?
- **Review students' understanding of mixtures with the Word Relationships routine.** Remind students of the Word Relationships routine. Explain to students that they will have cards with the following vocabulary words: *properties*, *observe*, *ingredients*, *mixtures*, and *different*. (Create new Word Relationships Cards with the words *mixture* and *different*. Reuse the *properties*, *observe*, and *ingredients* cards from Word Relationships Set 1 and Set 2.) Point out that students can use these words to help them answer questions. Invite students to form pairs. Pass out a new set of word cards to each pair. Have students take turns answering each question, using the word cards. Write each of the following questions on the board and read it out loud.

1) "What can you observe with your senses about the mixtures?" [I can observe the properties.]

Formative Assessments

Work time

- Explore the Critical Juncture Assessments



22 Lessons

Properties of Materials

Printable Teacher Guide

Unit Overview

Chapters

Printable Resources

Planning for the Unit

Teacher References

Lesson Overview

Compilation

Standards and Goals

3-D Statements

Assessment System

Embedded Formative Assessments

Books in This Unit

Apps in This Unit

Opportunities for Unit Extensions

Offline Preparation

Unit Overview


What's in This Unit?

How can you design a mixture for a certain purpose? For centuries, humans have undertaken this challenge. From the creation of medicines, paints, and building materials, to the development of cleaning products, adhesives, and foods, mixtures have proven to be essential to life as we know it. By mixing ingredients together, it's possible to create a mixture that takes on some of the properties of its ingredients. In this unit, students take on the role of glue engineers and use engineering design practices to create a glue for use at their school, which serves as the design problem for the unit. They conduct hands-on investigations to


Read more >

Chapters


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




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



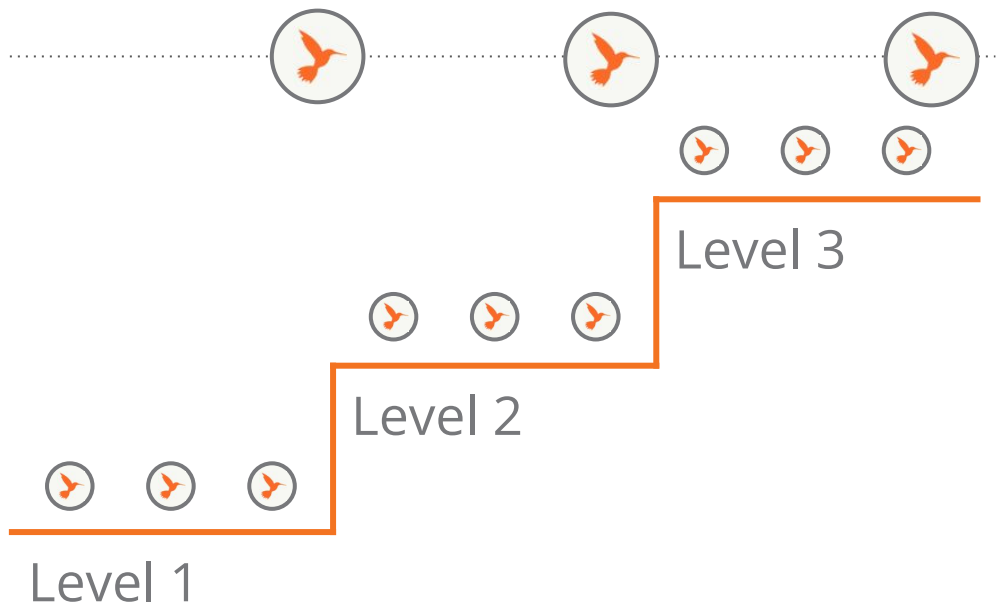
LESSON 1.6
Evaluating Sticky Test Evidence

Embedded formative assessments

Reflection

In 1-2 sentences, describe the relationship among:

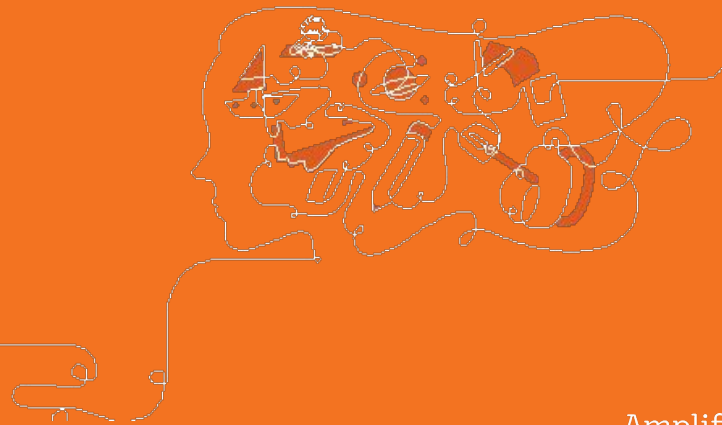
- Progress Build
- On-the-Fly Assessments
- Critical Juncture Assessments



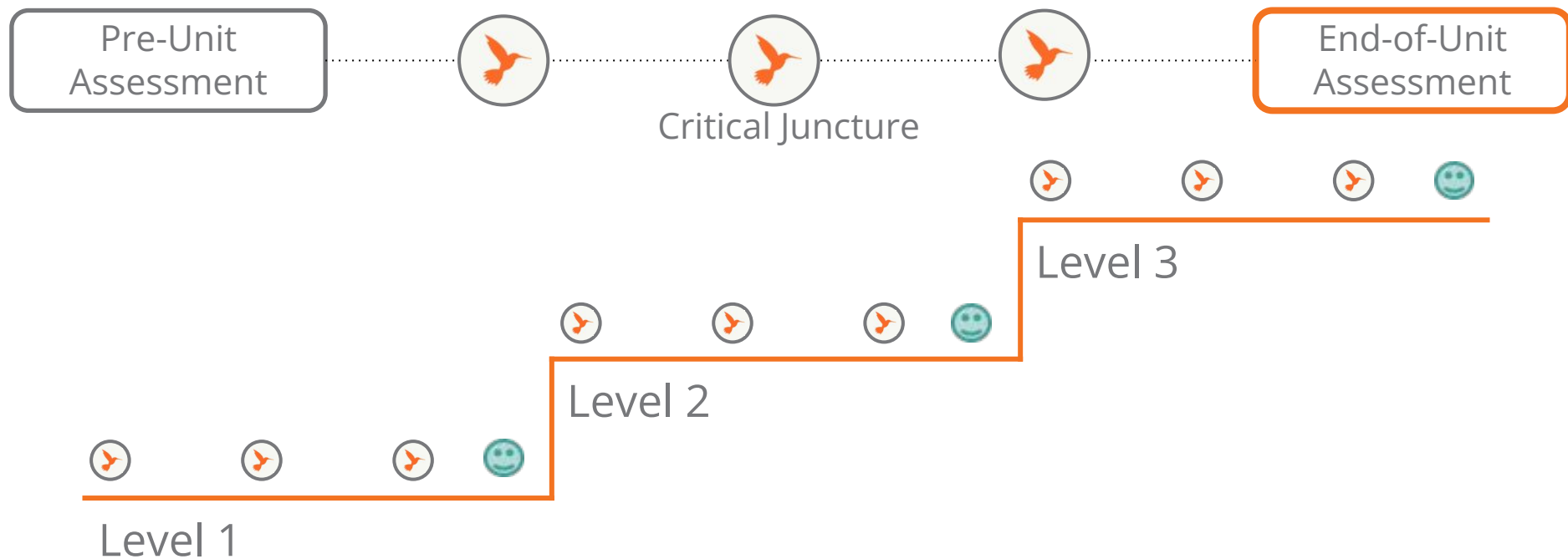
Questions?



End-of-Unit Assessment



K-5 Assessment System



End-of-Unit Assessment

3-dimensional assessment opportunity

- Summative assessment of mastery of science concepts
- Formative assessment of Science and Engineering Practices



End of Unit Assessments

What are students being asked to do?

Students write their final design arguments as a letter to the school principal about which glue recipe best meets a set of design goals.



3 Dimensional Learning

End of Unit Assessment Guide

Science and Engineering Practices

- Practice 7: Engaging in Argument from Evidence
 - ARG-P6: Construct an argument with evidence to support a claim.

Disciplinary Core Ideas

- PS1.A: Structure and Properties of Matter:
 - PS1.A-P1: Different kinds of matter exist and many of them can be either solid or liquid, depending on temperature. Matter can be described and classified by its observable properties.
 - PS1.A-P2: Different properties are suited to different purposes.
- ETS1.A: Defining and Delimiting Engineering Problems:
 - ETS1.A-P1: A situation that people want to change or create can be approached as a problem to be solved through engineering. Such problems may have many acceptable solutions.
 - ETS1.A-P2: Asking questions, making observations, and gathering information are helpful in thinking about problems.

Crosscutting Concept

- Cause and Effect
 - CE-P1: Simple tests can be designed to gather evidence to support or refute student ideas about causes.

End of Unit Assessment Rubric

Rubric 1: Assessing Students' Performance of the Practice of Constructing Design Arguments

Criteria	Description of level	Level
Responsive Does the argument propose a claim that addresses how the solution meets each design goal?	No claim is proposed, or proposed claim does not describe how the solution best meets the design goals (e.g., claim is off-topic). Possible feedback: <i>What are the design goals for the glue? Why do you think your ingredients are the best ones for meeting these design goals?</i>	0
	The argument provides a claim that describes how the solution best meets the design goal.	1
Supported Is evidence connected to each design goal in a way that is likely to convince the audience that the proposed solution is the best one?	Argument does not support the claim with any of the available information. Possible feedback: <i>How could you convince your audience that the your proposed solution meets the goals?</i>	0
	The argument cites evidence in support of some of the design goals. Possible feedback: <i>You included evidence that supports how your solution meets some of the design goals, but how can you convince your audience that your solution meets the other design goals?</i>	1
	The argument cites evidence in support of all of the design goals. Possible feedback: <i>Does all the available information support your claim that your ingredients are best? Does any available information support another claim?</i>	2
Clear and well-organized Is the argument structured in a way that clearly communicates to the audience why the proposed solution is best?	Questions to guide review of student's writing: In assigning a level for this criterion, take into consideration the writing supports and expectations emphasized in your classroom. We suggest a score from 0-2 but you may adjust the scale according to your instructional priorities. Note that not all questions below may be relevant for your classroom and/or you may choose to add your own. • If you ask, can the student describe how he tried to make his argument appropriate to the audience (the school principal)? • Does the argument use appropriate vocabulary from the unit (e.g., design, ingredient, mixture)?	0-2

Rubric 2: Assessing Students' Understanding of Science Ideas Encountered in the Unit

Rubric 2 considers whether students' arguments are consistent with the relevant science ideas that students have encountered in the unit. This rubric may be used summatively by tallying the points for each science idea demonstrated, as described below.

Rubric 2: Assessing Students' Understanding of Science Ideas Encountered in the Unit		
Criteria	Questions to keep in mind	Score
Consistent with accepted science ideas and available data Does the argument include the relevant science ideas and data?	Does the student show understanding that materials have properties that are inherent to the material? (1 point) Evidence could include: • The argument accurately describes the observable properties of the proposed glue's ingredients. • The argument accurately describes the observable properties of the proposed glue, such as being sticky, strong, white, clear, etc.	
	Does the student show understanding that the properties of a mixture are determined by the particular combination of materials that make it up? (1 point) Evidence could include: • The argument connects the properties of the chosen ingredients to the properties of the proposed glue.	
Total (0-2)		

Rubric 3: Assessing Students' Understanding of the Crosscutting Concept of Cause and Effect

Rubric 3 considers how well students are able to apply the crosscutting concept of Cause and Effect to a specific phenomenon. This rubric may be used summatively by tallying the points for each application demonstrated, as described below.

Rubric 3: Assessing Students' Understanding of the Crosscutting Concept of Cause and Effect		
Criteria	Questions to keep in mind	Score
Grounded in evidence Does the argument rely on the idea that causes generate observable patterns?	Does the argument use the idea that the properties of the ingredients will cause the mixture to have predictable properties? (1 point)	
Total (0-1)		

Possible Student Responses

Relevant to all three rubrics, possible student responses are provided to illustrate a response to the prompt that meets all four criteria: responsive, supported, clear and well-organized, and consistent with accepted science ideas and available data. Also provided is a response that meet some criteria but not others. This response shows one possible set of criteria, but note that students may have chosen a different final criterion.

Criteria	Possible student responses
Response that meets all criteria	<i>I chose these ingredients because</i> I wanted my glue to be sticky, strong, smooth, and spreadable. I chose ingredients that were sticky, strong, smooth, and spreadable so that my mixture would also be sticky, strong, smooth, and spreadable. <i>I know that my glue meets my design goals because</i> My glue is good at meeting the design goals of being sticky, strong, smooth, and spreadable. I know my glue is sticky and strong because my glue worked really well to hold my picture frame together. I know it is smooth because it dried smooth when I did my strength test. I know it is spreadable because I spread it to make my picture frame.
	<i>I chose these ingredients because</i> I wanted my glue to be sticky, strong, smooth, and spreadable. I chose ingredients that were sticky, strong, smooth, and spreadable so that my mixture would also be sticky, strong, smooth, and spreadable. <i>I know that my glue meets my design goals because</i> My glue is good at meeting the design goals of being sticky, strong, smooth, and spreadable.
Response that is responsive but not supported	<i>I chose these ingredients because</i> I wanted my glue to be sticky, strong, smooth, and spreadable. I chose ingredients that were sticky, strong, smooth, and spreadable so that my mixture would also be sticky, strong, smooth, and spreadable. <i>I know that my glue meets my design goals because</i> My glue is good at meeting the design goals of being sticky, strong, smooth, and spreadable.

End-of-Unit Assessment

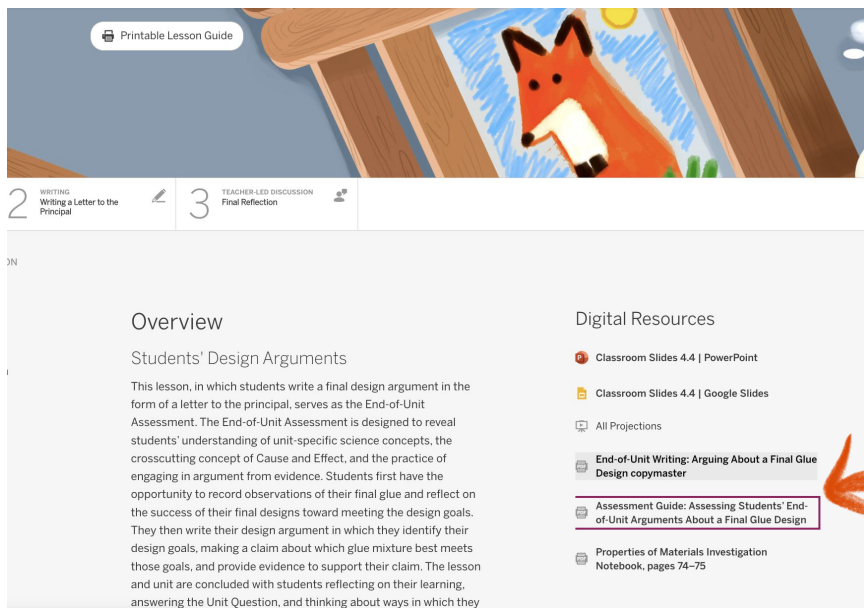
Work time

- Open your Participant Notebook to page 12.
- Score the three student responses (page 16) with rubric 2 only (science ideas).
- Come together with your group and discuss your scores.
- Share out



End-of-Unit Assessment

- Go to the The **End-of-Unit Writing** and the **End-of Unit Assessment Guide** on the lesson page
- Compare your scores with the student responses in the guide.
- Discuss with your group if there were any differences.



The screenshot shows a lesson page with a header image of a fox on a wooden bridge. Below the header is a navigation bar with two tabs: '2 WRITING Writing a Letter to the Principal' and '3 TEACHER-LED DISCUSSION Final Reflection'. The main content area is titled 'Overview' and 'Students' Design Arguments'. It describes a lesson where students write a final design argument in the form of a letter to the principal, serving as the End-of-Unit Assessment. The text explains that the assessment is designed to reveal students' understanding of unit-specific science concepts, the crosscutting concept of Cause and Effect, and the practice of engaging in argument from evidence. Students first have the opportunity to record observations of their final glue and reflect on the success of their final designs toward meeting the design goals. They then write their design argument in which they identify their design goals, making a claim about which glue mixture best meets those goals, and provide evidence to support their claim. The lesson and unit are concluded with students reflecting on their learning, answering the Unit Question, and thinking about ways in which they

On the right side, there is a 'Digital Resources' section with the following items:

- Classroom Slides 4.4 | PowerPoint
- Classroom Slides 4.4 | Google Slides
- All Projections
- End-of-Unit Writing: Arguing About a Final Glue Design copymaster**
- Assessment Guide: Assessing Students' End-of-Unit Arguments About a Final Glue Design**
- Properties of Materials Investigation Notebook, pages 74–75

An orange arrow points to the 'Assessment Guide: Assessing Students' End-of-Unit Arguments About a Final Glue Design' resource.

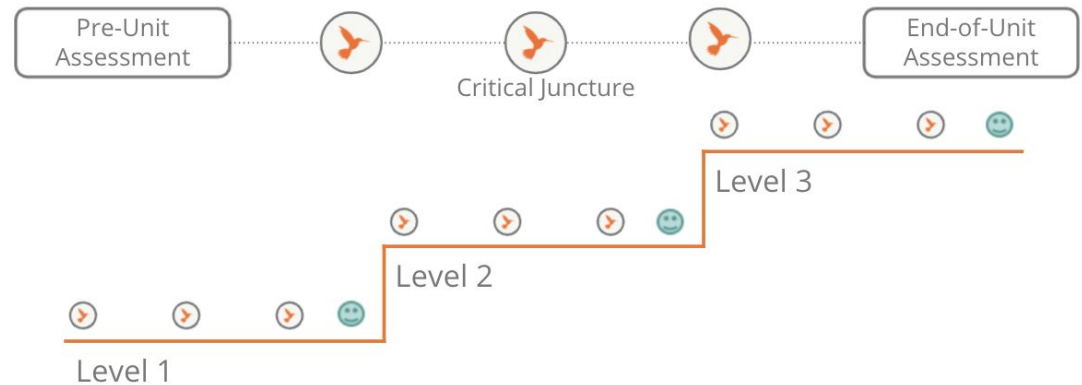
Assessment System

Reflection

How do the Progress Build and assessments work as a system?

What are the benefits of this system for students? For teachers?

K-5 Assessment System

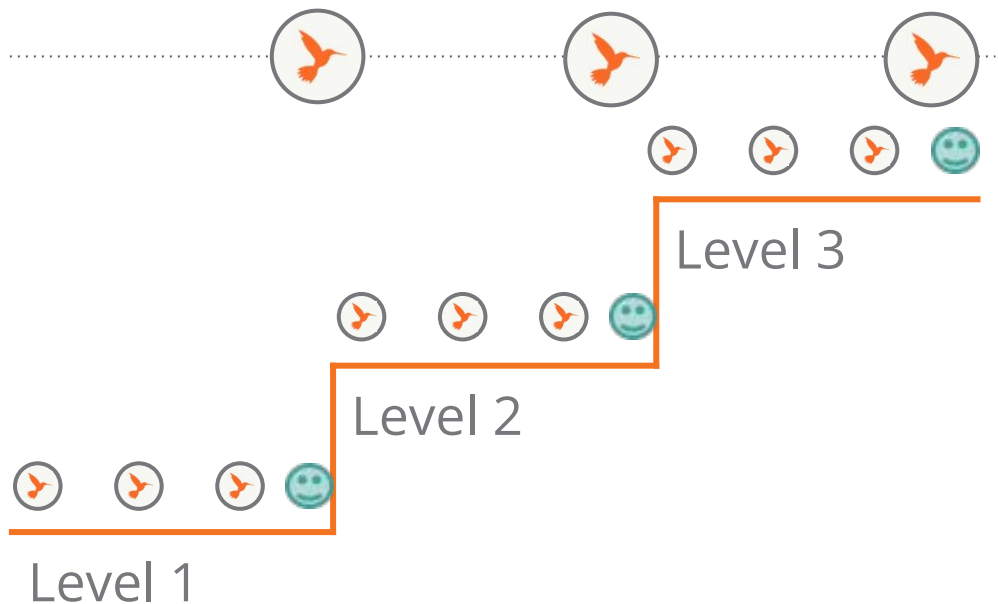


Lunch Break

Additional formative assessment information

Student Self-Assessments

- End of each chapter
- Grades K-1: Pair Share activity
- Grades 2-5: Independent Investigation Notebook activity



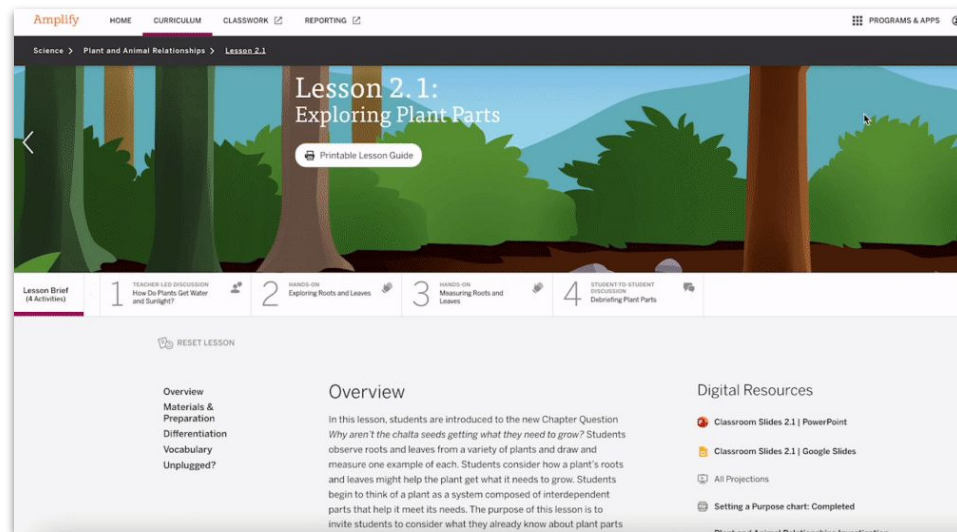
Questions?



Resources for NGSS progress monitoring

NGSS Benchmark assessments

- Accessible in the Global Navigation menu
- Grades 3-5
- 4 assessments per grade



Resources for NGSS progress monitoring

3D Assessment Objectives

- Located in the Unit Guide
- Identifies where each dimension of the target Performance Expectations are assessed in the unit, in the grade, or in the grade-band.

2-LS2-1. Plan and conduct an investigation to determine if plants need sunlight and water to grow.

SEP: Planning and Carrying Out Investigations

Needs of Plants and Animals (Grade K)

OTFA 7: Lesson 2.3, Activity 3
OTFA 10: Lesson 3.1, Activity 2

Pushes and Pulls (Grade K)

PRE: Lesson 1.1, Activity T
OTFA 4: Lesson 2.1, Activity 2

Sunlight and Weather (Grade K)

OTFA 2: Lesson 2.1 Activity 4
INV: Lesson 4.1, Activities 3 + 4 (S)
OTFA 14: Lesson 5.2, Activity 4

Light and Sound (Grade 1)

OTFA 2: Lesson 1.3, Activity 3
OTFA 7: Lesson 3.1, Activity 2
INV: Lesson 4.1, Activity 3 (S)

Spinning Earth (Grade 1)

OTFA 7: Lesson 3.1, Activity 2
OTFA 8: Lesson 3.3, Activity 4
OTFA 11: Lesson 4.1, Activity 2

Plant and Animal Relationships (Grade 2)

OTFA 4: Lesson 1.6, Activity 4
OTFA 9: Lesson 3.3, Activity 3
OTFA 12: Lesson 4.1, Activity 4
OTFA 13: Lesson 4.2, Activity 4
INV: Lesson 4.3, Activity 4 and Lesson 4.3, Activities 1–4 (S)
OTFA 14: Lesson 4.3, Activity 3

DCI: LS2.A: Interdependent Relationships in Ecosystems

Plant and Animal Relationships (Grade 2)

PRE: Lesson 1.1, Activity 3
CJ 1: Lesson 1.7 Activity 2
OTFA 7: Lesson 2.3, Activity 3
CJ 2a: Lesson 2.4, Activity 3
CJ 2b: Lesson 2.5, Activity 3
INV: Lesson 4.3, Activity 4 and Lesson 4.3, Activities 1–4 (S)
EOU: Lesson 4.4, Activity 3 (S)

CCC: Cause and Effect

Pushes and Pulls (Grade K)
PRE: Lesson 1.1, Activity T
EOU: Lesson 6.3, Activity 1 (S)

Sunlight and Weather (Grade K)
PRE: Lesson 1.3, Activity 4
OTFA 13: Lesson 4.4, Activity 1
EOU: Lesson 5.6, Activity 1 (S)

Animal and Plant Defenses (Grade 1)
OTFA 3: Lesson 1.4, Activity 3

Light and Sound (Grade 1)
PRE: Lesson 1.1, Activity 1
OTFA 3: Lesson 1.4, Activity 3
OTFA 9: Lesson 3.6, Activity 1
INV: Lesson 4.1, Activity 3 (S)
EOU: Lesson 4.6, Activity 1 (S)

Changing Landforms (Grade 2)
OTFA 5: Lesson 2.4, Activity 2

Properties of Materials (Grade 2)
OTFA 8: Lesson 2.3, Activity 5
OTFA 16: Lesson 4.3, Activity 4
EOU: Lesson 4.4, Activity 2 (S)

Generating grades

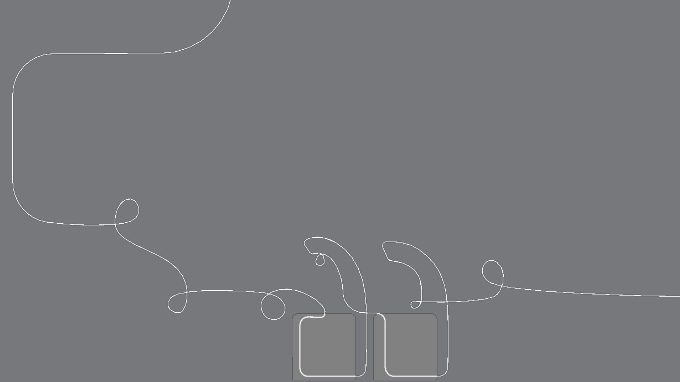
Group collaborative discussion

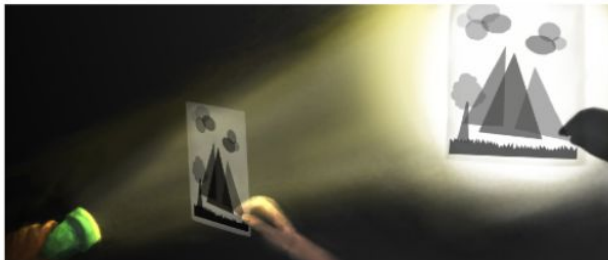
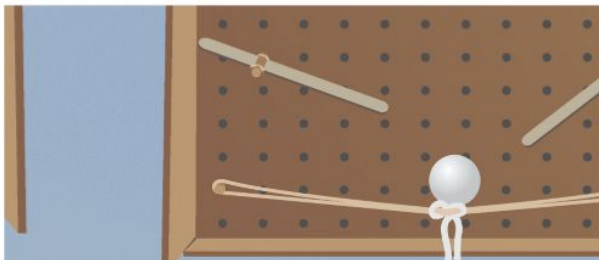
What are your district's grading requirements for science?

How will you use Amplify Science assessments to generate grades?



Questions?





Plan for the day

- Introduction
- Assessment System
- Progress Build
- Assessments
- **Model Lesson**
- Planning
- Closing

Properties of Materials

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

Role: Glue engineers

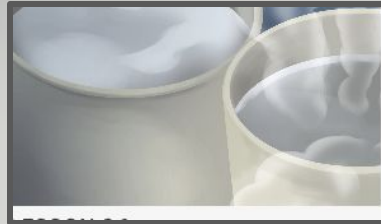
As glue engineers, students are challenged to create a glue for use at their school that meets a set of design goals. Students present an evidence-based argument stating why their glue mixture would solve their school's need for a better glue.

Properties of Materials

Coherent Storylines



How can you make a sticky glue?



Can heating an ingredient make a better glue?



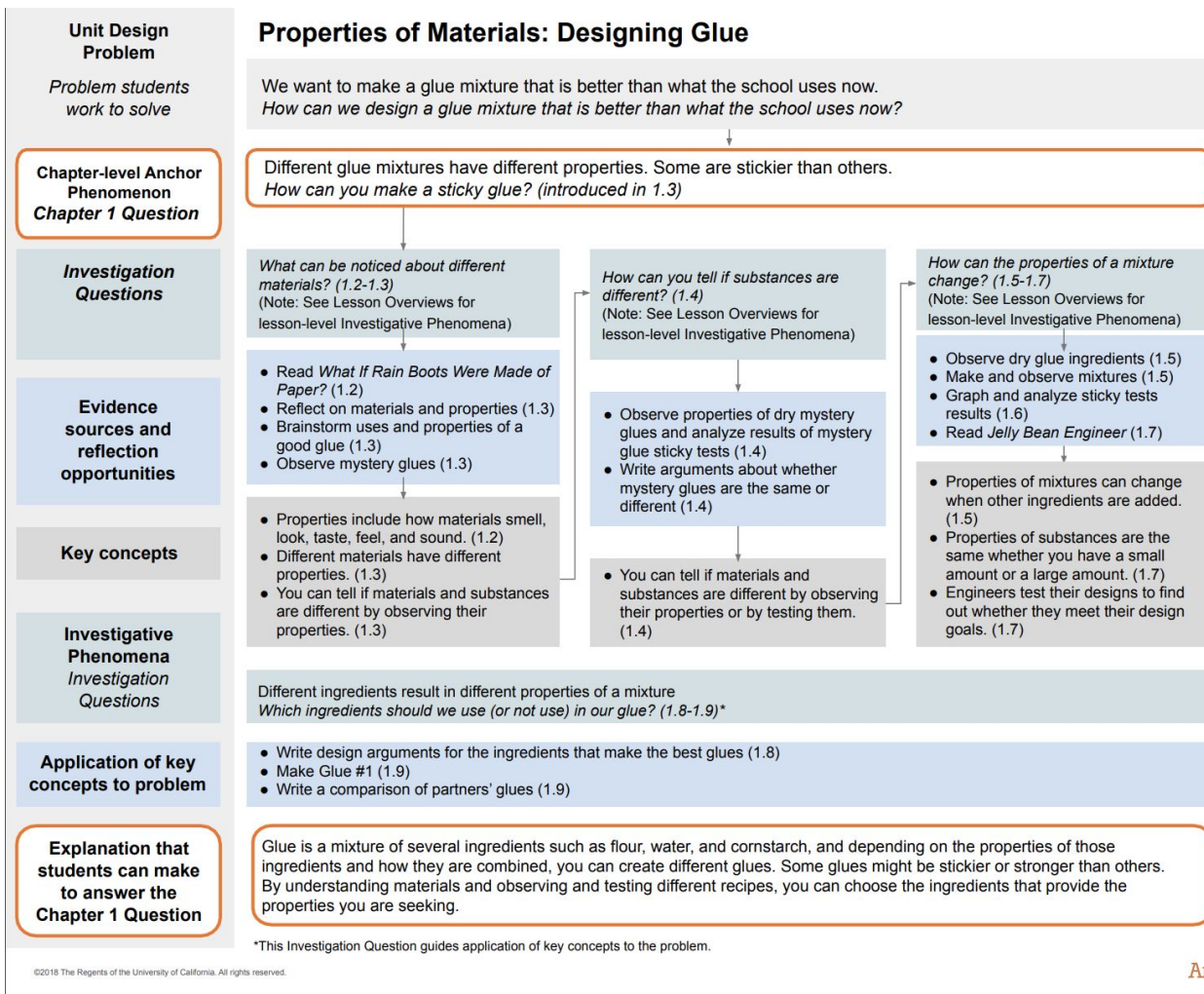
What ingredients can be used to make a glue that is sticky and strong/



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

Coherence Flowchart

Chapter 1



*This Investigation Question guides application of key concepts to the problem.

Modeling Matter

Leading up to our
model lesson

Chapters

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



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 1.1

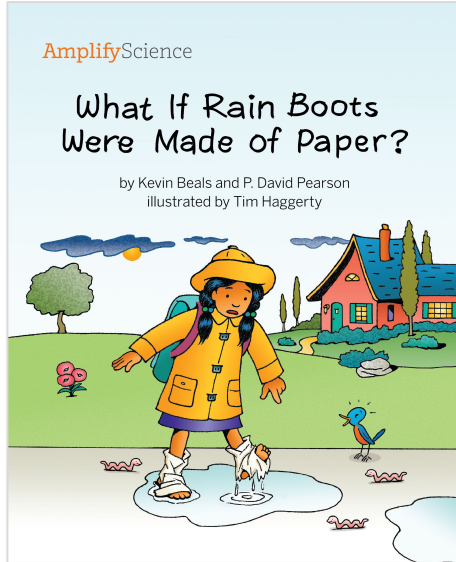


Observe substances using their senses of touch, smell, and sight



Observe your Mystery Mixture and **record** your observations and ideas.

Lesson 1.2



Read using this strategy
of predicting


Key Concepts

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

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

The Lesson Brief

Science California > Properties of Materials > Lesson 1.3



Lesson 1.3: Observing Properties of Glue

[Printable Lesson Guide](#)


Lesson Brief
(4 Activities)

1
TEACHER-LED DISCUSSION
Materials Riddles

2
STUDENT-TO-STUDENT
DISCUSSION
Uses and Properties of Glue

3
HANDS-ON
OBSERVING
Observing Mystery Glues

4
HANDS-ON
SETTING UP
Setting Up Glue Tests







 RESET LESSON

Overview
Materials & Preparation
Differentiation
Standards
Vocabulary
Unplugged?

Overview

Students gain firsthand experience observing the properties of materials and of two mystery substances—Glue A and Glue B. The teacher first creates riddles describing materials in the classroom by their properties. Students use their prior knowledge of the properties of the mystery materials to figure out what they are. Next, students learn that there can be different types of the same material, for instance not all wood is the same, not all metal is the same, not all paper is the same, and not all glue is the same. Students learn the word substance and then they observe and record the properties of two mystery glues to decide whether the two glues are the same substance or different substances. They set up a “sticky test” of the

Digital Resources

-  Classroom Slides 1.3 | PowerPoint
-  Classroom Slides 1.3 | Google Slides
-  All Projections
-  Design Goals poster
-  How to Smell Things Safely
-  Tray Setup: Mystery Glues Sticky Test

English

Español

Properties of Materials

Materials for Lesson 1.3

For the Class

- 1 container of school glue, white, non-toxic*
- 1 container of craft glue, tacky, non-toxic*
- 3–4 glues, assorted*
- 18 3-ounce paper cups
- 18 craft sticks, small
- 38 index cards
- 36 paper plates*
- dried beans
- 9 labels: Glue A
- 9 labels: Glue B
- 1 sheet of chart paper*
- 9 trays*
- 36 safety goggles*
- masking tape*
- marker*
- optional: Chapter 1 Home Investigation: Observing Your Favorite Drink copymaster

Each Group of Four Students

- 1 tray of investigation materials

For Each Student

- safety goggles*
- optional: 1 copy of the Chapter 1 Home Investigation: Observing Your Favorite Drink student sheet
- *Properties of Materials* Investigation Notebook (pages 6–7)

Properties of Materials

Classroom Wall

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.

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

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

Key Concept:

*Different materials have different properties
You can tell if materials and substances are different by
observing their properties.*

Vocabulary:

Design
Material
Predict
property
Evidence
Observe
Substance
test

An illustration showing a hand holding a wooden stick, applying a thick, white, viscous substance (glue) to a red kidney bean. The glue is being pulled into a long, stringy strand. Several other red kidney beans are scattered on a light blue surface. The background is a solid light blue color.

Grade 2 | Properties of Materials

Lesson 1.3: Observing Properties of Glue

Activity 1

Materials Riddles



Remember that we are investigating this question:

What can be noticed about different materials?

AmplifyScience

What If Rain Boots Were Made of Paper?

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



We learned that things are made from different kinds of materials.



What **kinds of materials** did we read about in the book?



What are the **properties of paper** that make it a **bad material** for making rain boots? What are the **properties of rubber** that make it a **better choice**?

What is another “what if” material from the book and its properties?

We're going to solve some **Materials Riddles**.

I will **think of a material** used in our classroom and **describe its properties** without saying what it is.

You'll think about the properties I list and try to figure out what material I'm describing.

Now I'll give you some Materials Riddles.



Put your thumb up if you know the material I am thinking of.

Keep your answers to yourselves so your classmates have a chance to solve the riddle.



How were you able to **solve the riddles?**

Vocabulary



observe

**to use any of the five senses to gather information
about something**

Notice is an everyday word. **Observe** is a science word. I'll replace the word "noticed" with "observed" in the question we have been investigating.

Key Concept

Different materials have different properties.

Activity 2

Uses and Properties of Glue



We're working as glue engineers and will be making glue for the school.



What is the **science word** for when an engineer **solves a problem by making something new**?



Chapter 1 Question

How can you make a sticky glue?

Design Goals

Possible *Glue* Uses

Possible *Glue* Properties

Goals for Our *Glue*

Before designing a solution, it's important to **understand the problem.**

We'll use this poster throughout the unit to **help us plan.**

Think-Pair-Share Routine



Think

Think silently about the question.



Pair

Turn and talk to a partner about the question.



Share

Share your ideas about the question with the class.



What kinds of things is
glue used for?

Design Goals

Possible Glue Uses



Possible Glue Properties

Goals for Our Glue

Let's record our ideas about uses for glue under "Possible Glue Uses."



We are designing glue for school, so which of these uses are **important for a good school glue?**

Design Goals

Possible *Glue* Uses

Possible *Glue* Properties



Goals for Our *Glue*



What **properties** do you think our glue should have?



What ideas do you have about what **makes glues different?**

Activity 3

Observing Mystery Glues



There can be **different types of the same material**. For example, wood, metal, and paper are materials, but there are different kinds of wood, different kinds of metal, and different kinds of paper.

Substance is a word that scientists use to talk about a **specific kind of material**.

Vocabulary



substance

a specific kind of material



Glue is a material, but **not all glue is the same.**

Each of these glues is a substance. They are all glues, but they are different glues. They are **different substances.**



You'll observe Mystery Glues to figure out if they're the same substance.



How might you **observe the properties** of each glue?



As you **observe** the Mystery Glues, make sure you smell substances in the **special way that scientists do.**

Name: _____ Date: _____

Observing the Wet Mystery Glues

- Directions:
- 1. Use your senses to observe each mystery glue.
 - 2. Write the properties of each mystery glue in the table below.

Properties of Mystery Glue A	Properties of Mystery Glue B

Turn to page 7 in your notebooks.

The notes you take here will help you decide whether the Mystery Glues are **the same or different substances**.

Observing the Mystery Glues



Step 1

In your groups of four, **one pair observes Glue A while the other observes Glue B. Switch cups** so each pair gets to observe both glues.



Step 2

Use your senses to observe each glue. Look at it, smell it, pour it on the plate, and feel it with the stick.



Step 3

Record your observations in your notebooks.



Design Goals

Possible *Glue* Uses

Possible *Glue* Properties



Goals for Our *Glue*

Let's discuss the glues before saying whether we think they are the same.



What are some of the
properties of the glues
that you observed?



Thumbs up if you think the two glues are the **same substance**. What did you **observe** that makes you think they are the same?

Thumbs down if you think the two glues are **different substances**. What did you **observe** that makes you think they are different?

Key Concept

You can tell if materials or substances are different by observing their properties.

Vocabulary



evidence

information that supports an answer to a question

Activity 4

Setting Up the Glue Tests



Let's look at the various ways we said that glue is used.



What is the **most important property** for a glue to have in order to be used in these ways?

Vocabulary



test

to try something and find out what happens



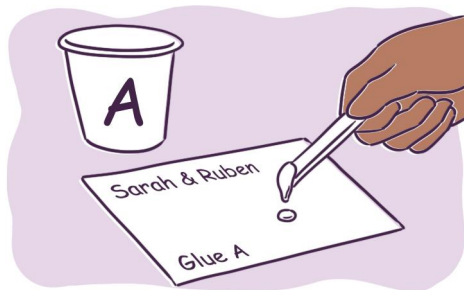
What would be a **good test** to see if something is **sticky**?



We'll be doing a **sticky test** for each of the Mystery Glues.

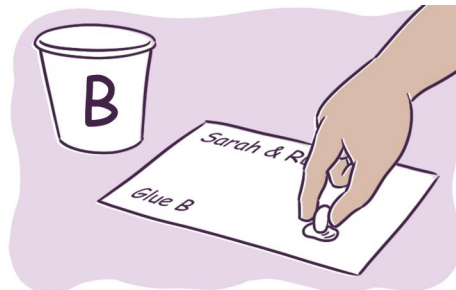
I'll show you how to set up the tests.

Mystery Glue Sticky Test



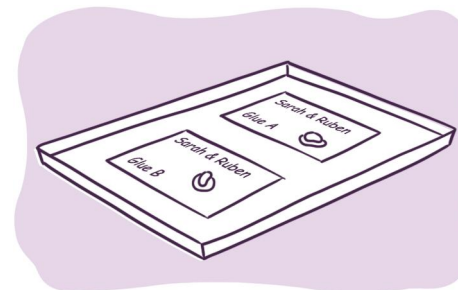
Step 1

Write your names and Glue A or Glue B on the cards. Put a **small amount of glue** on each card.



Step 2

Put a bean in the middle of each circle of glue.



Step 3

Leave the cards flat on the tray to dry overnight.

End of Lesson

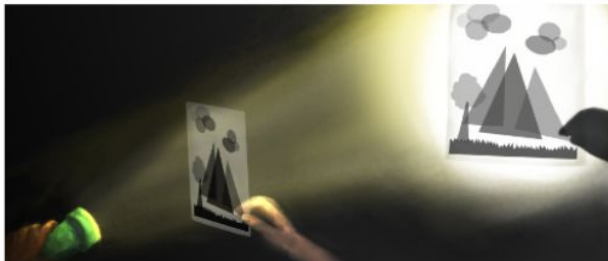
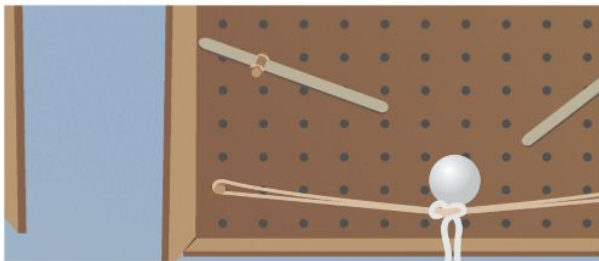


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HALL OF SCIENCE
UNIVERSITY OF CALIFORNIA, BERKELEY

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Break

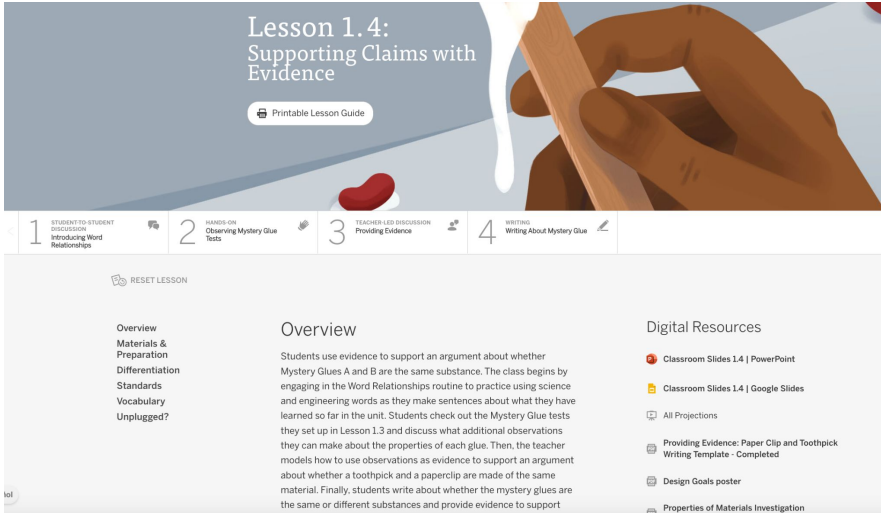


Plan for the day

- Introduction
- Assessment System
- Progress Build
- Assessments
- Model Lesson
- **Planning**
- Closing

Work time - Planning

- Navigate to a lesson that you'll be teaching in the upcoming week that has a formative assessment opportunity (you might want to refer to the **Embedded Formative Assessment or Assessment System** documents on the Unit Landing Page)
- Review the assessment type and guidance



The screenshot displays the interface for Lesson 1.4, titled "Supporting Claims with Evidence". At the top, there is a header with the lesson title and a "Printable Lesson Guide" button. Below the header is a progress bar with four steps: 1. Student-to-Student Discussion: Introducing Word Relationships, 2. Hands-On: Observing Mystery Glue Tests, 3. Teacher-Led Discussion: Providing Evidence, and 4. Writing: Writing About Mystery Glue. The main content area is divided into three sections: Overview, Materials & Preparation, and Digital Resources. The Overview section contains a paragraph about the lesson's purpose and activities. The Materials & Preparation section lists various resources like Classroom Slides, All Projections, and Design Goals poster. The Digital Resources section lists additional materials like Providing Evidence: Paper Clip and Toothpick Writing Template and Properties of Materials Investigation.

Lesson 1.4:
Supporting Claims with Evidence

Printable Lesson Guide

1 STUDENT-TO-STUDENT DISCUSSION Introducing Word Relationships

2 HANDS-ON Observing Mystery Glue Tests

3 TEACHER-LED DISCUSSION Providing Evidence

4 WRITING Writing About Mystery Glue

RESET LESSON

Overview

Materials & Preparation

Differentiation

Standards

Vocabulary

Unplugged?

Overview

Students use evidence to support an argument about whether Mystery Glues A and B are the same substance. The class begins by engaging in the Word Relationships routine to practice using science and engineering words as they make sentences about what they have learned so far in the unit. Students check out the Mystery Glue tests they set up in Lesson 1.3 and discuss what additional observations they can make about the properties of each glue. Then, the teacher models how to use observations as evidence to support an argument about whether a toothpick and a paperclip are made of the same material. Finally, students write about whether the mystery glues are the same or different substances and provide evidence to support

Digital Resources

- Classroom Slides 1.4 | PowerPoint
- Classroom Slides 1.4 | Google Slides
- All Projections
- Providing Evidence: Paper Clip and Toothpick Writing Template - Completed
- Design Goals poster
- Properties of Materials Investigation

Work time - Planning

- Download and review the classroom slides
- Read the unit overview
- Read the Materials and Prep
- Read the differentiation
- Prepare any data collectors or assessment materials needed.

The screenshot displays the interface for Lesson 1.4, titled "Supporting Claims with Evidence". At the top, there is a header with the lesson title and a "Printable Lesson Guide" button. Below the header is a navigation bar with four tabs: 1. STUDENT TO STUDENT DISCUSSION: Introducing Word Relationships, 2. HANDS ON: Observing Mystery Glue Tests, 3. TEACHER LED DISCUSSION: Providing Evidence, and 4. WRITING: Writing About Mystery Glue. The main content area is divided into three sections: Overview, Materials & Preparation, and Digital Resources. The Overview section contains a paragraph about the lesson's purpose and activities. The Materials & Preparation section lists various resources like Classroom Slides, All Projections, and a Design Goals poster. The Digital Resources section lists additional materials like Properties of Materials Investigation and a Paper Clip and Toothpick Writing Template.

Lesson 1.4:
Supporting Claims with Evidence

Printable Lesson Guide

1 STUDENT TO STUDENT DISCUSSION: Introducing Word Relationships

2 HANDS ON: Observing Mystery Glue Tests

3 TEACHER LED DISCUSSION: Providing Evidence

4 WRITING: Writing About Mystery Glue

RESET LESSON

Overview

Materials & Preparation

Differentiation

Standards

Vocabulary

Unplugged?

Overview

Students use evidence to support an argument about whether Mystery Glues A and B are the same substance. The class begins by engaging in the Word Relationships routine to practice using science and engineering words as they make sentences about what they have learned so far in the unit. Students check out the Mystery Glue tests they set up in Lesson 1.3 and discuss what additional observations they can make about the properties of each glue. Then, the teacher models how to use observations as evidence to support an argument about whether a toothpick and a paperclip are made of the same material. Finally, students write about whether the mystery glues are the same or different substances and provide evidence to support

Digital Resources

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- Classroom Slides 1.4 | Google Slides
- All Projections
- Providing Evidence: Paper Clip and Toothpick Writing Template - Completed
- Design Goals poster
- Properties of Materials Investigation

Work time - Planning

Be prepared to share out the:

- Lesson chosen
- Type of assessment
- “Look Fors” or “Assess for Understanding”
- “Now What” or “Tailor Instruction”
- Personal observations or reflections

Amplify Science sample assessment data collection tool

Grade :
Lesson _____

Look for 1:

Look for 2:

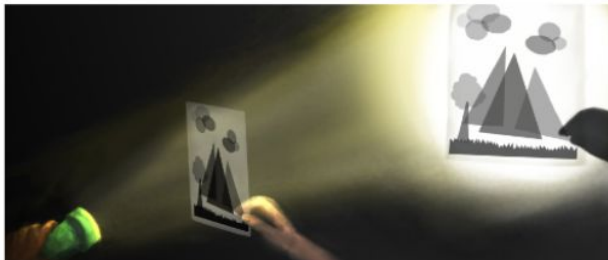
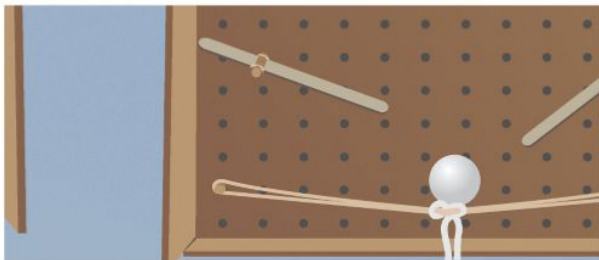
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Share Out

Share:

- Lesson chosen
- Type of assessment
- “Look Fors” or “Assess for Understanding”
- “Now What” or “Tailor Instruction”
- Personal observations or reflections



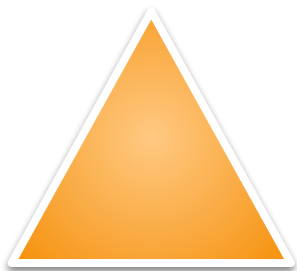


Plan for the day

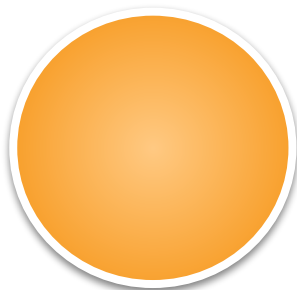
- Introduction
- Assessment System
- Progress Build
- Assessments
- Model Lesson
- Planning
- Closing

Closing reflection

Based on our work today, share:



1-3 big points you're taking away from this session



A question or topic that's still circling in your mind



Something that's "squaring" (resonating) with you from this session

Overarching goals

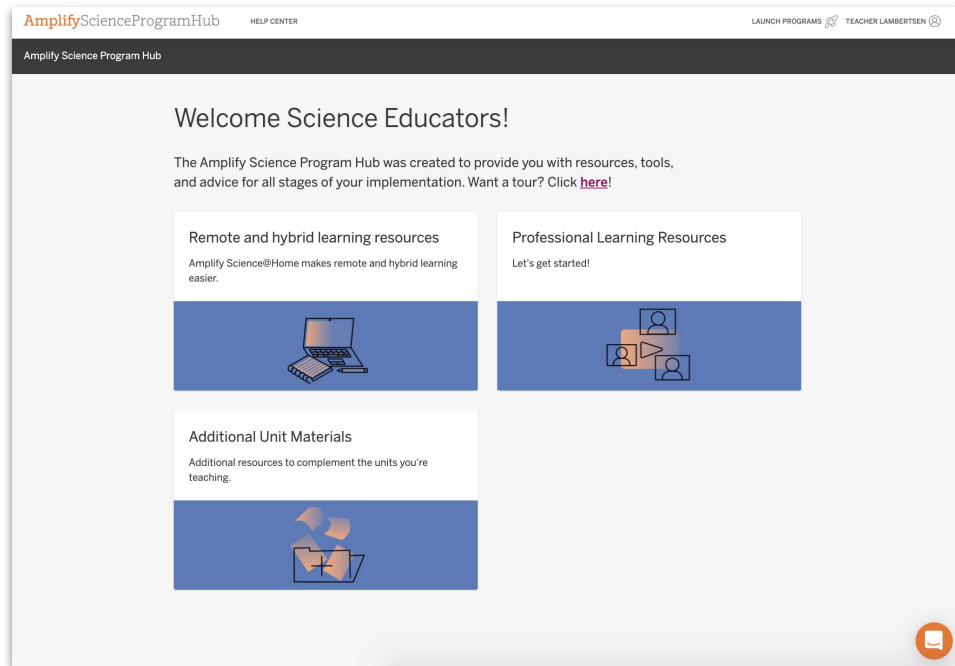
- ☑ Describe the structure and purpose of the Amplify Science Assessment System
- ☑ Plan for the strategic use of assessment resources to analyze and respond to student work

Let's connect
this goal to
our students



Program Hub

- Unit overview videos
- Planning tools
- Remote and hybrid learning resources.

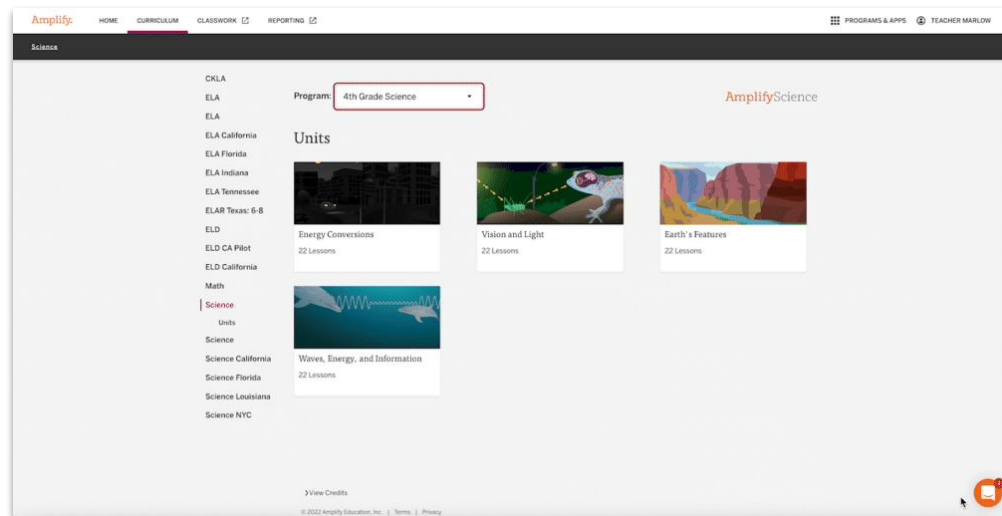


Additional resources and ongoing support

Seek information specific to enrollment and rosters, technical support, materials and kits, and teaching support.



Amplify Chat



K-2ND GRADE AMPLIFY SCIENCE PARTICIPANT FEEDBACK LINK



<http://bitly.ws/xoMz>