

Amplify Science
New York City

**Make Science Accessible
for All Learners**
Grades K-2



Workshop Norms



- Please keep your camera on, if possible.
- Take some time to orient yourself to the platform



- Mute your microphone to reduce background noise unless sharing with the group



- The chat box is available for posting questions or responses to during the training



- Make sure you have a note-catcher present



- Be an active participant - chat, ask questions, discuss, share!

Session Plan



- **Framing the day**
- Amplify Approach to Supporting Diverse Learners
- Access and Equity Frameworks
- Differentiation
- Explore a lesson
- Closing

Overarching goals

By the end of this 2 -hour workshop, we will:

- Review the research-based principles that guided the creation of the access and equity supports & strategies in Amplify Science
- Identify the embedded supports for diverse learner needs within your current unit



During this Session

We will visit and explore:

1. [**The Amplify Science NYC Resources site**](#)
2. [**The Amplify Science Digital Teacher's Guide**](#)
3. [**The Amplify Science NYC Program Guide**](#)
4. [**The Amplify Science Program Hub**](#)



Reflect

Who are your/our
diverse learners?



The background of the slide is a grid of numerous fingerprints, rendered in grayscale. The prints are arranged in rows and columns, creating a textured, repetitive pattern. An orange horizontal bar is positioned at the top, and a light gray rectangular area is centered on the page, containing the main text and quote.

Who are our Diverse Learners?

*“The way people learn is as
as unique as their
fingerprints...”*

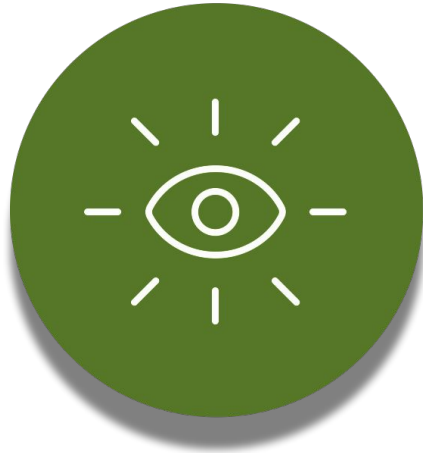
cast.org

Session Plan



- Framing the day
- **Amplify Approach to Supporting Diverse Learners**
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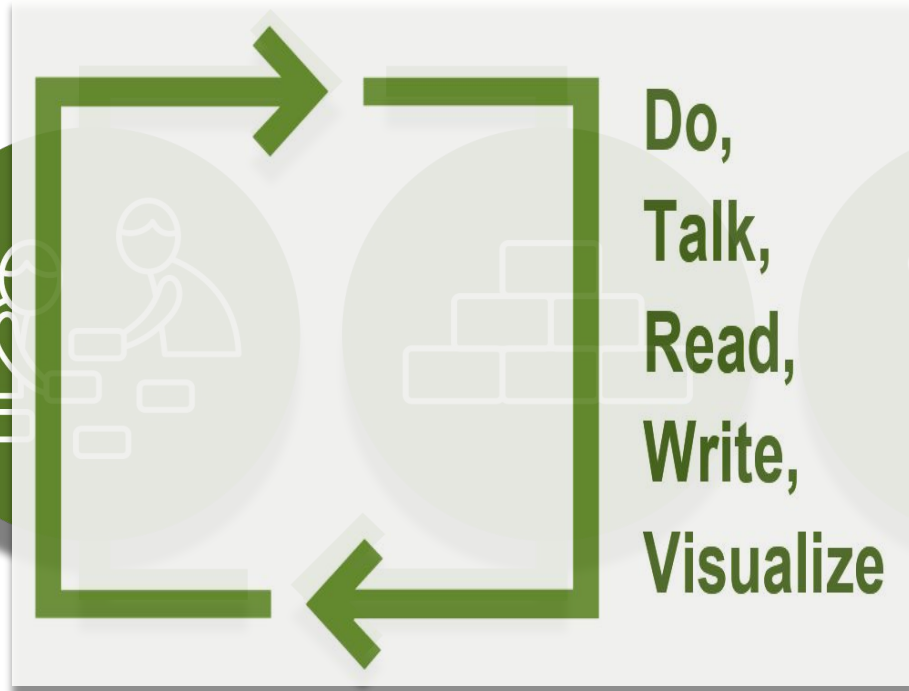
How does the Amplify Science Approach Support all learners?



**Introduce a
phenomenon/real
world problem**



**Collect evidence
from
multiple sources**



**Build
increasingly
complex
explanations**



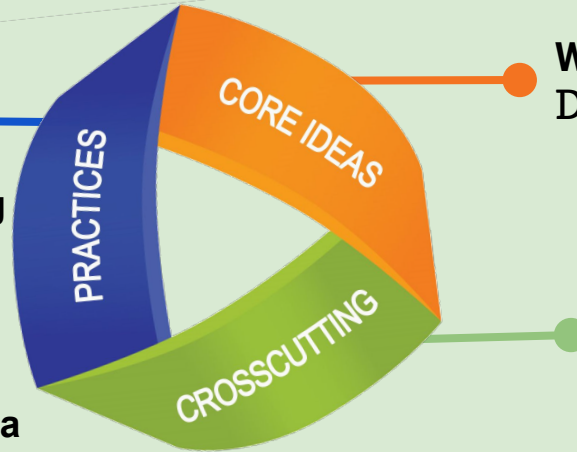
**Apply knowledge to
solve a different
problem**

NGSS/NYSSLS 3D



What scientists do 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



What scientists want to know Disciplinary Core Ideas

How scientists make sense of, organize and connect...

Crosscutting Concepts

- patterns
- cause and effect
- scale, proportion, and quantity
- systems and system models
- energy and matter
- structure and function
- stability and change

Reminder! Capitalizing on Amplify Science in a responsive relaunch

1. Amplify Science is NGSS-designed.
2. In Amplify Science units, students are figuring out phenomena.
3. Amplify Science has a robust system of formative assessment.
4. Amplify Science has a strong emphasis on literacy development.
5. Amplify Science is for all students.

Amplify Science Resources for NYC (K-5)

Updated 7/2020. These materials supporting resources designed for the New York City Department of Education Amplify Science students in grades K-5.

Resources for Classrooms

Education Specialist Publications

20-21 Logic Update

Instructional Planning Opportunities

Instructional

Setting and Maintaining

Planning and Implementing Instruction

Assessment

Change Measures

Tools for Instructional Planning

20-21 Professional Learning Resources

20-21 Professional Learning Resources

Returning to Classrooms

An article to help build the 2020-2021 school year, and to help thinking about making your classroom experience for students work best in the next 100+ days. Please take time to read this article for more information on how to get the most out of your classroom during this time and to get additional resources for support.

Student Instructional Resources

LEAP to Amplify Science

ELL in Amplify Science

Response Research Introduction Video

Response Research NYC Brief

Capitalizing on Amplify Science in a responsive relaunch

Guidance for instructional leaders and teachers

The learning disruptions of the past year due to COVID-19 have created wide disparities in the amount and quality of science teaching and learning that has taken place in schools. The resulting unfinished learning in science will vary in each school and classroom, and for each individual student. This document highlights five key features of Amplify Science that can be leveraged in responsive relaunch plans:

1. Amplify Science is NGSS-designed.
2. In Amplify Science units, students are figuring out phenomena.
3. Amplify Science has a robust system of formative assessment.
4. Amplify Science has a strong emphasis on literacy development.
5. Amplify Science is for all students.

The recommendations outlined in the following pages are intended to support instructional leaders and teachers as they envision what science teaching and learning will look like in the upcoming back-to-school season and beyond.

5. Amplify Science is for all students.

The NYSSLS offers a vision for “all standards, all students.” Teaching with Amplify Science aligns with this vision to support students in developing their identities as builders and active users of science knowledge, to promote cultural and linguistic inclusion, and to provide access to deep learning.



Recommendations

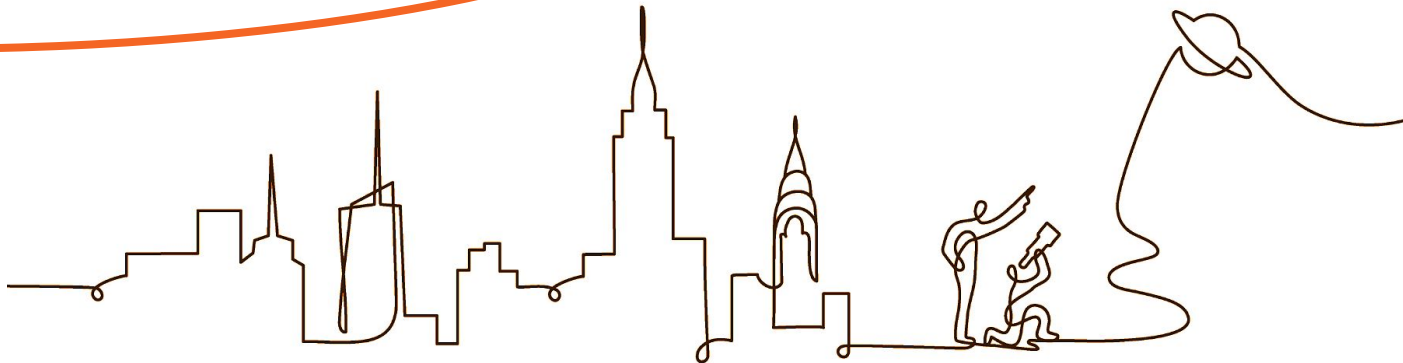
- Take time to establish a culture of figuring out.
- Utilize the **differentiation notes** in the Lesson Brief of each lesson.

Tips for establishing a culture of figuring out
 To promote equity, relevance, and engagement

- Elicit and leverage students' prior knowledge, personal experiences, and cultural backgrounds
 - Find space and time where students can share their experiences and ideas related to the unit phenomenon or problem that they will be seeking to explain or solve.
 - Have students return to their funds of knowledge at key moments of the figuring out process for the purpose of building on their ideas, using their connections as a source of evidence, or to notice if their ideas have changed over time.
 - Think about how to attribute ideas from students who might not see themselves as contributors to the conversation.
- Value student questions
 - Utilize the embedded question-asking opportunities in the unit to elicit questions from students.
 - Document, return to, and sort student questions at key moments, such as the beginning of the unit when the unit phenomenon is introduced and at the beginning and end of each chapter.
- Connect to local and relevant phenomena
 - Welcome in students' interest in and experience with local and everyday phenomena, and help draw connections to what they're figuring out throughout the year about the unit phenomena.
 - Compare and contrast the unit phenomenon to local phenomena.
 - Encourage students' explorations and observations of everyday phenomena at home or in their communities.
 - Identify community resources that can help students explore phenomena in their community.
- Allow for a variety of sensemaking types and paces
 - Attend to how different students thrive with different modalities, or need less or more time with them.
 - Use the storyline in the unit to teach sequentially but allow for flexibility based on student need.
- Take on the role of an interested skeptic
 - Students might not be intrigued by a phenomenon right away because they believe they already know how or why it happens. Help students become disinterested with what they can explain.
 - Ask questions such as: "Is that how a scientist would do it?", "Is that consistent with what we read about?", or "Do you agree with your partner's idea?"

Open Up Resources. Illustrations by
 Linda Ward Beechler and CO-OP Design/University of Utah

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NYC Resources

Amplify Science

Social and Emotional Learning in Amplify Science



Amplify Science

Culturally and Linguistically Responsive Teaching in Amplify Science



Culturally Responsive-Sustaining Education Framework

New York City Resources site

Amplify Science Resources for NYC (K-5)

Welcome! This site contains supporting resources designed for the New York City Department of Education Amplify Science adoption for grades K-5.

**No Login Required:
Bookmark this
website!**

[Returning to Classrooms](#)

[Educator Spotlight Submission](#)

[20-21 Login Update](#)

[Professional learning opportunities](#)

[Introduction](#)

[Getting started resources](#)

[Planning and implementation resources](#)

[Admin resources](#)

[Caregiver resources](#)

[Remote and hybrid learning resources](#)

[20-21 Professional learning resources](#)

[19-20 Professional learning resources](#)

[Returning to Classrooms](#)

As we start to look toward the 2021-2022 school year, you're likely thinking about making your classroom responsive to student needs due to the covid-19 pandemic. Please take a look at our recommendations for summer instruction using Amplify, our Social Emotional Learning and Culturally and Linguistically-Responsive Teaching documents, and our Responsive Relaunch resources for support.

[Summer Instruction Resources](#)

[CLRT in Amplify Science](#)

[SEL in Amplify Science](#)

[Responsive Relaunch Introduction Video](#)

[Responsive Relaunch NYC Brief](#)



Amplify.



Questions?

Session Plan



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Two conceptual frameworks informed the Amplify Science approach to ensuring access and equity for all students:

Universal Design for Learning & Culturally Linguistically Responsive Teaching.

Universal Design for Learning

- Universal Design for Learning (UDL) is a **research-based framework** for improving student learning experiences and outcomes by **focusing on careful instructional planning to meet the varied needs of students.**
- UDL is **NOT a special-education initiative.**
- Through the UDL framework, the **needs of ALL learners are considered** and planned for at the point of first teaching, thereby **reducing the need to reteach concepts.**

UDL and the Amplify Science Approach

Provide multiple means of Engagement →

Affective Networks
The "WHY" of learning



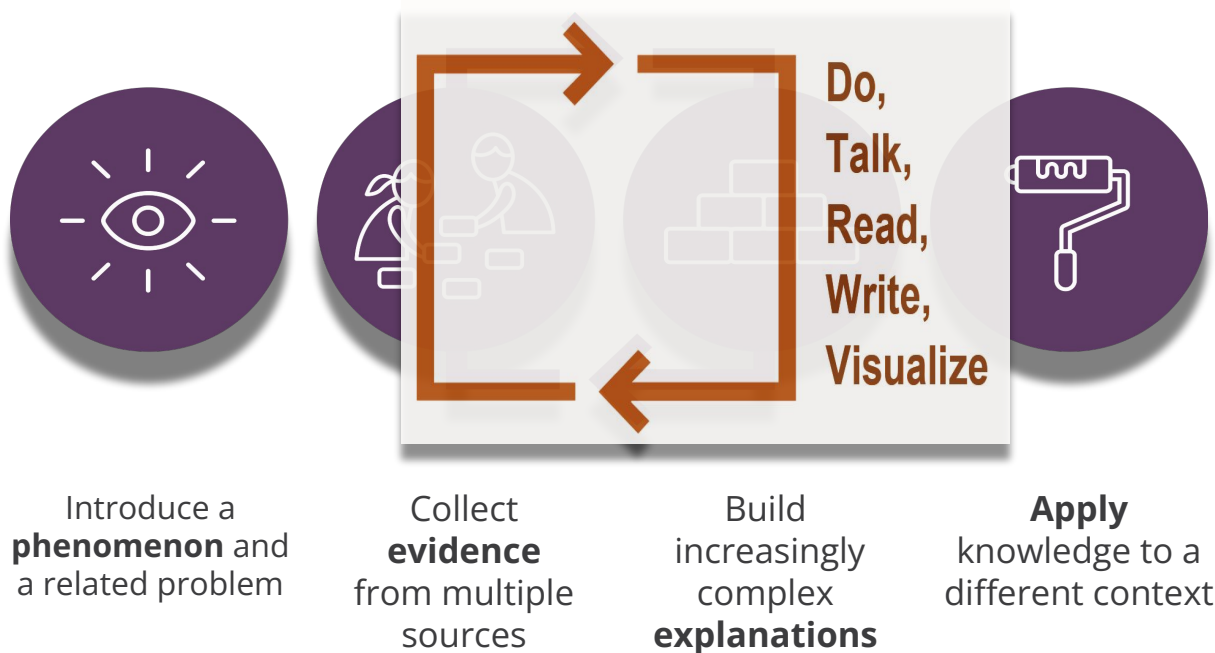
Provide multiple means of Representation →

Recognition Networks
The "WHAT" of learning



Provide multiple means of Action & Expression →

Strategic Networks
The "HOW" of learning



Universal Design for Learning Guidelines

Provide multiple means of
Engagement ➔

Affective Networks
The "WHY" of learning



Provide multiple means of
Representation ➔

Recognition Networks
The "WHAT" of learning



Provide multiple means of
Action & Expression ➔

Strategic Networks
The "HOW" of learning



Access

Provide options for
Recruiting Interest (7) ➔

- Optimize individual choice and autonomy (7.1) ➔
- Optimize relevance, value, and authenticity (7.2) ➔
- Minimize threats and distractions (7.3) ➔

Provide options for
Perception (1) ➔

- Offer ways of customizing the display of information (1.1) ➔
- Offer alternatives for auditory information (1.2) ➔
- Offer alternatives for visual information (1.3) ➔

Provide options for
Physical Action (4) ➔

- Vary the methods for response and navigation (4.1) ➔
- Optimize access to tools and assistive technologies (4.2) ➔

Build

Provide options for
Sustaining Effort & Persistence (8) ➔

- Heighten salience of goals and objectives (8.1) ➔
- Vary demands and resources to optimize challenge (8.2) ➔
- Foster collaboration and community (8.3) ➔
- Increase mastery-oriented feedback (8.4) ➔

Provide options for
Language & Symbols (2) ➔

- Clarify vocabulary and symbols (2.1) ➔
- Clarify syntax and structure (2.2) ➔
- Support decoding of text, mathematical notation, and symbols (2.3) ➔
- Promote understanding across languages (2.4) ➔
- Illustrate through multiple media (2.5) ➔

Provide options for
Expression & Communication (5) ➔

- Use multiple media for communication (5.1) ➔
- Use multiple tools for construction and composition (5.2) ➔
- Build fluencies with graduated levels of support for practice and performance (5.3) ➔

Internalize

Provide options for
Self Regulation (9) ➔

- Promote expectations and beliefs that optimize motivation (9.1) ➔
- Facilitate personal coping skills and strategies (9.2) ➔
- Develop self-assessment and reflection (9.3) ➔

Provide options for
Comprehension (3) ➔

- Activate or supply background knowledge (3.1) ➔
- Highlight patterns, critical features, big ideas, and relationships (3.2) ➔
- Guide information processing and visualization (3.3) ➔
- Maximize transfer and generalization (3.4) ➔

Provide options for
Executive Functions (6) ➔

- Guide appropriate goal-setting (6.1) ➔
- Support planning and strategy development (6.2) ➔
- Facilitate managing information and resources (6.3) ➔
- Enhance capacity for monitoring progress (6.4) ➔

Goal

Expert Learners who are...

Purposeful & Motivated

Resourceful & Knowledgeable

Strategic & Goal-Directed

<http://www.cast.org/>

Reflect
How are you supporting the use of multiple modalities in-class, hybrid, or remote?

Culturally and linguistically responsive teaching

Culturally and linguistically responsive teaching (CLRT) principles **emphasize validating and valuing students' cultural and linguistic heritage and creating positive and nurturing learning environments** so that learning is more effective.



Source: (l): Aaron Yaazie; (um): Kyle Spradley/ University of Missouri; (Im) Dr. Grace O'Connell; (ur) Jane Rigby; (lr) Tina Shelton/ John A. Burns/ University of Hawaii at Manoa

Culturally and linguistically responsive teaching

Reflect: What have you leveraged from the Amplify curriculum to support culturally and linguistically responsive teaching?

CULTURALLY AND LINGUISTICALLY RESPONSIVE TEACHING PRINCIPLES

- ∨ Promote a positive disposition toward diversity: +
- ∨ Leverage students' cultural and experiential backgrounds: +
- ∨ Value language diversity and multilingualism: +
- ∨ Cultivate students' development of the language of science: +

Who Becomes a Space Scientist?



Hein is a theoretical

Meet an Engineer Who Works with Genetics Equipment

When Steven Henderson was young, science wasn't his favorite class. "I wasn't into science as a kid," he says. However, things have changed since then: today, Henderson is a chemical engineer working with cutting-edge genetics equipment.

Henderson works for a company that makes equipment and software that analyzes the genes in body tissue. These machines sequence DNA—by running strands of DNA through chemicals, they can determine the order of the genes that make up the DNA. Understanding the order of the genes is important because it allows scientists to understand how an organism's genes interact.



The equipment Henderson uses is used in the lab for

Designing Wheelchairs for All Shape and Sizes

People who use wheelchairs come in all different shapes and sizes—children are tall and short, big and small—and so do wheelchairs they use. Some wheelchairs have motors, and others are operated by hand. People who use wheelchairs do all kinds of different things. Wheelchair users may go to school or work in an office. They may play rock band, take their dogs to the park, or lead a parade through city

Meet a Scientist Who Studies How the Environment Affects Our Traits

Aiika Maunakea grew up in Hawaii and still lives and works there today. He says, "My great-grandmother was a Native Hawaiian medicine practitioner and whenever I got sick, she would treat me with herbs she grew in our yard." Maunakea grew up feeling a deep



Aiika Maunakea is a biomedical researcher. He studies how genes and the environment affect whether people get certain diseases.

Bringing Back the Buffalo

Tens of millions of bison (also known as buffalo) once lived in the prairie ecosystems of America. Huge herds of them crossed grasslands, eating the plants, moving in their droppings or caught in their droppings were hunted by wolves, grizzly bears, and people—the Native Americans who lived on the prairie—but the buffalo population was large and stable. Native Americans depended on the buffalo. They ate the meat and used their skins for clothing and shelter. Since time immemorial, buffalo were important and central to their way of life. About 150 years ago, European-American settlers arrived on the prairie. The settlers hunted buffalo for sport. The United States government encouraged people to kill buffalo in order to make life harder for Native American settlers could take their land. Over the next 100 years, nearly all of the buffalo were

Meet a Scientist Who Studies Underwater Currents

In the dark of night, a ship sails through cold ocean waters. On the rain-soaked deck, the crew is busy keeping the ship safe during a powerful storm. Inside a cabin, Amy Bower calmly enters

important data to map the stormy help constr

Bower is a research



Meet a Scientist Who Studies Variation in Monkey Populations

Scientist Christopher Schmitt bends to measure the tail of a vervet monkey in the hot, dry savanna of South Africa. He stretches the measuring tape as a student holds the monkey gently but firmly. Just then Schmitt feels a strange tugging on his foot. He looks back and sees a large warthog with long, curved tusks trying to eat his shoe!

Schmitt studies variation in monkey populations. He has measured monkey tails, waists, and heights to find out about variation in their sizes. He has collected poop to find out about differences in the digestive systems of monkeys. He found out that some monkeys have more parasites in their guts than others.



Christopher Schmitt is a scientist.



Meet a Scientist Who Changed How We Think About Brain Cells

Whether or not you realize it, the cells in your body are constantly performing a range of tasks that help you live: transporting oxygen, allowing muscles to contract, fighting infection, carrying messages to and from the brain. All cells in your body need glucose to release energy, but not all cells do the same things with that energy. Different body systems have specialized cells that

The Amplify Science Program Guide

AmplifyScience

New York City

Welcome

Program developers

Designed for the NGSS

Program components

Scope and Sequence

Phenomena, standards, and progressions

Assessments

Science and literacy

Access and equity

Resources

Welcome

The Program Guide details information about the program, including its authorship, development, themes, and more. It serves as a resource for finding out more about the program's structure, components, supports, how it meets standards, and flexibility.

Navigate through the links on the left-hand side of the page to access more information about the program and to explore resources that can help with your implementation.

**No Login Required:
Bookmark this
website!**

ACCESS THE DIGITAL CURRICULUM

Resources

Support and FAQs

Technical Support

(800) 823-1969

scihelp@amplify.com

More Amplify Science

Transitional Kindergarten (TK)

Search Site ...



Amplify.

Access and equity

Universal Design for Learning

Culturally and linguistically responsive

Differentiation strategies

– English learners

– Students with disabilities

– Standard English learners

– Girls and young women

– Advanced learners and gifted learners

– Students living in poverty, foster children and youth, and migrant students

Lesson-level differentiation

Diverse learner needs

- Explore each part of the program guide Access and Equity section
- Record strategies you've read about from the **Program Guide** & those from your **own practice**.
- **Please share one finding/recommendation in chat**



Questions?

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Digital Teacher's Guide

AmplifyScience > Patterns of Earth and Sky

22 Lessons

Patterns of Earth and Sky

☑ JUMP DOWN TO UNIT GUIDE

🖨️ GENERATE PRINTABLE TEACHER'S GUIDE

Chapter	Topic	Lessons
Chapter 1	Why don't we see a lot of stars in the daytime?	7 Lessons
Chapter 2	Why is the sun up sometimes, but not other times?	6 Lessons
Chapter 3	Why do we see different stars at different times of year?	6 Lessons



Differentiation in Amplify Science

Overview

Materials &
Preparation

Differentiation

Standards

Vocabulary

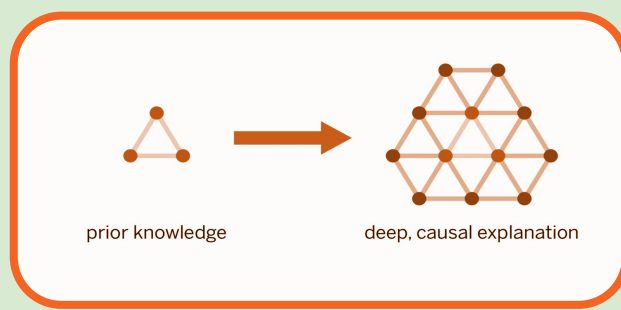
Unplugged?

Differentiation

Embedded Supports for Diverse Learners

Multiple modalities with the same topic. In the previous lesson, students read the “Hemophilia, Genes, and Proteins” article about genes. In this lesson, students use a physical investigation to consider the role genes play in building proteins. Engaging with the same ideas through different modalities provides students with multiple opportunities to make sense of a complex concept. It also provides an access point for different types of learners.

Eliciting and Leveraging Students' Prior Knowledge, Personal Experience, and Cultural Background



Planning for the Unit

Unit Overview



Unit Map



Progress Build



Getting Ready to Teach



Materials and Preparation



Science Background



Standards at a Glance



Printable Resources



3-D Assessment Objectives



Coherence Flowcharts



Copymaster Compilation



Crosscutting Concept Tracker



Eliciting and Leveraging Students' Prior Knowledge, Personal Experiences, and Cultural Backgrounds



Investigation Notebook



Multi-Language Glossary



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Capitalizing on Amplify Science in a responsive relaunch

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A disciplinary literacy approach to learning science

In the Amplify Science program, students **learn to read, write, and speak as scientists do** as they acquire facility with the **academic language** and vocabulary of science. Through the **seamless integration of science and literacy instruction**, students also learn that reading, writing, and talking are **essential practices of science**, and that all scientists use these practices to gather information, communicate claims, leverage evidence, draw conclusions from data, and share their ideas through oral and written **explanations and arguments**.

Explore Differentiation Brief and Teacher Notes

- Navigate to the lesson **activity** you would like to focus on
- Review the **differentiation brief** and record notes describing the supports you think would best support your **diverse learner**.

My Student May be Challenged by...	Suggestions from the Differentiation Brief	Suggestions from my own Teacher Toolkit

**Supporting
Diverse Learners
with
Supplemental
Materials from
the Program Hub**



Student Books Read-Aloud Videos

Read-Aloud videos

Click below to access a playlist of this unit's Student Books being read aloud. Individual read-aloud videos can also be found within lesson playlists that use the book, and as shortened links in the @Home Unit student materials for those lessons. Find the Spanish playlist [here](#).

Amplify

Grade 3 Balancing Forces_Hoverboard B...

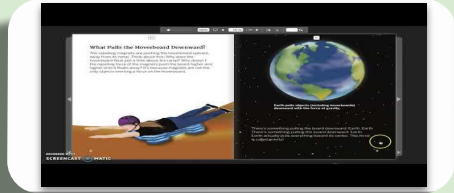
What Pulls the Hoverboard Downward?

The repelling magnets are pushing the hoverboard upward, away from its ramp. Think about this: Why does the hoverboard float just a little above the ramp? Why doesn't the repelling force of the magnets push the board higher and higher until it floats away? It's because magnets are not the only objects exerting a force on the hoverboard.

Earth pulls objects (including hoverboards) downward with the force of gravity.

There's something pulling the board downward: Earth. Earth has something pulling the board downward: Earth. Earth actually pulls everything toward its center. This force is called gravity!

RECORDED WITH SCREENCAST MATIC

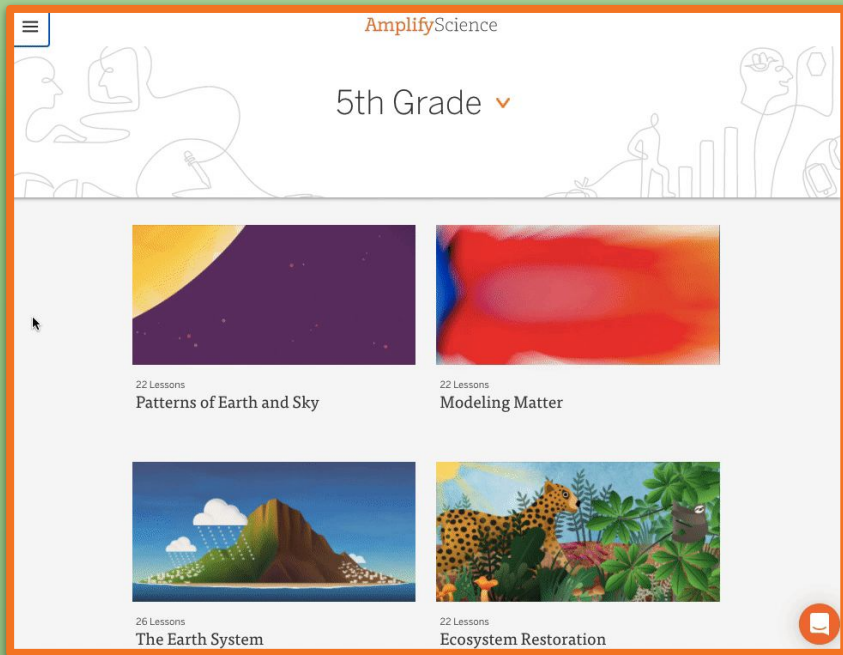


Hands-on Videos

Program Hub



The Program Hub with supplemental and self study resources



The screenshot shows the AmplifyScience website interface. At the top, the logo "AmplifyScience" is on the left, and a navigation menu icon is on the far left. The main header area features the text "5th Grade" with a downward arrow, flanked by decorative line art of human profiles and a bar chart. Below the header, there are four course cards arranged in a 2x2 grid. Each card has a colorful illustration at the top, the number of lessons, and the course title. The bottom right corner of the interface includes a small red icon of a document with a checkmark.

AmplifyScience

5th Grade ▾

22 Lessons
Patterns of Earth and Sky

22 Lessons
Modeling Matter

26 Lessons
The Earth System

22 Lessons
Ecosystem Restoration





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Customer Care

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



scihelp@amplify.com



800-823-1969



Amplify Chat