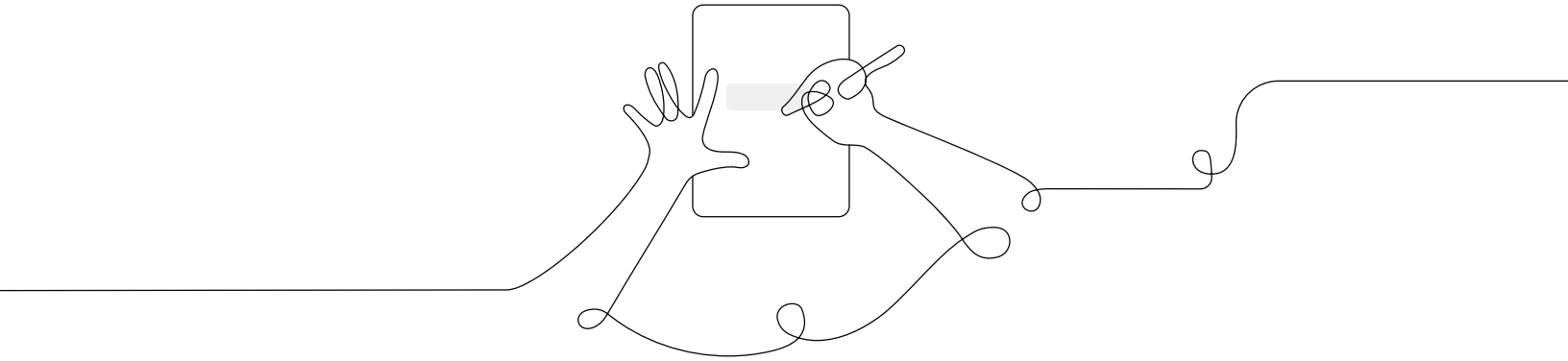
Amplify Science

Participant Notebook

Assessment System

Grade 2



Assessment System

Agenda

Introduction

- Framing

Assessment System

- Overview

Progress Build

- Analysis
- Group Work Time

Assessments

- Pre-UnitAssessments
- Formative Assessments
- End of Unit Assesment

Model Lesson

Planning

Closing

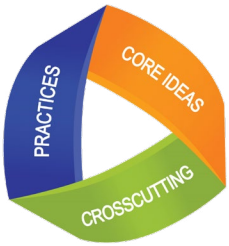
Demo account for your workshop:

URL: **learning.amplify.com** (Log in with Google)

Temporary username: _____ **@pd.tryamplify.net**

Password: _____

Three dimensional learning reference



3-D learning engages students in using scientific and engineering practices and applying crosscutting concepts as tools to develop understanding of and solve challenging problems related to disciplinary core ideas.

Science and Engineering Practices

1. **Asking Questions and Defining Problems**
2. **Developing and Using Models**
3. **Planning and Carrying Out Investigations**
4. **Analyzing and Interpreting Data**
5. **Using Mathematics and Computational Thinking**
6. **Constructing Explanations and Designing Solutions**
7. **Engaging in Argument from Evidence**
8. **Obtaining, Evaluating, and Communicating Information**

Disciplinary Core Ideas

Earth and Space Sciences:
- Earth's Place in the Universe
- Earth's Systems
- Earth and Human Activity

Life Sciences:
- From Molecules to Organisms
- Ecosystems
- Heredity
- Biological Evolution

Physical Sciences:
- Matter and its Interactions
- Motion and Stability
- Energy and their Applications

Engineering, Technology and the Applications of Science:
- Engineering Design
- Links among Engineering Technology, Science and Society

Crosscutting Concepts

1. **Patterns**
2. **Cause and Effect**
3. **Scale, Proportion, and Quantity**
4. **Systems and System Models**
5. **Energy and Matter**
6. **Structure and Function**
7. **Stability and Change**

Reflection

Use the provided spaces as a place for reflection throughout the session.

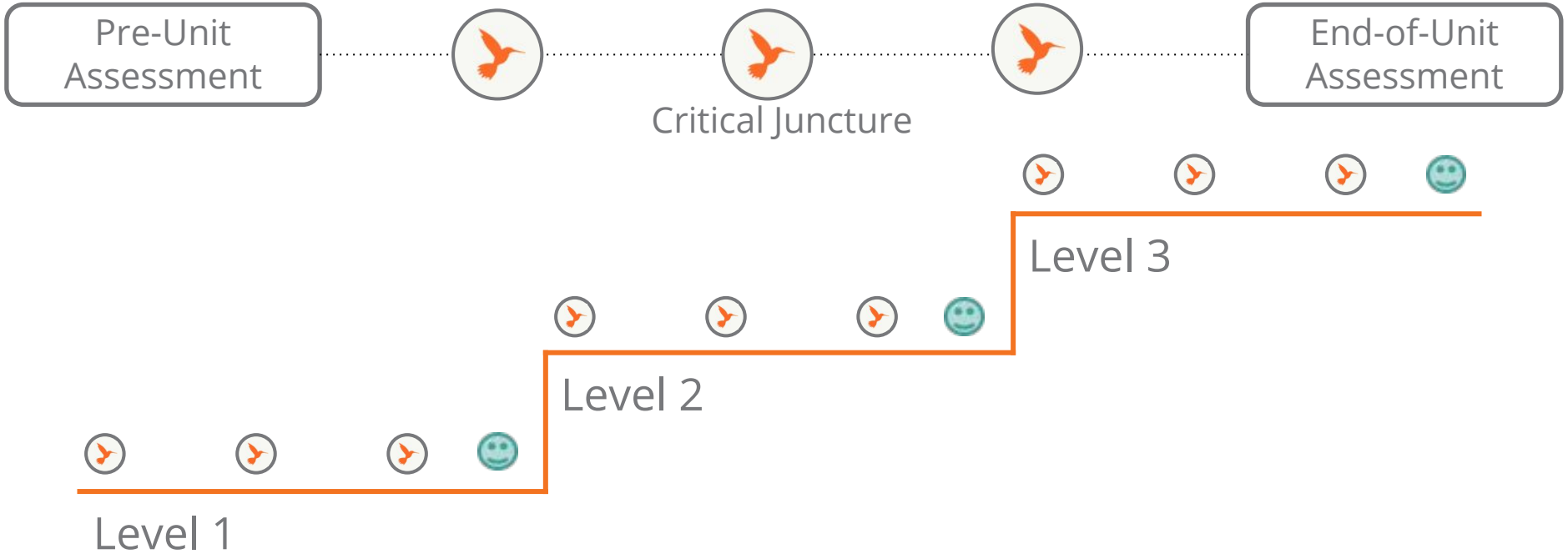
Session goals and student outcomes

What Connect the workshop goal(s) to an outcome you envision for your students.	Why Reflect on why you want this outcome for your students.	How How will your students achieve the outcome? Reflect on what you learned during the workshop that will impact student outcomes.

Triangle – Circle – Square reflection

△	
○	
□	

K-5 Assessment System



Assessment System reference (grades 2-5)

Assessment type	Description	Student experience	Teacher resources
Pre-Unit Assessment	Formative, 3-D performance assessment meant to gauge students' initial understanding and pre-conceptions about core ideas in the unit	• Pre-Unit Writing copymaster (available in Digital Resources)	• Assessment Guide (available in Digital Resources)
End-of-Unit Assessment	Summative, 3-D performance assessment to evaluate students' understanding of core ideas in the Progress Build	• End-of-Unit Writing copymaster, Versions A and B (available in Digital Resources) • For select units, End-of-Unit Writing Part 2 (available in Digital Resources or the Investigation Notebook)	• Rubric and Possible Responses in Assessment Guide (available in Digital Resources)
Critical Juncture Assessments	Embedded formative assessments for assessing students' progress along the Progress Build	• Written task in the Investigation Notebook • For written explanation and argumentation-based tasks, scaffolded version of assessment provided as a copymaster (available in Digital Resources)	• Full text of assessment includes "Assess Understanding" section and "Tailor Instruction" suggestions accessible in Instructional Guide by clicking the hummingbird icon • All Critical Juncture Assessments are included in Reference: Embedded Formative Assessments (available in the Unit Guide) • Possible Responses accessible in Instructional Guide by clicking the Possible Responses tab • For written explanation and argumentation-based tasks, Rubrics and Possible Responses in Assessment Guide (available in Digital Resources)
On-the-Fly Assessments	Embedded formative assessments for noting students' progress with one or more of the following: science disciplinary core ideas, science and engineering practices, crosscutting concepts, sense-making strategies, and collaborative science work	• Activities are embedded into existing instructional activities, leveraged for assessment opportunities. Artifacts can include discussion, use of a digital tool, notebook pages, etc.	• Full text of assessment includes what to "Look for" and "Now What?" instructional suggestions accessible in Instructional Guide by clicking the hummingbird icon • All On-the-Fly Assessments are included in Reference: Embedded Formative Assessments (available in the Unit Guide)

Assessment System reference (grades 2-5) cont.

Assessment type	Description	Student experience	Teacher resources
Student Self-Assessments	Opportunity for students to reflect on whether they understand or don't yet understand the core concepts from the unit	• Reflection prompts in the Investigation Notebook • Provided at or near the end of each chapter	• Information about Student Self-Assessments in Reference: Assessment System (available in the Unit Guide) • Teacher Support notes accessible in Instructional Guide by clicking the Teacher Support tab
Investigation Assessments	Summative, 3-D performance assessment to evaluate students' performance of the science and engineering practices of Planning and Carrying Out Investigations and Analyzing and Interpreting Data, as well as their application of disciplinary core ideas and crosscutting concepts	• Prompts for planning investigation and recording results in the Investigation Notebook or a copymaster or copymaster (available in Digital Resources) • Materials (physical or digital) for conducting investigation	• Rubrics and Possible Responses in Assessment Guide (available in Digital Resources) • Possible Responses also accessible in Instructional Guide by clicking the Possible Responses tab
Portfolio Assessments	Opportunity for students to compile and reflect on key work products collected at the end of each unit. Final portfolio compilation occurs at the end of the school year and allows students to select and reflect on work products which they feel best demonstrate their growth in understanding throughout the year	• Compilation of work products (written explanations and/or arguments, models) that show growth over the course of the year • Reflection on chosen work products • Rubrics for evaluating work products (available in Program Guide → *Assessments* → *Additional Assessment Resources*)	• Assessment Rubrics (available in Program Guide → *Assessments* → *Additional Assessment Resources*) • Guidance for communicating to parents about student progress (available in Program Guide → *Assessments* → *Additional Assessment Resources*)

Progress Build

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

In the *Properties of Materials* unit, students will learn to design a mixture with desired properties for a specific purpose.

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).

Progress Build Level 1: Different materials have different properties.

Materials are the stuff that makes up everything. Materials have properties. These properties are observable things such as color, texture, smell, and taste. Different materials have different properties.

Progress Build Level 2: Mixtures have different properties, depending on their ingredients.

Materials are the stuff that makes up everything. Materials have properties. These properties are observable things such as color, texture, smell, and taste. Different materials have different properties. **Sometimes a material is made of a combination of other materials; we call this combination a mixture, and we call the materials that make it up substances. Some mixtures have different properties, depending on their ingredients.**

Progress Build Level 3: Heating or cooling a substance can change it to a new substance.

Materials are the stuff that makes up everything. Materials have properties. These properties are observable things such as color, texture, smell, and taste. Different materials have different properties. Sometimes a material is made of a combination of other materials; we call this combination a mixture, and we call the materials that make it up substances. Some mixtures have different properties, depending on their ingredients. **Properties of substances can change when they are heated or cooled. Some substances change into a different substance when they are heated or cooled, so they have different properties when they return to their original temperature. Other substances remain the same, so they have the same properties when they return to their original temperature.**

Progress Build Level 4: A mixture may have a combination of the properties of its ingredients.

Materials are the stuff that makes up everything. Materials have properties. These properties are observable things such as color, texture, smell, and taste. Different materials have different properties. Sometimes a material is made of a combination of other materials; we call this combination a mixture, and we call the materials that make it up substances. Some mixtures have different properties, depending on their ingredients. Properties of substances can change when they are heated or cooled. Some substances change into a different substance when they are heated or cooled, so they have different properties when they return to their original temperature. Other substances remain the

same, so they have the same properties when they return to their original temperature. **The properties of a mixture may be a combination of the properties of the ingredients. Therefore, by combining certain substances, the resulting mixture will have certain properties.**

Progress Build Analysis

Directions:

1. Open the Progress Build document in the Planning for the Unit section of the Unit Guide.
2. **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.
3. 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)

Lesson 1.2, Activity 3

On-the-Fly Assessment 1: Identifying Evidence of Energy

Look for: Circulate as students work. Look for students observing the materials before and after shining a light on them and listen for students talking about the results in terms of energy moving into the materials and causing movement or change.

Now what? If students have trouble talking about their results in terms of the energy being carried by the light, ask them to focus on what is needed to cause objects to move or change. If necessary, refer to the definition of energy and review that energy is the ability to make things move or change; without energy, nothing can happen. Therefore, any movement or change students observe in the materials when the light is shined on them is evidence that energy is being carried by the light to the materials. You can further support students' thinking by asking them explicitly to consider whether each material can move or change when the light is not shining on it, then ask students what is different when the light is shining on it. Help students come to the conclusion that their observations provide evidence that energy must be affecting the material any time there is movement or change.

Amplify Science sample assessment data collection tool

Grade :
Lesson ____

Look for 1:

Look for 2:

Student Name	Look for 1	Look for 2	Notes

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: *What are the design goals for the glue? Why do you think your ingredients are the best ones for meeting these design goals?*	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: *How could you convince your audience that the your proposed solution meets the goals?*	0
	The argument cites evidence in support of some of the design goals. Possible feedback: *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?*	1
	The argument cites evidence in support of all of the design goals. Possible feedback: *Does all the available information support your claim that your ingredients are best? Does any available information support another claim?*	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

Student Response #1

I chose these ingredients because

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 know that my glue meets my design goals because

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.

Student Response #2

I chose these ingredients because

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 know that my glue meets my design goals because

My glue is good at meeting the design goals of being sticky, strong, smooth, and spreadable.

Additional Amplify resources

Program Guide

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

You can find your Program Guide through the Program and Apps menu, which is located in the top right corner of your screen. The Program Guide icon can be found under the "Other Resources" section.

Amplify Help

Frequently updated compilation of articles with advice and answers from the Amplify team.

my.amplify.com/help

Caregivers Site

https://amplify.com/science-caregivers

Amplify Support

Contact the Amplify support team for information specific to enrollment and rosters, technical support, materials and kits, and teaching support.

Email: help@amplify.com

Email: edsupport@amplify.com (pedagogical questions)

Phone: 800-823-1969

Or, reach Amplify Chat by clicking the  icon at the bottom right of the digital Teacher's Guide.

When contacting the support team:

- Identify yourself as an Amplify Science user.
- Note the unit you are teaching.
- Note the type of device you are using (Chromebook, iPad, Windows, laptop).
- Note the web browser you are using (Chrome or Safari).
- Include a screenshot of the problem, if possible. Copy your district or site IT contact on emails.

Notes

Amplify Science