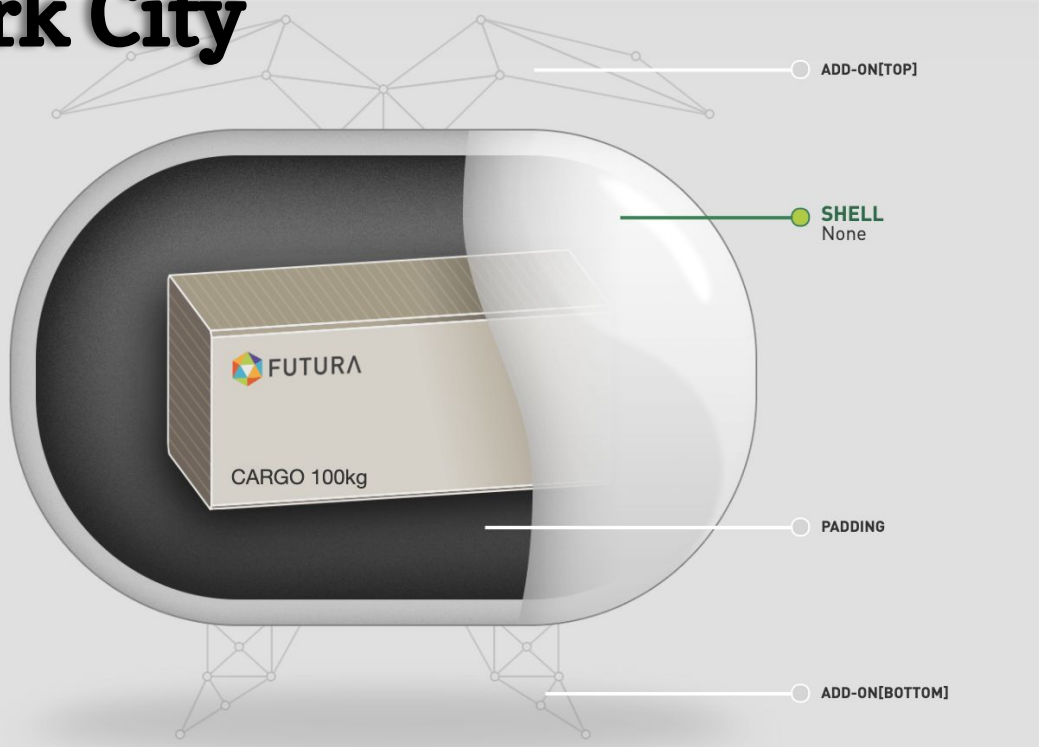
AmplifyScience

New York City

Guided Unit
Internalization
Force and Motion

Engineering Internship



Who's in the Room?

Represent for your Borough!

Share your name, role, borough.

1- Brooklyn North
2- Brooklyn South
3- Queens North
4- Queens South
5- The Bronx
6- Staten Island

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

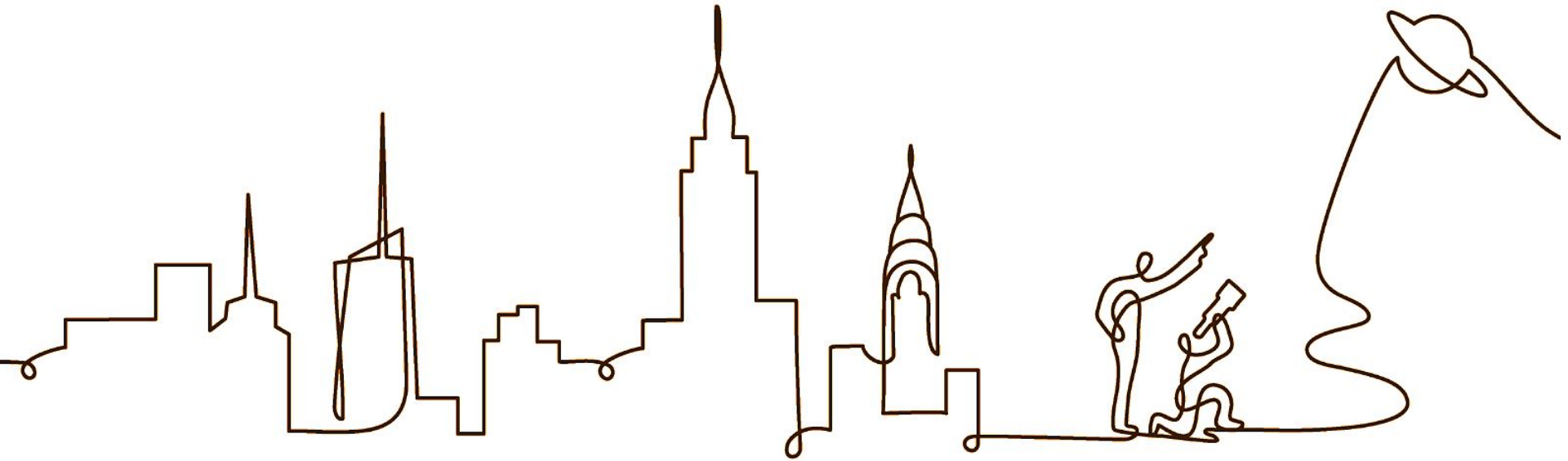
- Be an active participant - chat, ask questions, discuss, share!

Workshop Goals

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

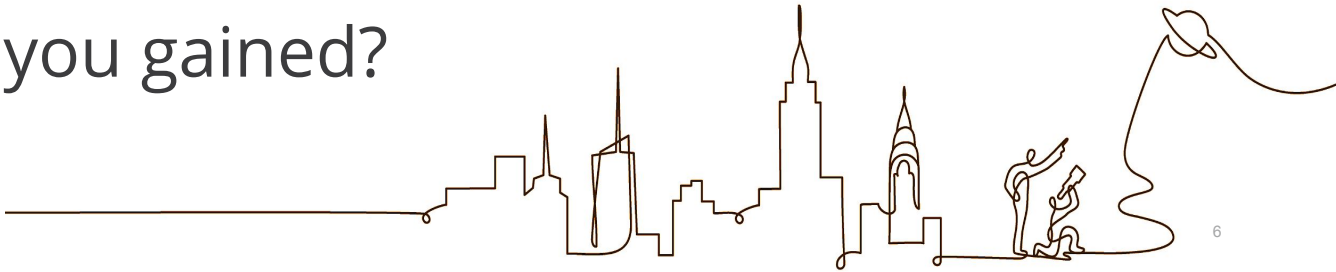
- **Make instructional decisions about remote or hybrid learning**
- **Develop a plan for using @Home resources within your class schedule and instructional format.**

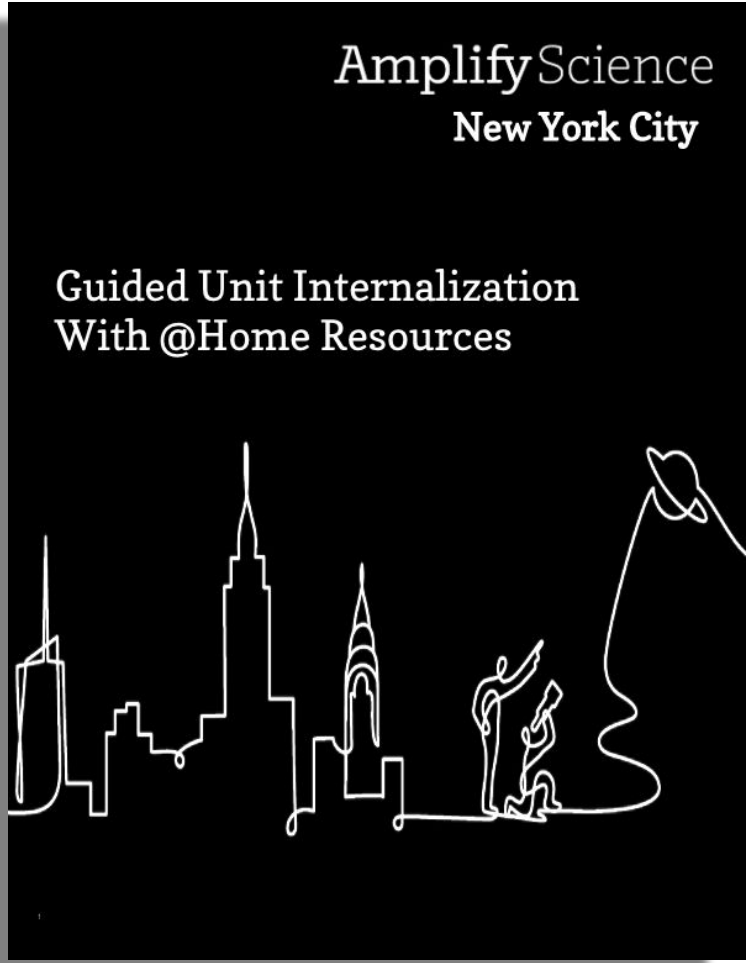
Reflection and Goal Setting

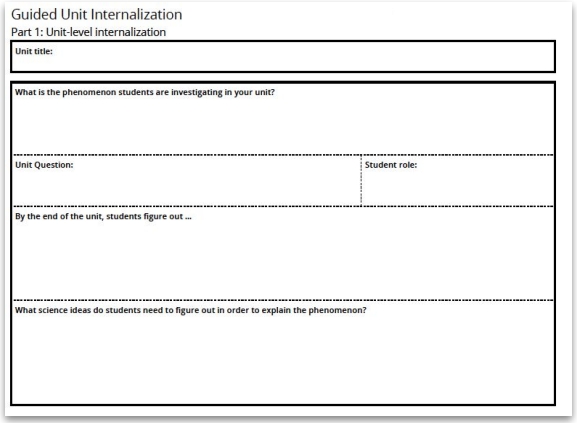


Reflect- then in chat **Choose One**: While teaching through new instructional models (Hybrid/Remote)

- What is **one** challenge, problem, or roadblock you or your students experienced?
- What are **two** successes you or your students experienced?
- What are **three** new things you learned or new insights you gained?



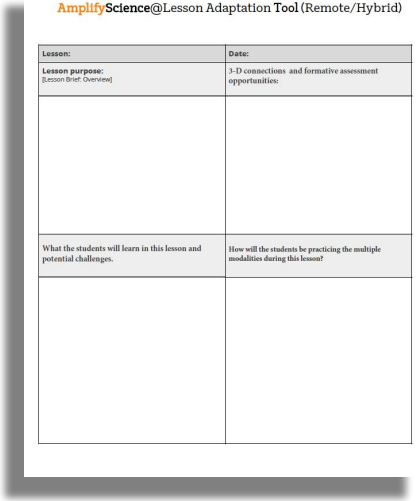




Guided Unit Internalization

Part 1: Unit-level internalization

Unit title:	
What is the phenomenon students are investigating in your unit?	
Unit Question:	Student role:
By the end of the unit, students figure out ...	
What science ideas do students need to figure out in order to explain the phenomenon?	



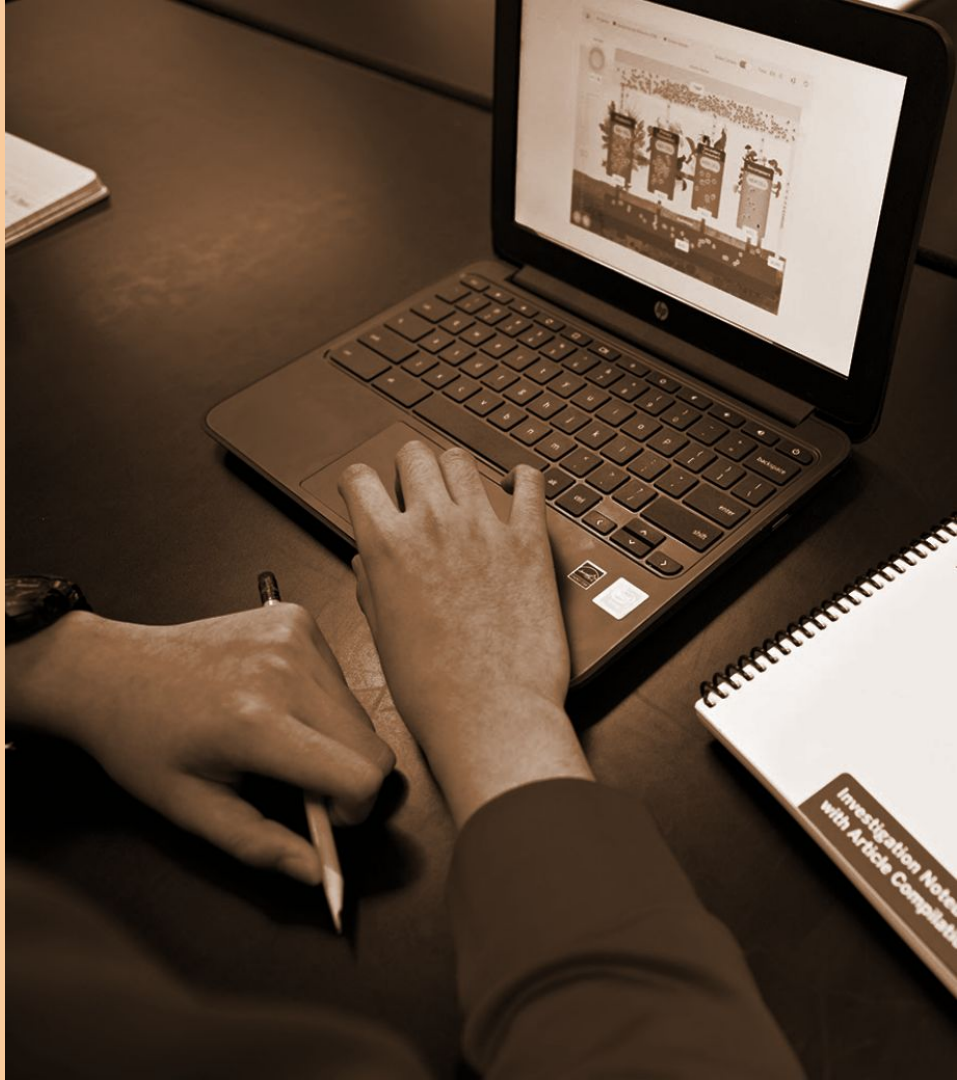
AmplifyScience@Lesson Adaptation Tool (Remote/Hybrid)

Lesson:	Date:
Lesson purpose: [Lesson Brief: Overview]	3-D connections and formative assessment opportunities:
What the students will learn in this lesson and potential challenges.	How will the students be practicing the multiple modalities during this lesson?

Participant Materials

Plan for the day

- **Framing the day**
- Unit Internalization
- Explore EI Components
- Planning
- Reflection and closing



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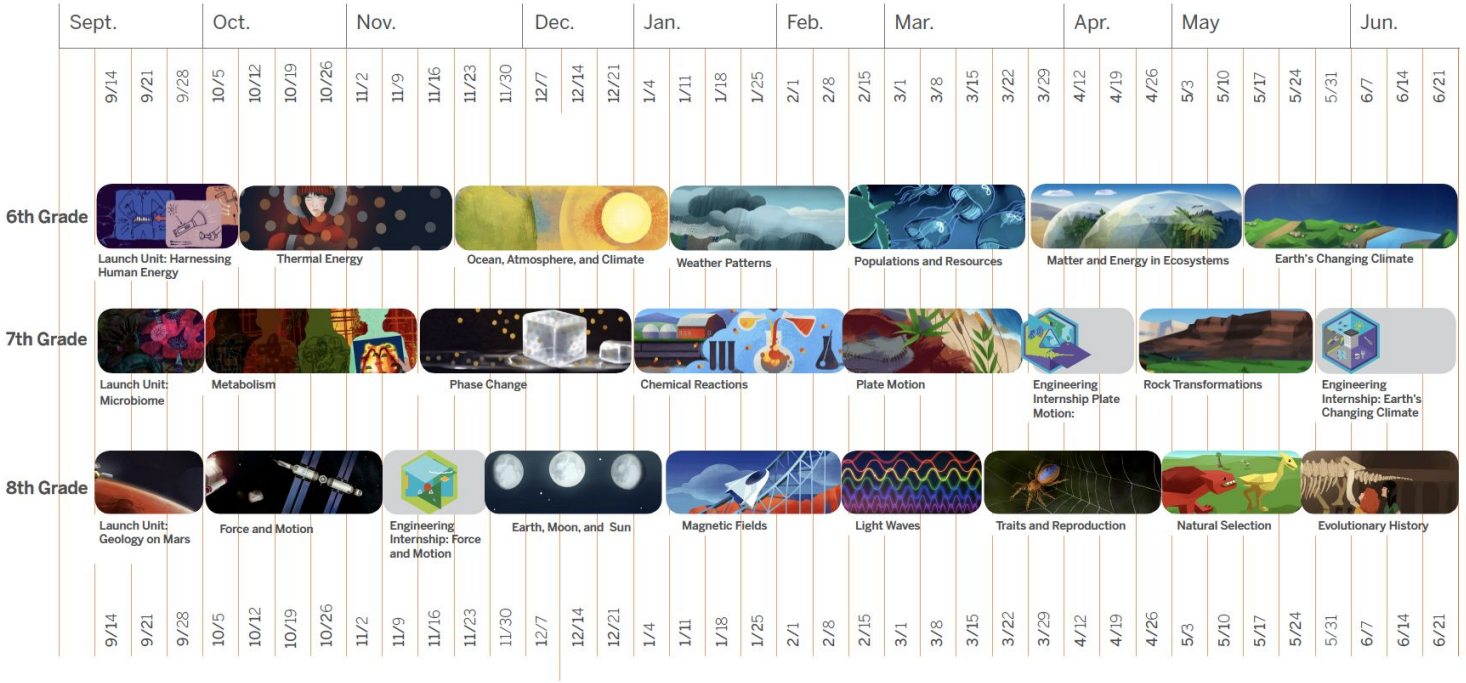
NYC Middle School
Unit Pacing Calendar 20-21*



*Updated Sequence for the 2020-2021 School Year

Amplify.

Middle School Curriculum New York City Edition

Grade 6

- Launch: * Harnessing Human Energy
- Thermal Energy
- Ocean, Atmosphere,and Climate
- Weather Patterns
- Populations and Resources
- Matter and Energy in Ecosystems
- Earth's Changing Climate

Grade 7

- Launch: * Microbiome
- Metabolism
- Phase Change
- Chemical Reactions
- Plate Motion
- Engineering Internship: Plate Motion
- Rock Transformations
- Engineering Internship: Earth's Changing Climate

Grade 8

- Launch: Geology on Mars
- Force and Motion
- Engineering Internship: Force and Motion
- Earth, Moon, and Sun
- Magnetic Fields
- Light Waves
- Traits and Reproduction
- Natural Selection
- Evolutionary History

Unit	@Home Unit Release	@Home Videos Release
Chemical Reactions	January 15	December 11
Earth's Changing Climate	March 13	March 26
Earth, Moon, and Sun	January 10	December 11
Evolutionary History	February 26	March 26
Light Waves	December 17	October 26
Magnetic Fields	November 15	N/A (already posted)
Matter and Energy in Ecosystems	March 21	March 26
Natural Selection	February 20	February 12
Ocean, Atmosphere, and Clime	January 17	December 11
Phase Change	December 19	October 26
Populations and Resources	February 20	February 12
Rock Transformations	November 6	N/A (already posted)
Thermal Energy	December 13	October 26
Traits and Reproduction	November 4	N/A (already posted)
Weather Patterns	February 17	February 12

Amplify Science@Home Schedule

Written by Amplify
Updated over a week ago

@Home Resources Release Dates

https://my.amplify.com/help/en/articles/4562101-amplify-science-home-schedule

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Classroom Slides Release Dates

https://my.amplify.com/help/en/articles/4004263-amplify-science-classroom-slides-for-grades-6-8

1st and 2nd unit of each grade: August 2020

- Microbiome
- Geology on Mars
- Harnessing Human Energy
- Metabolism
- Plate Motion
- Force and Motion

3rd unit of each grade: September 2020

- Metabolism Engineering Internship
- Plate Motion Engineering Internship
- Force and Motion Engineering Internship

4th unit of each grade: October 2020

- Traits and Reproduction
- Rock Transformations
- Magnetic Fields

5th unit of each grade: November 2020

- Thermal Energy
- Phase Change
- Light Waves

6th unit of each grade: December 2020

- Ocean, Atmosphere, and Climate
- Plate Motion Engineering Internship
- Earth, Moon, and Sun

7th unit of each grade: February 2021

- Weather Patterns
- Chemical Reactions
- Natural Selection

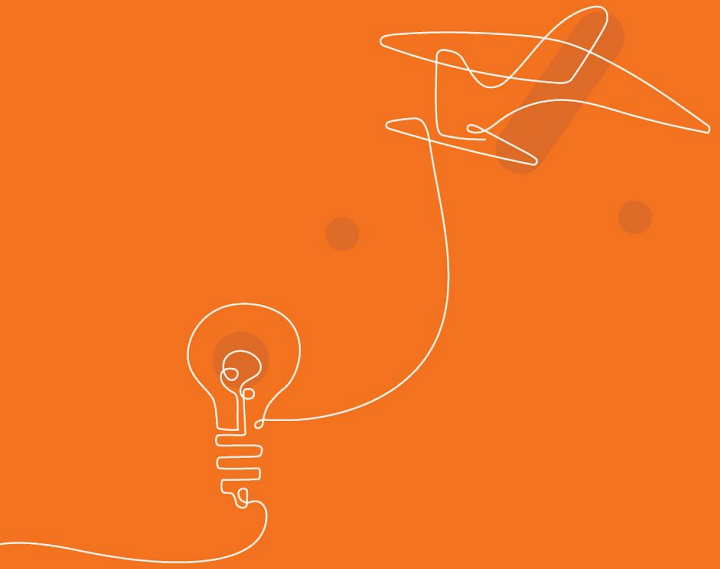
8th unit of each grade: March 2021

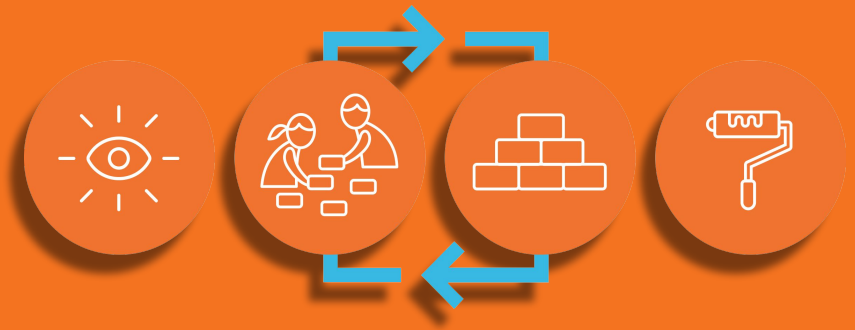
- Earth's Changing Climate
- Populations and Resources
- Natural Selection Engineering Internship

9th unit of each grade: April 2021

- Earth's Changing Climate Engineering Internship
- Matter and Energy in Ecosystems
- Evolutionary History

Revisiting the Amplify Science approach





Questions
Reflections
Connections

Unit 2 Planning Notes

Amplify Science Approach Review:

Note Taking Opportunities

A version of this presentation will be available to you. However, you may want to record some of the presenter's comments and suggestions from your colleagues!

The approach

Introduce a phenomenon/real world problem

Collect evidence from multiple sources

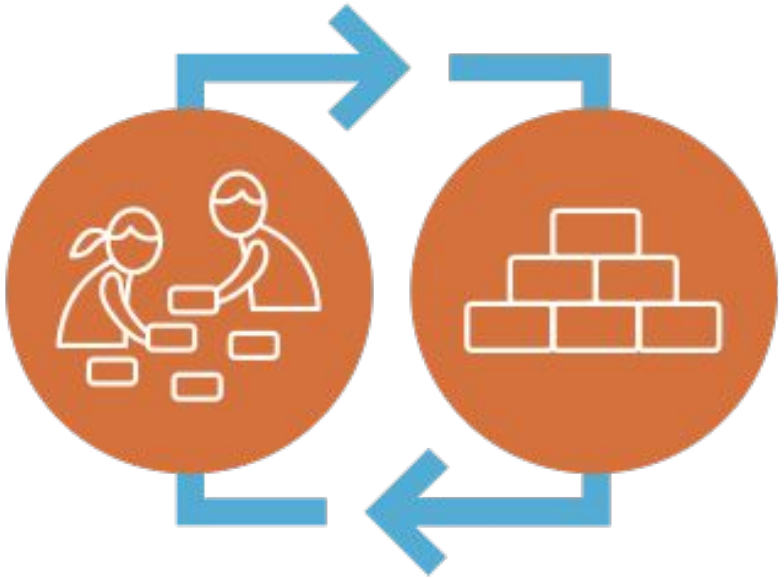
Build increasingly complex explanations

Apply knowledge to solve a different problem

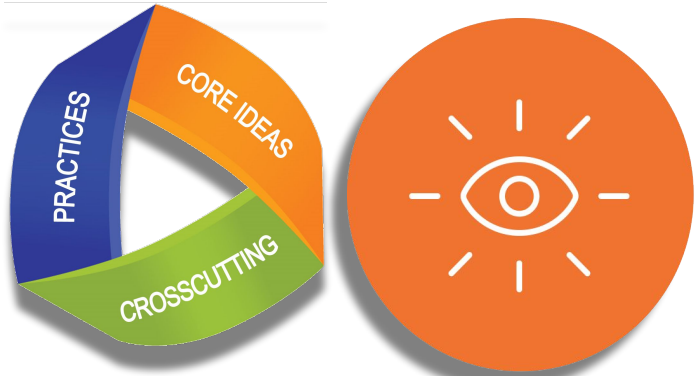
Multimodal Phenomenon-based approach

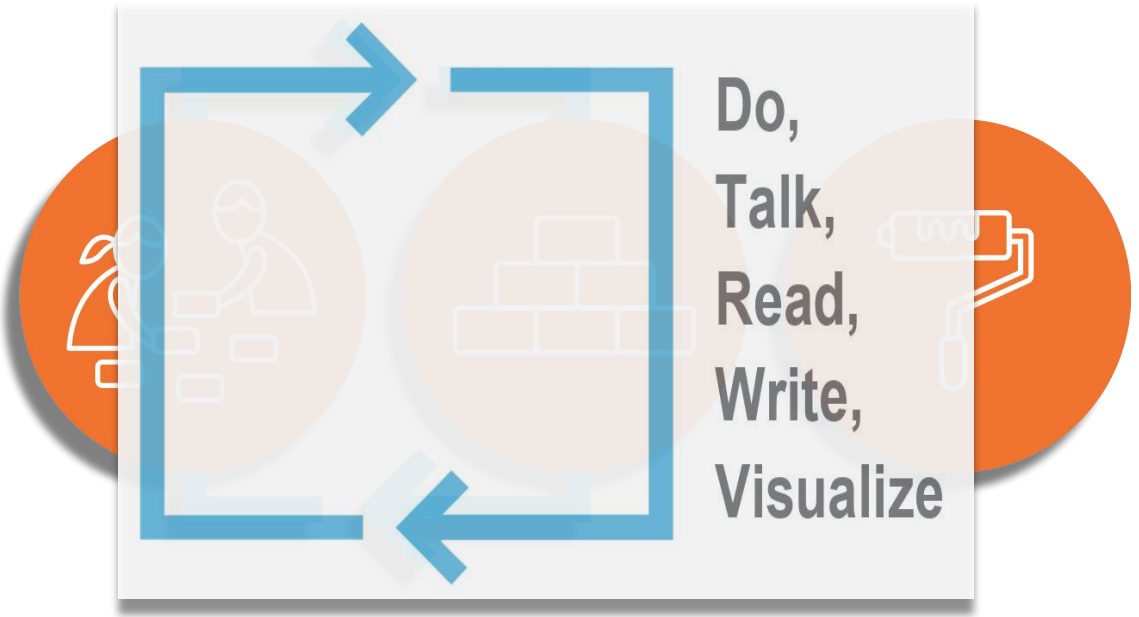
The anchor phenomenon drives instruction through a whole unit

Taking on the **roles** of scientists and engineers, students gather evidence and use it to build **increasingly complex explanations** about a rich, real-world anchoring phenomenon.



Using three dimensions to figure out

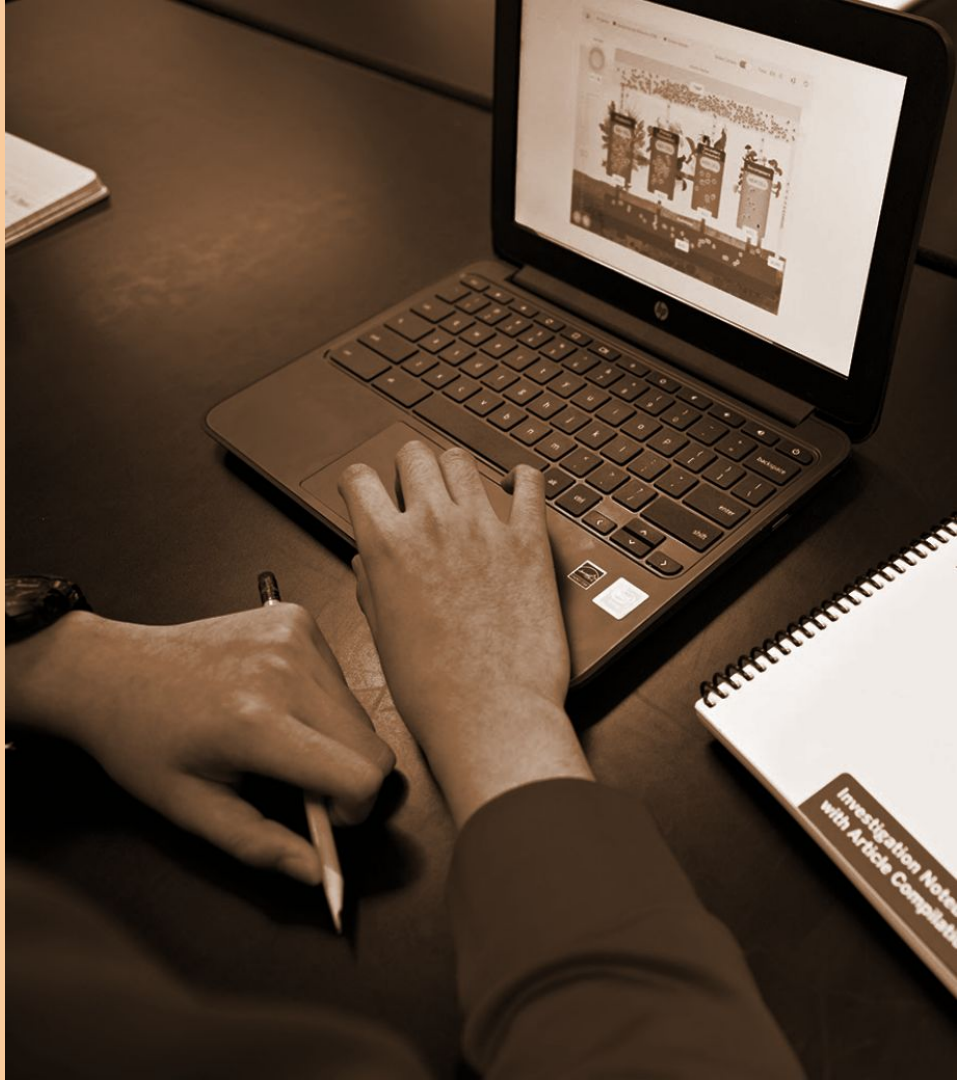




Questions?

Plan for the day

- Framing the day
- **Unit Internalization**
- Explore EI Components
- Planning
- Reflection and closing



Design Problem: Design a supply drop pod for areas affected by natural disaster.

Force and Motion Engineering Internship

Day 1: Introducing the Engineering Internship

AmplifyScience

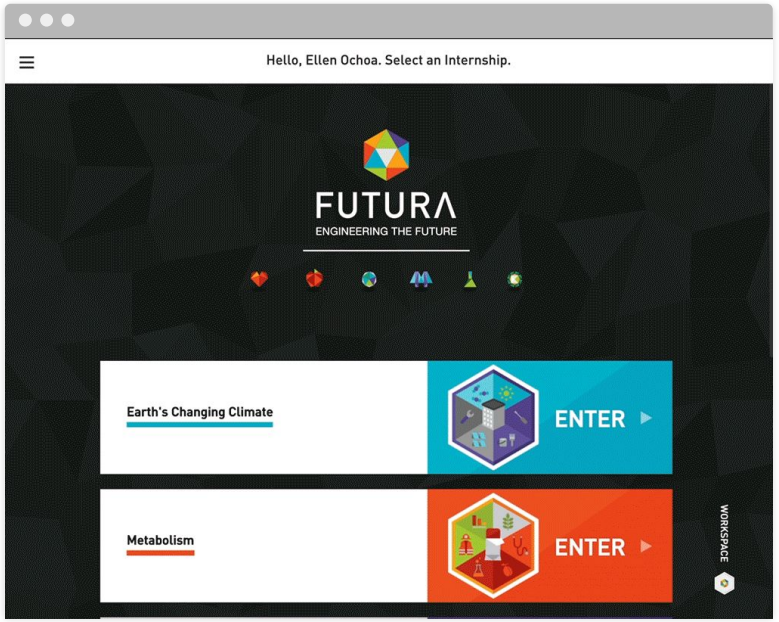
5 MIN

Activity 1

Connecting to Futura Workspace

Starting today, you will be working as **mechanical engineering interns** for a company called Futura.

You will start each day of your internship by reading a new message.



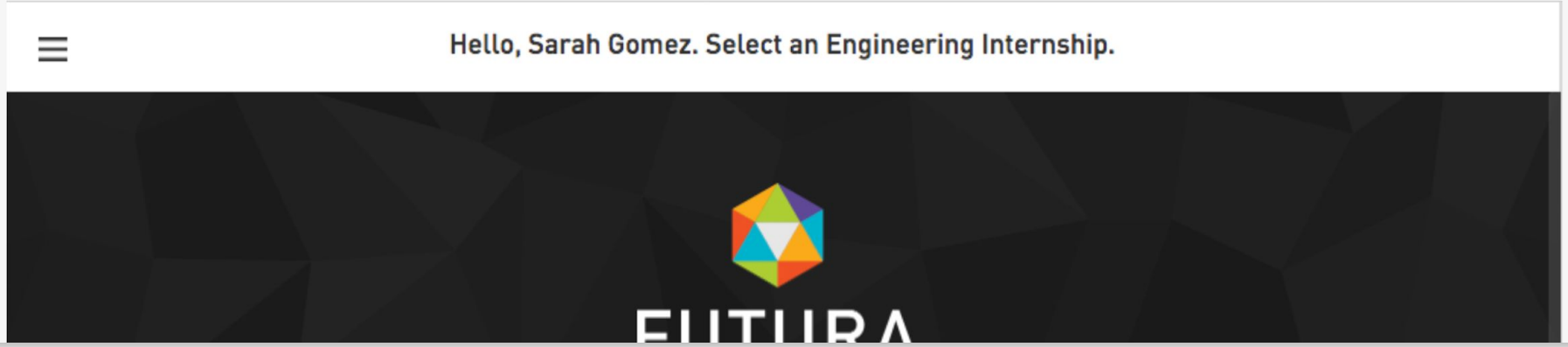
You'll open **Futura Workspace** and select *Force and Motion* Engineering Internship.

Then, you'll open the Day 1 message to read about your new internship.

Connecting to Futura Workspace

Open Futura Workspace:

1. Select the **Force and Motion Engineering Internship** from the login page.
2. Select the **Welcome to Futura!** message to open and read about your new internship.



10 MIN

Activity T

Introducing Futura

Welcome, engineering interns! I will be your internship coordinator, and I'll guide you through this project with Nisha Kar, your project director.

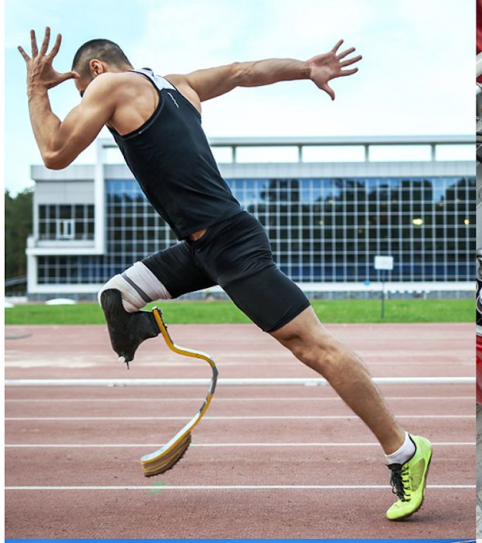
Where have you heard the word **engineer** before? What kind of work do engineers do?

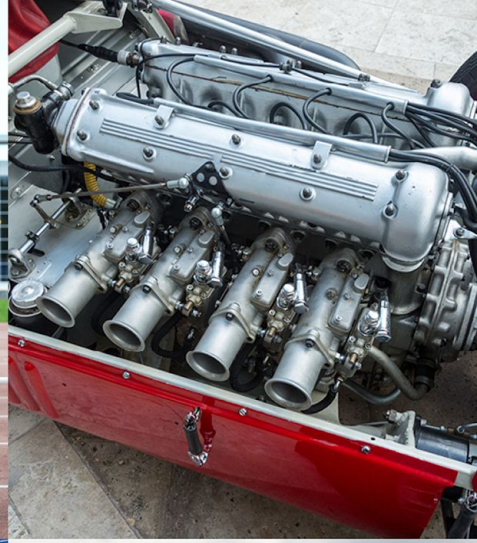
What about **mechanical engineers?** What do you think they do?

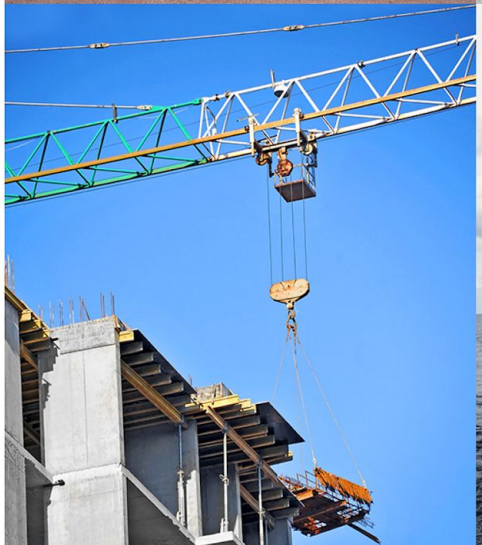
Mechanical engineers apply physics concepts to build structures, machines, and everyday objects that help people.

They work on:

- new and improved materials for building
- structures at the nanoscale
- machines that build machines
- structural analysis to learn at what point structures fail







Your **project director** is Nisha Kar.

Nisha has sent a video message to explain more about Futura and your engineering project.

Nisha wants you to design supply pods for disaster aid.

What are some possible **requirements** that might be important to ensure a successful supply pod design?

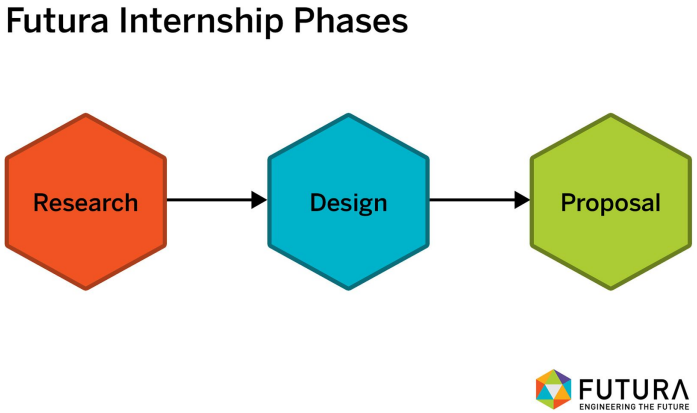
Let’s discuss what you learned in the video about your internship.

What is the **project** you will work on?

Do you have any **questions?**

As **mechanical engineering interns,** you will use what you learned about force and motion to solve a real and important problem.

Remember, Nisha Kar will be the **project director** for this internship. She will send you messages, assign you tasks to do, and give you feedback on your work.



Your internship will have **three phases:** Research, Design, and Proposal.

I'll give you a quick overview of what will happen in each phase.

criteria: standards by which something may be judged

At Futura, we have many *criteria* for every product.

Let's discuss the **three criteria** for your supply pods and why each one is important:

1. minimize cargo damage
2. maximize shell condition
3. keep costs low

constraint: a limit or restriction

At Futura, we must keep our creative ideas
within our clients' *constraints*.

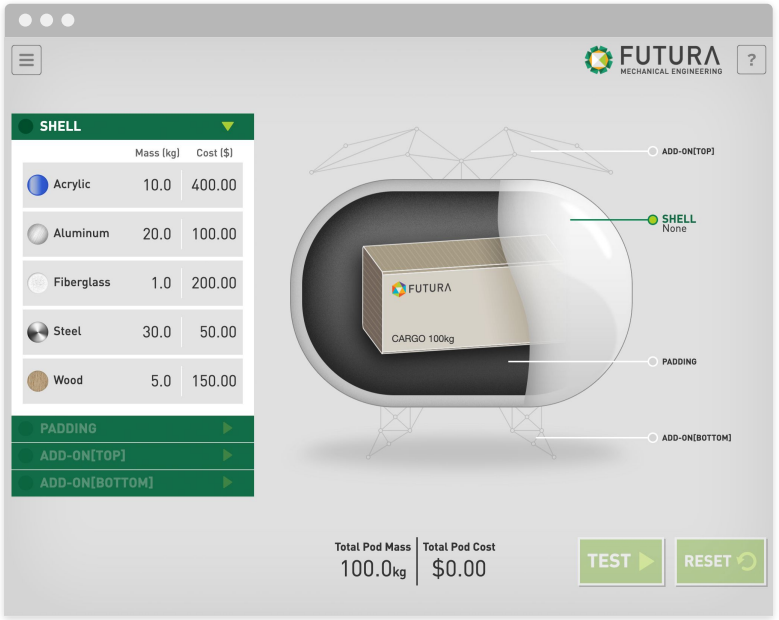
Our project has some **constraints:**

1. The pod must be dropped from a **helicopter.**
2. It must be dropped from the **same** height.

10 MIN

Activity T

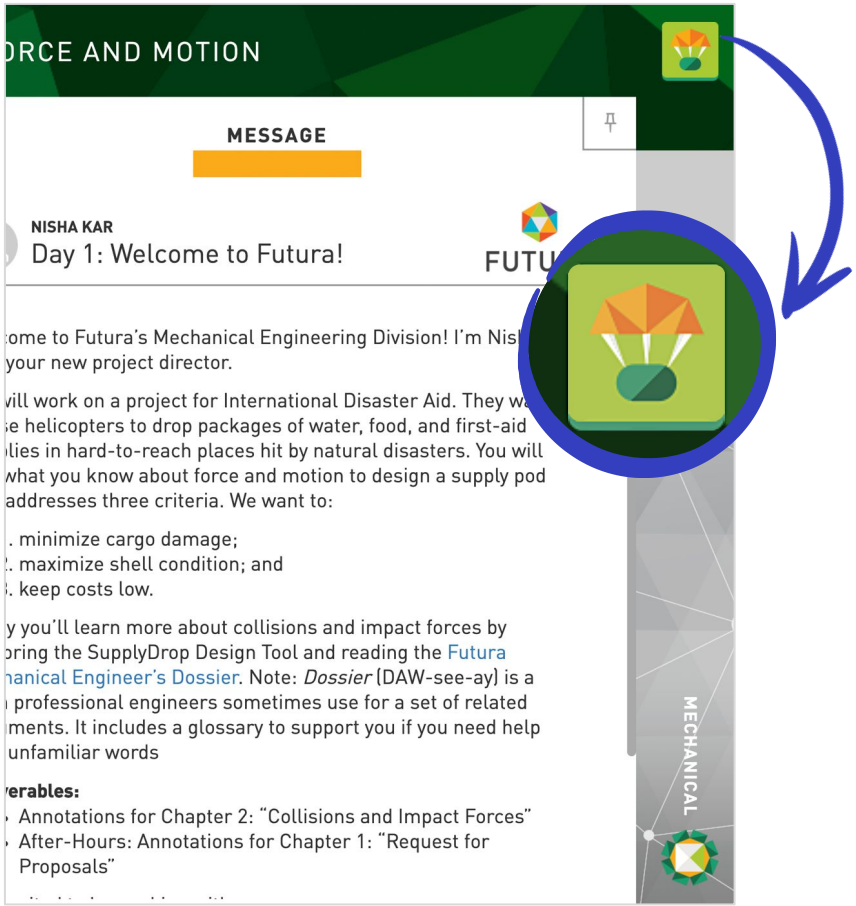
Exploring SupplyDrop



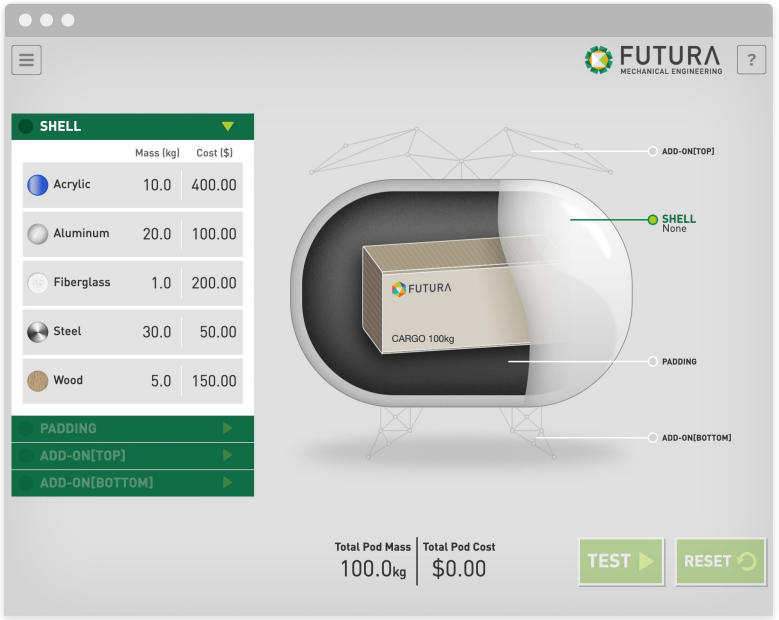
Futura designed the **SupplyDrop** Design Tool.

It is a **digital model** of a supply pod. It allows you to **build and test** several supply pod designs.

Why might engineers use **models** in their work?

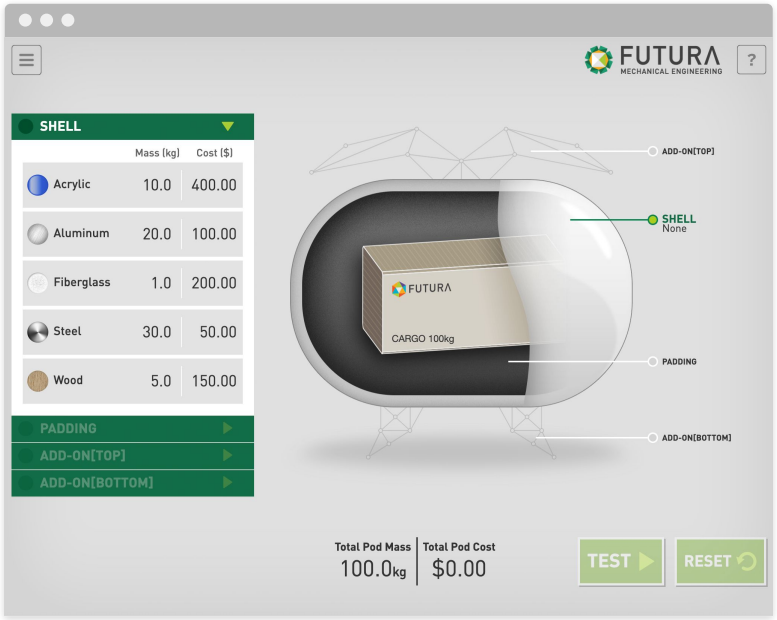


Press the button in the top right corner of Futura Workspace to **open SupplyDrop.**



Explore **SupplyDrop.**

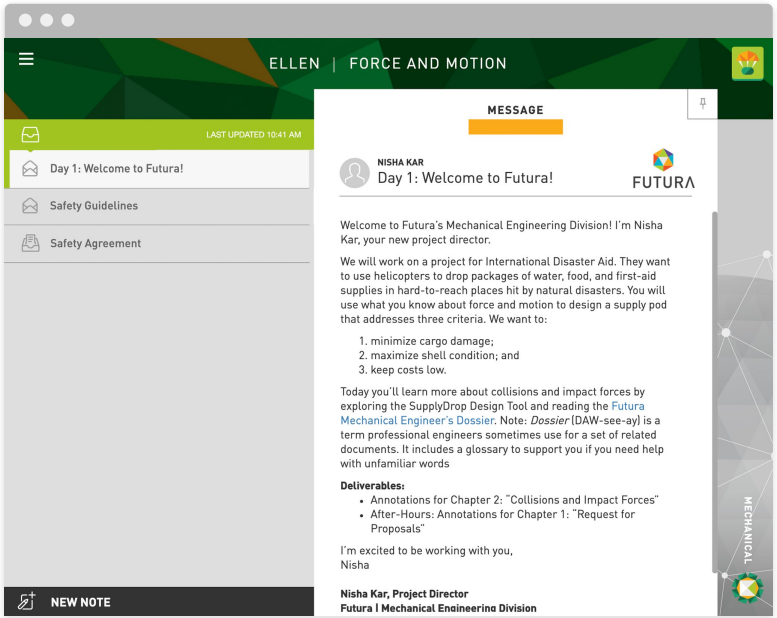
As you explore, share what you notice or find interesting with your colleague.



What did you notice about SupplyDrop?

Activity T

Reading About Collisions and Impact Forces



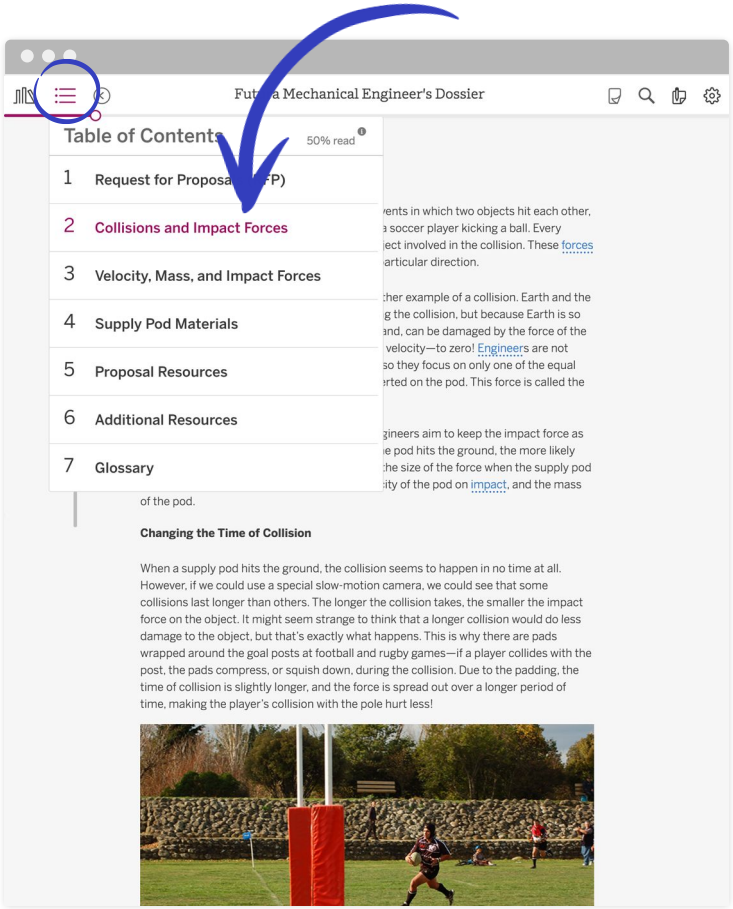
Throughout your internship, you'll be using **Futura Workspace** to get messages, record notes, and submit work.

Let's see how it works.

FUTURA MECHANICAL ENGINEER'S DOSSIER

FUTURA
MECHANICAL ENGINEERING

You will begin your **research** on collision and impact forces by reading part of the **Futura Mechanical Engineer's Dossier**.



It is essential that you understand collisions and impact forces, so you'll read **Chapter 2.**

You can use the Table of Contents to find the chapter you need.

Engineers read like scientists: **reading multiple times, taking notes,** and **asking critical questions.**

As engineering interns, you should practice these skills, just as you have been doing in science class by using **Active Reading.**

Active Reading Guidelines

1. Think carefully about what you read. Pay attention to your own understanding.

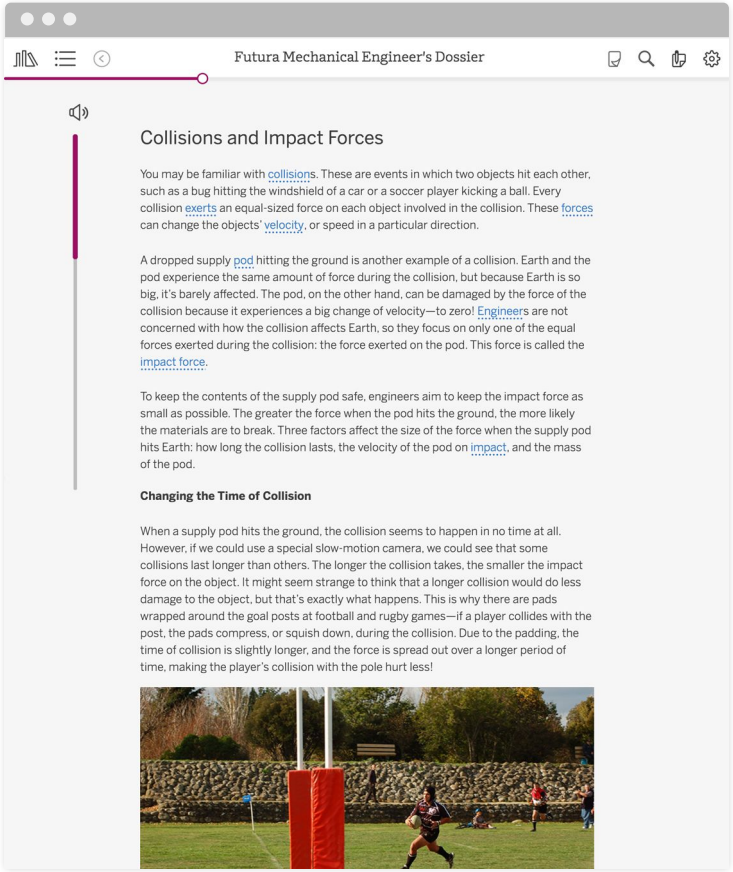
2. As you read, annotate the text to make a record of your thinking. Highlight challenging words and add notes to record questions and make connections to your own experience.

3. Examine all visual representations carefully. Consider how they go together with the text.

4. After you read, discuss what you have read with others to help you better understand the text.

How does collision time affect impact forces?

In addition to recording your own questions and connections as you read, you can make annotations to help you answer this **focus question.**



You can open the Dossier using the link in the Welcome message.

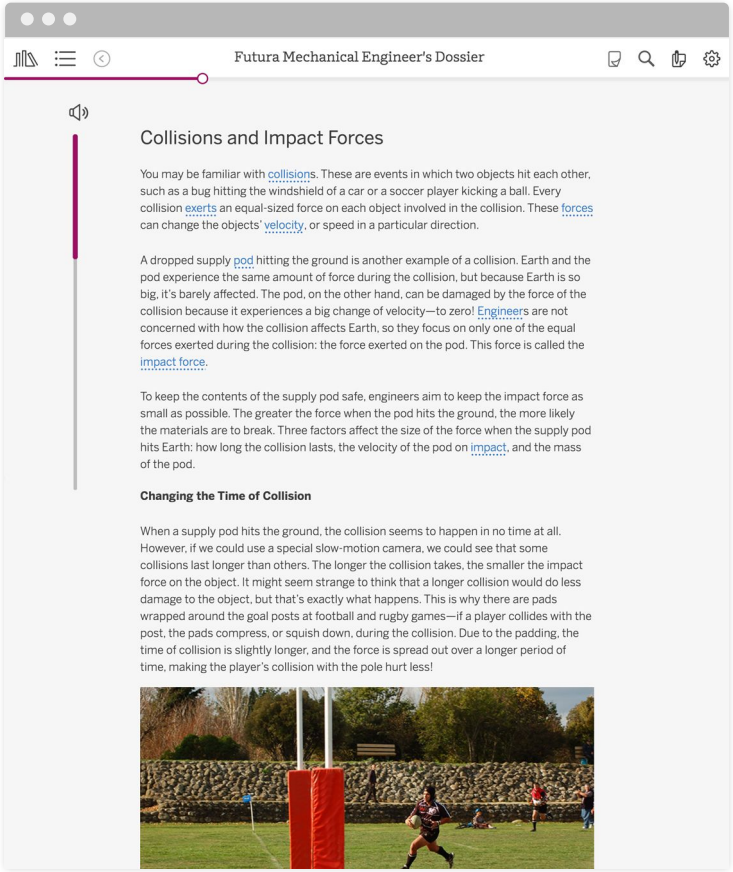
Read and annotate Chapter 2: "Collisions and Impact Forces" in the Dossier.

Discussing Annotations

After reading, discuss the following questions with your partner:

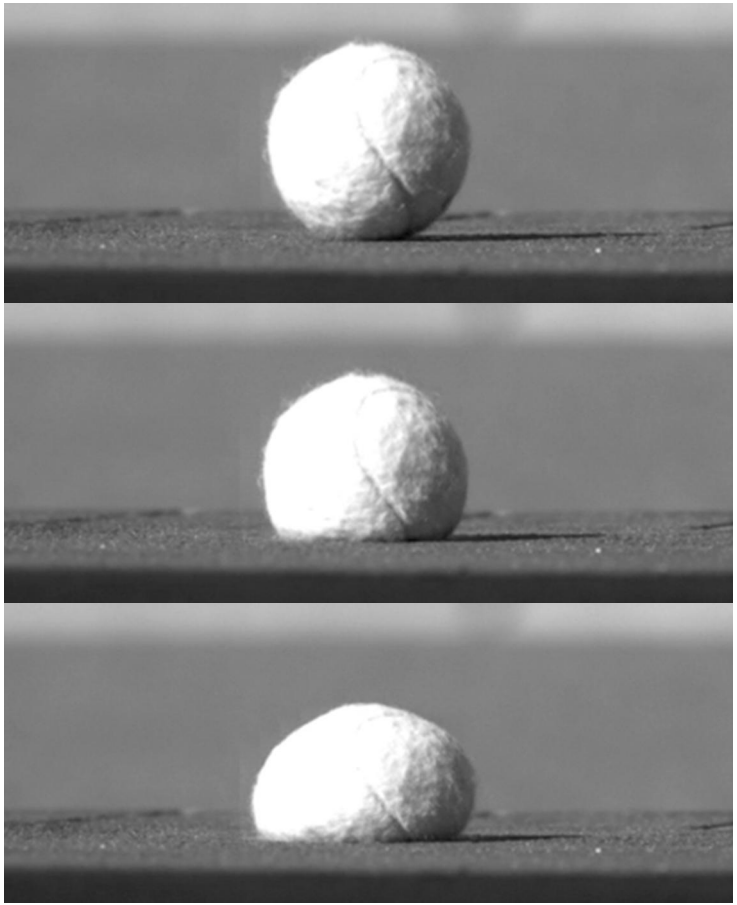
- While you were reading, what connections did you make to what you already know?
- What questions do you have about collisions and impact forces?
- What words are you unsure about?
- What information did you find to help you answer the focus question?

Impact force: the push exerted on one object when it has a collision with another object; just one of the pair of equal-sized forces in a collision



Let's work together to **summarize the key points** of what you read in Chapter 2.


+21.2 ms



When the tennis ball hits the surface, the collision doesn't happen all at once.

You see this as the ball changes shape when it collides with the surface.

Activity 2

Submitting Annotations

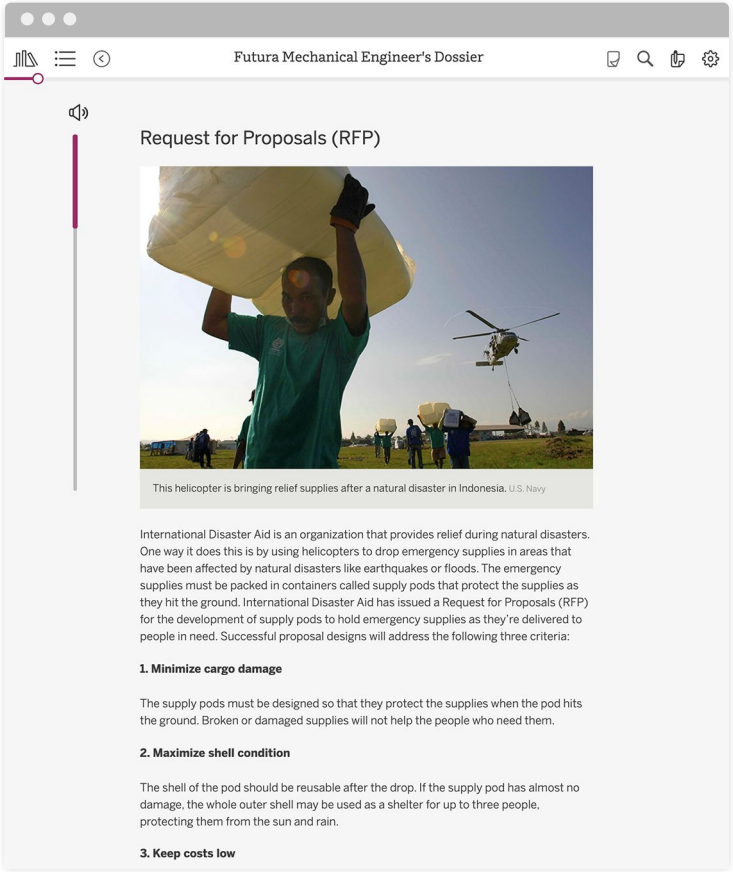
Submitting Annotations

Review your annotations for Chapter 2, answer the reflection question below the article, and then select HAND IN to submit your article.

Request for Proposals (RFP)

Activity 3

After-Hours Work



For this task, you'll **read and annotate** Chapter 1: "Request for Proposals (RFP)" in the Dossier.

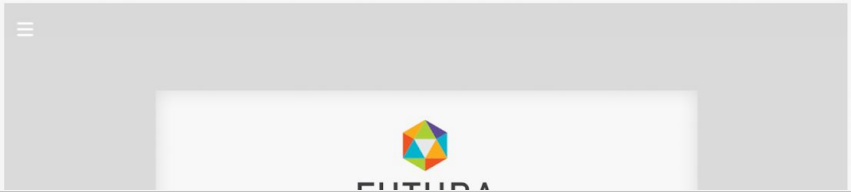
Then, you'll submit your annotations and respond to some questions.

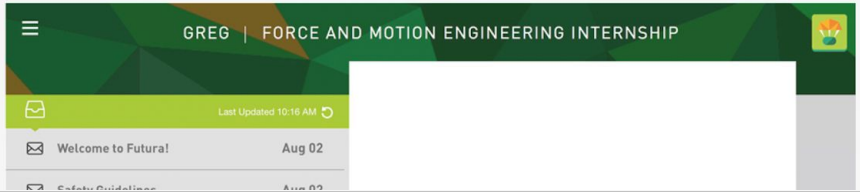
After-Hours Work

Return to Futura Workspace and be sure you've completed all internship tasks for the day.

- Open the Dossier.
- Read and annotate Chapter 1: "Request for Proposals" (RFP).
- Double-check your workspace inbox to see if there are Safety Guidelines to read and a Safety Agreement to submit.
- If your internship coordinator has told you to submit your annotations, move on the next student screen to hand them in.

Remember to select the Force and Motion Engineering Internship from the login page for the Futura Workspace.





End of Lesson

THE LAWRENCE HALL OF SCIENCE
UNIVERSITY OF CALIFORNIA, BERKELEY

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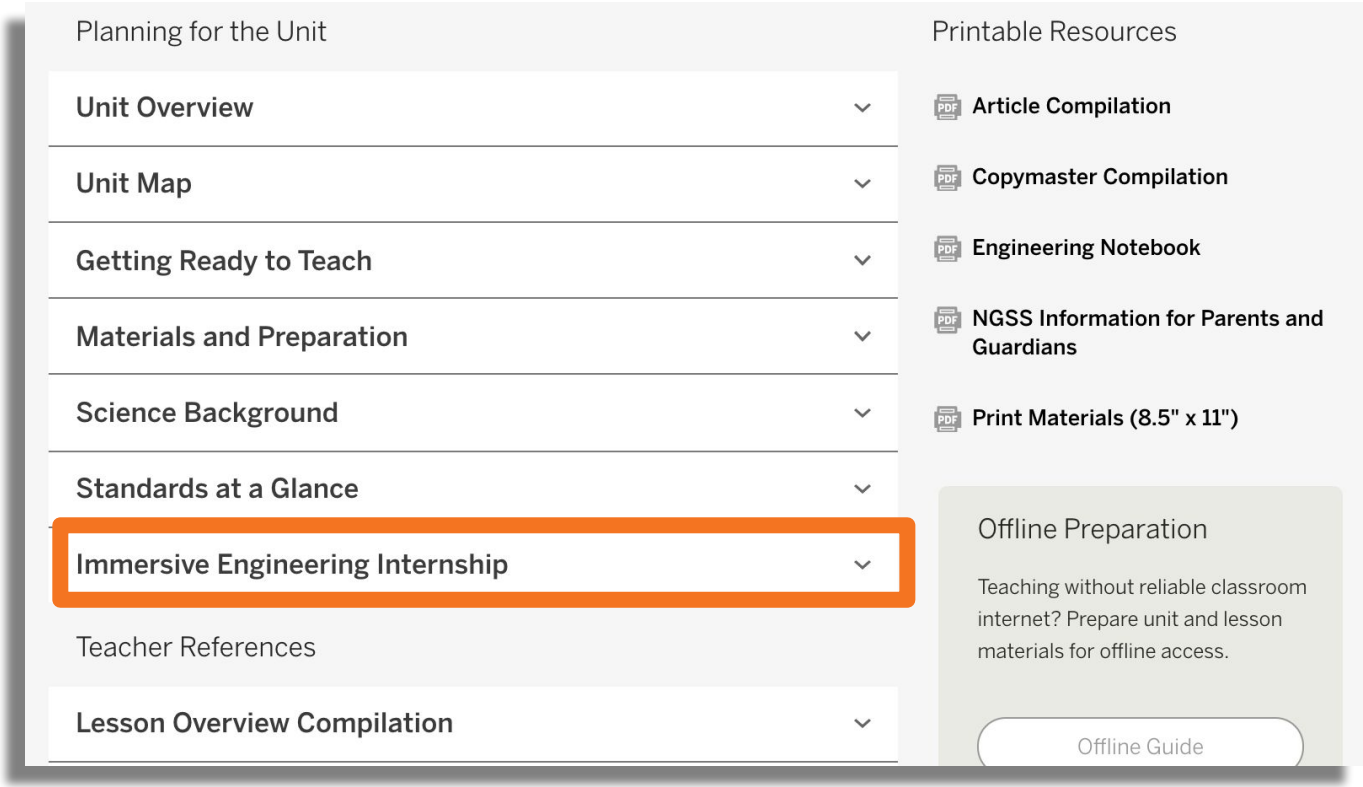
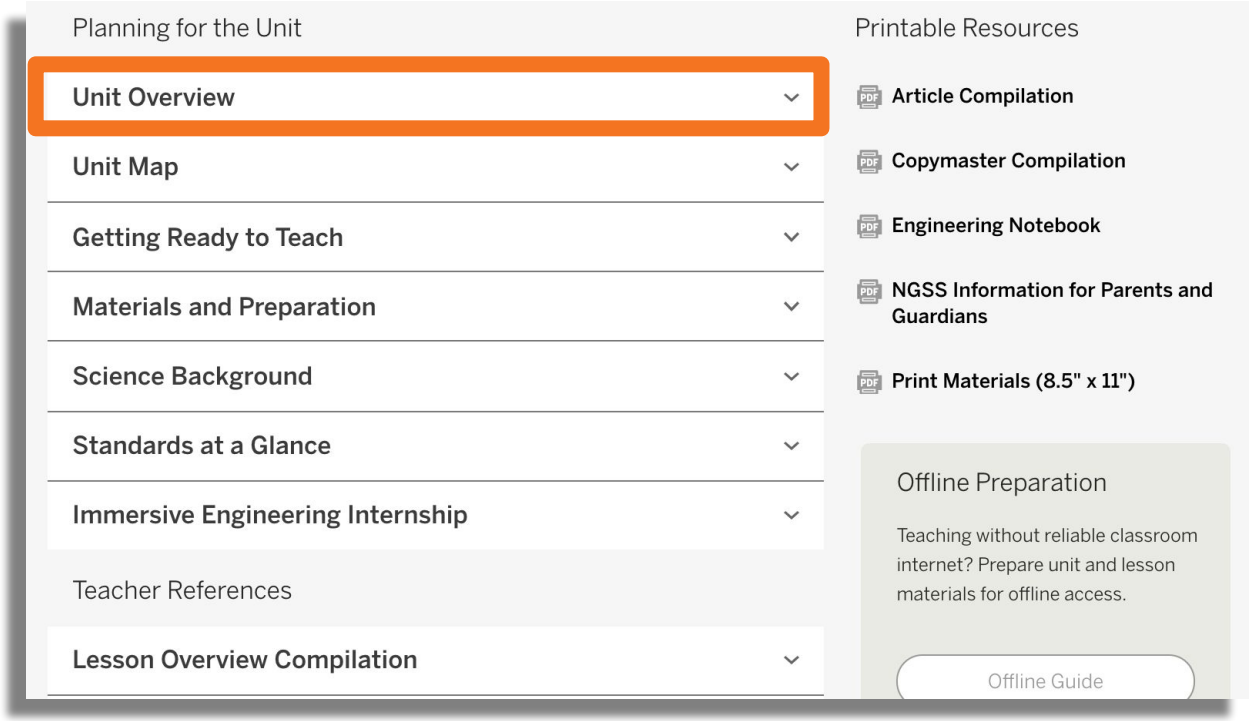
Live Navigation

How is the Immersive Engineering Internship different from the core units?



Where do you find the Unit Design Problem?



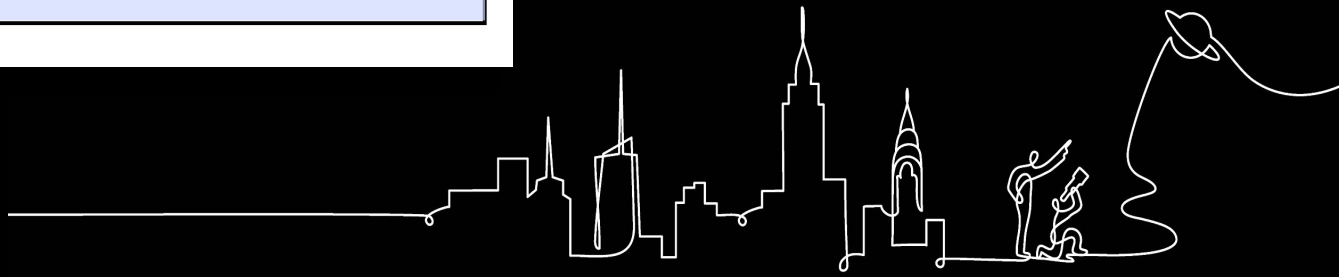
Guided EI Unit Internalization Planner

Unit-level internalization

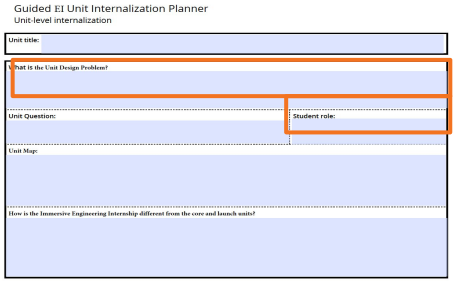
Unit title:	

What is the Unit Design Problem?	
Unit Question:	Student role:
Unit Map:	
How is the Immersive Engineering Internship different from the core and launch units?	

Guided Unit Internalization Document



What is the student role? How is the Unit Map different in EI from Core Units?


Guided EI Unit Internalization Planner
Unit-level internalization

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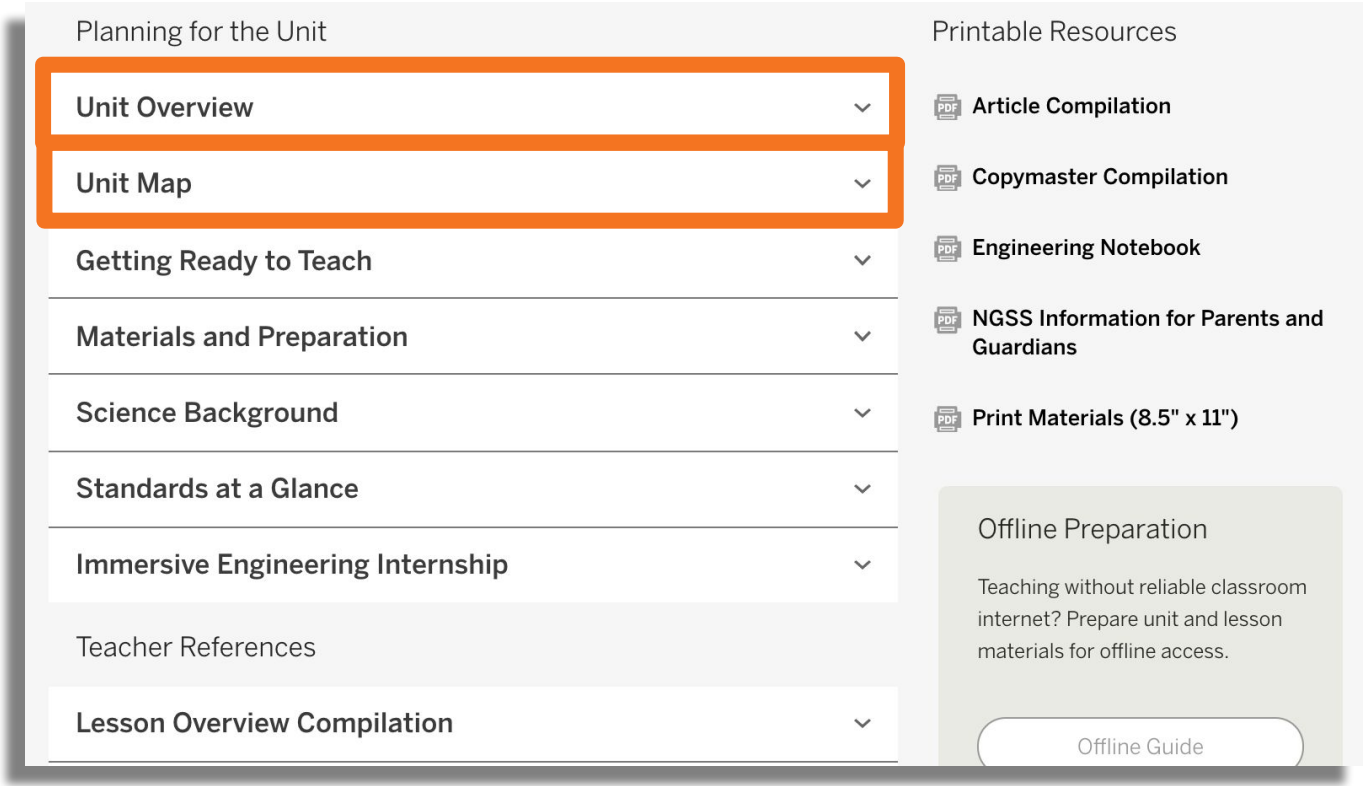
Student role:

Unit Map:

How is the Immersive Engineering Internship different from the core and launch units?


Planning for the Unit

Unit Overview

Unit Map

Getting Ready to Teach

Materials and Preparation

Science Background

Standards at a Glance

Immersive Engineering Internship

Teacher References

Lesson Overview Compilation

Printable Resources

Article Compilation

Copymaster Compilation

Engineering Notebook

NGSS Information for Parents and Guardians

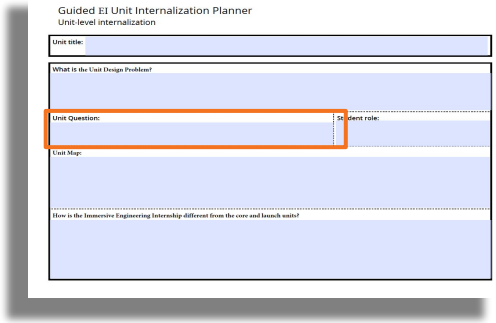
Print Materials (8.5" x 11")

Offline Preparation

Teaching without reliable classroom internet? Prepare unit and lesson materials for offline access.

Offline Guide

What do you need to do for interns on Day 4?


Guided EI Unit Internalization Planner
Unit-level internalization
Unit title:
What is the Unit Design Problem?
Unit Question:
Student role:
Unit Map:
How is the Immersive Engineering Internship different from the core and launch units?

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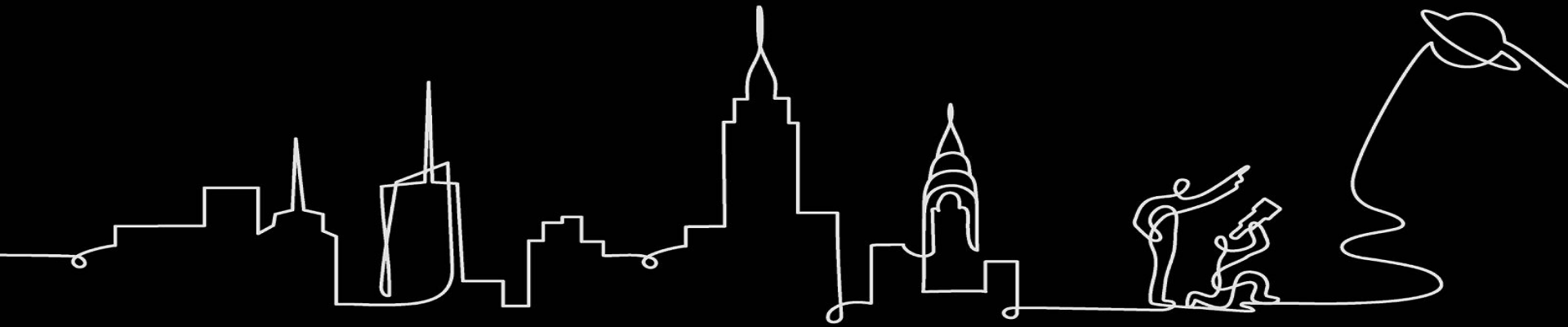
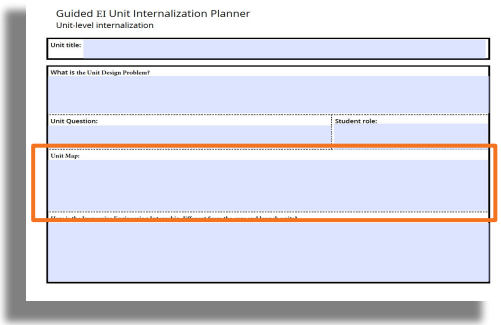
Offline Guide

Reflect-Type-Chat! Share and Learn

In two sentences or less, what do students figure out by the end of the unit?



By the end of the unit what will the students figure out?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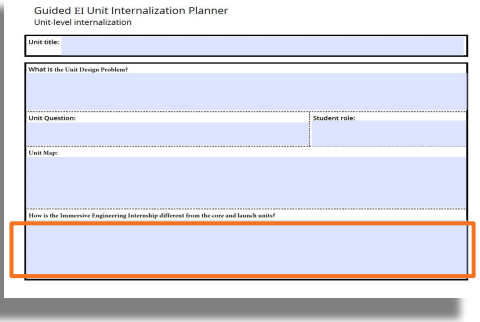
Offline Guide

How is the Immersive Engineering Internship different from a core unit?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Offline Guide

Guided EI Unit Internalization P

Unit-level internalization

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What is the Unit Design Problem?

Unit Overview

Unit Question:	Student role:
Lesson Overview Compilation	**Unit Overview**

Unit Map:

Unit Map

How is the Immersive Engineering Internship different from the core and launch units?

Immersive Engineering Internship

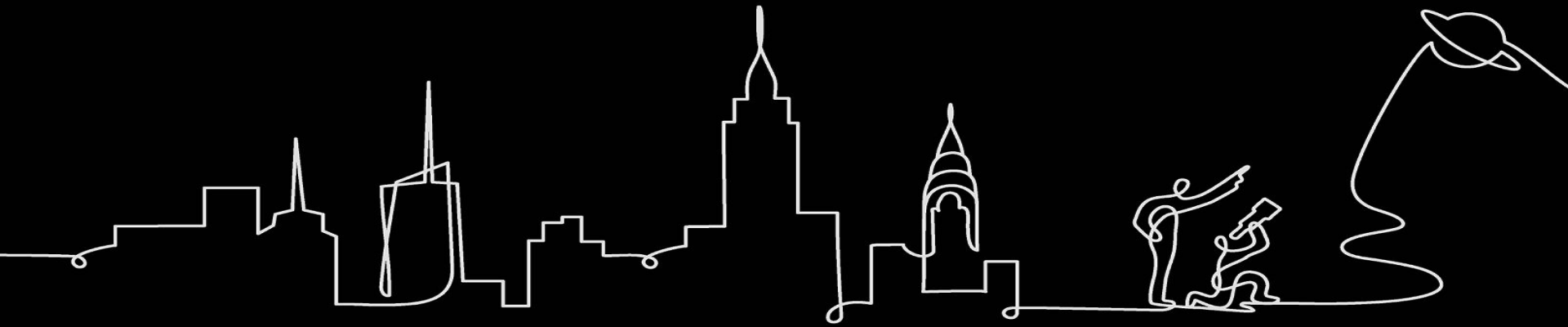
Where to Look!

Interns Working from home?

Amplify.

Reflect-Type-Chat! Share and Learn

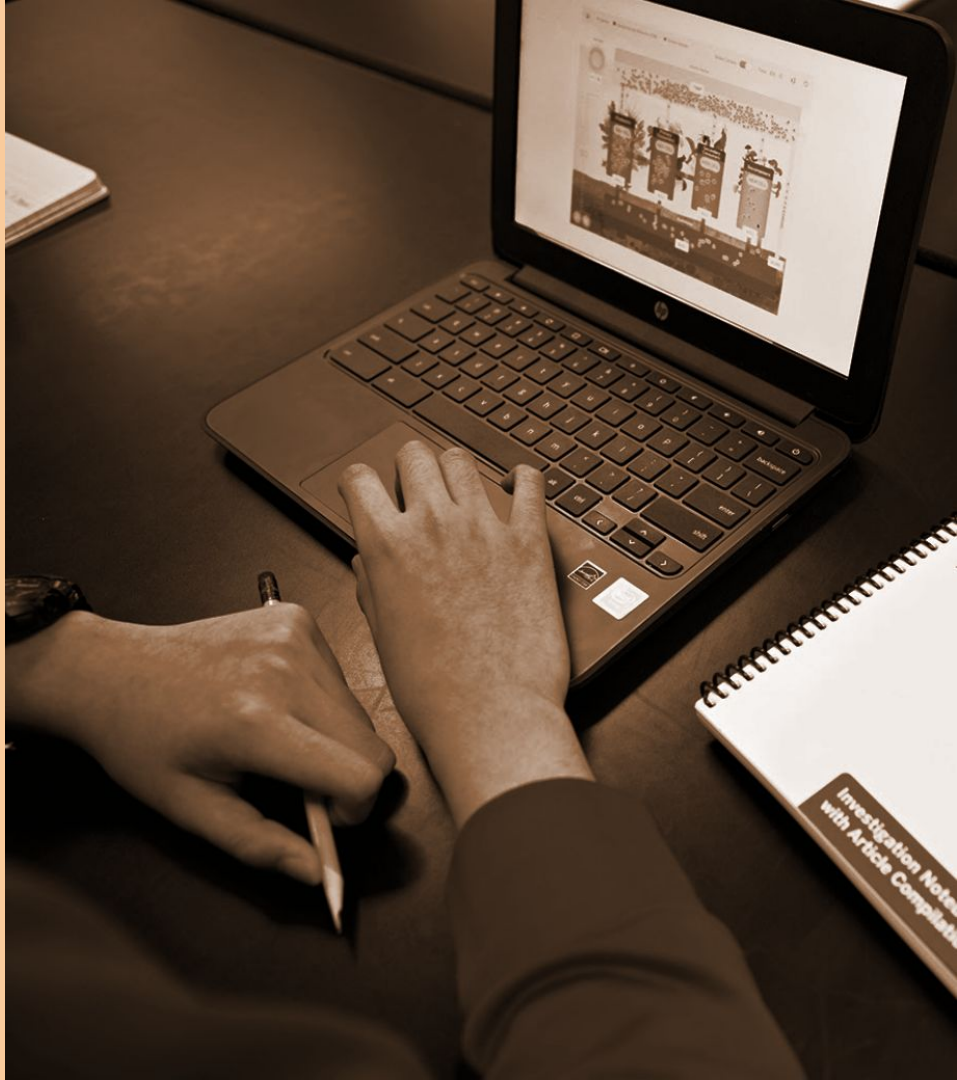
How will you adjust the Engineering Internship for your instructional model?



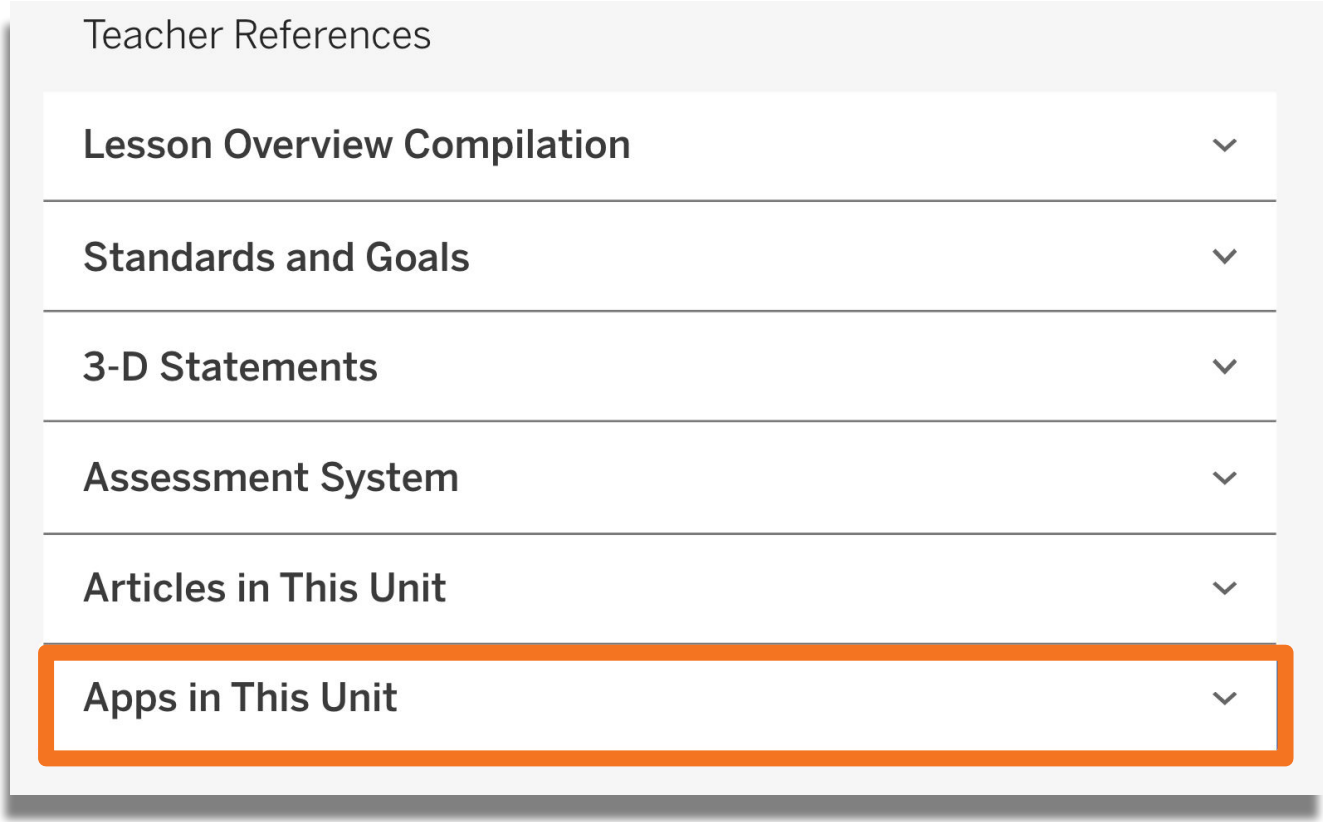
Questions?

Plan for the day

- Framing the day
- Unit Internalization
- **Explore EI Components**
- Planning
- Reflection and closing



Read the Apps in your Unit Section of the Teacher References: Futura Workspace and Supply Drop Simulation



FUTURA

ENGINEERING THE FUTURE

Earth's Changing Climate

Section 1

Section 2

WORKSPACE

FUTURA
MECHANICAL ENGINEERING

?

Design Details

Shell
Wood

Padding
20% Air Bags
20% Feathers
10% Metal Foam
20% Packing Peanuts

Add-On (Top)
Parachute - Large

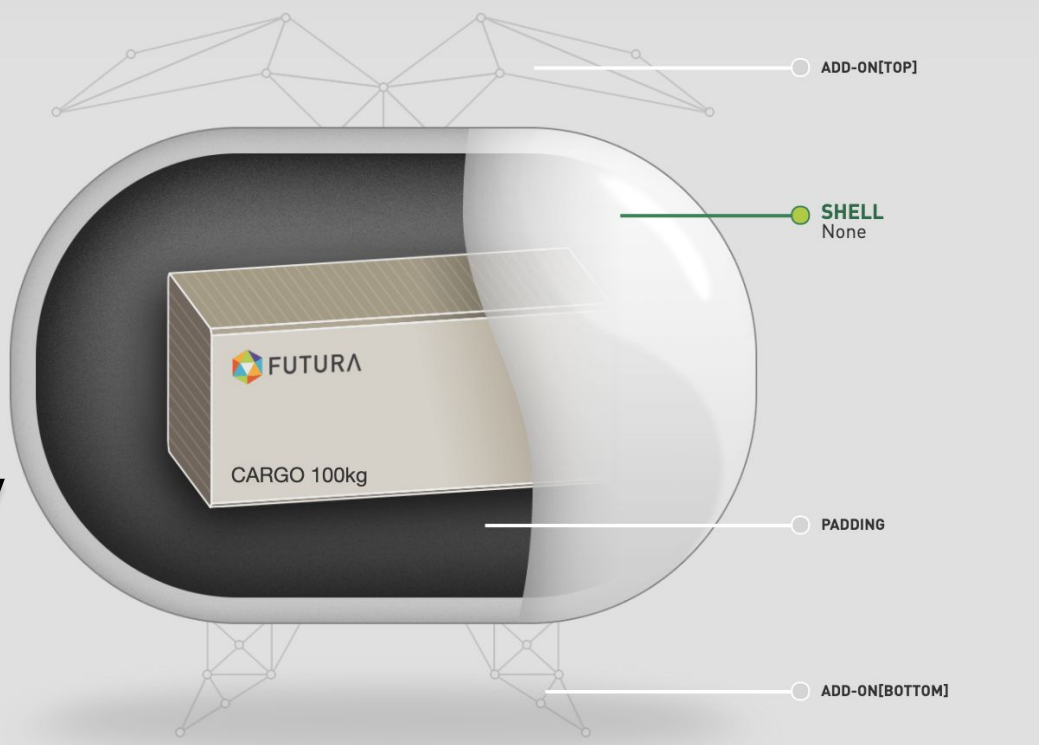
Add-On (Bottom)
None

Test Results

Impact Force On Pod	200,737 Newtons
Total Pod Mass	122.9kg
Velocity	15.7 m/s
Shell Condition	Building Materials
Total Pod Cost	$1,377.00
Cargo Damage	8.2 %

EDIT

Explore the Supply Drop Simulation. Locate the days that students will be using it and explore the activity sequence

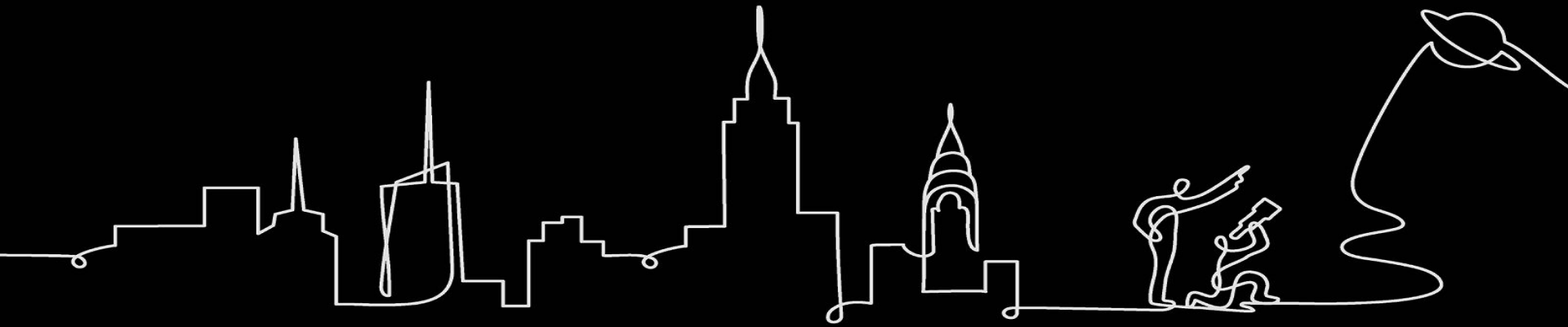


In Chat

What extra resources do you have to support your interns?

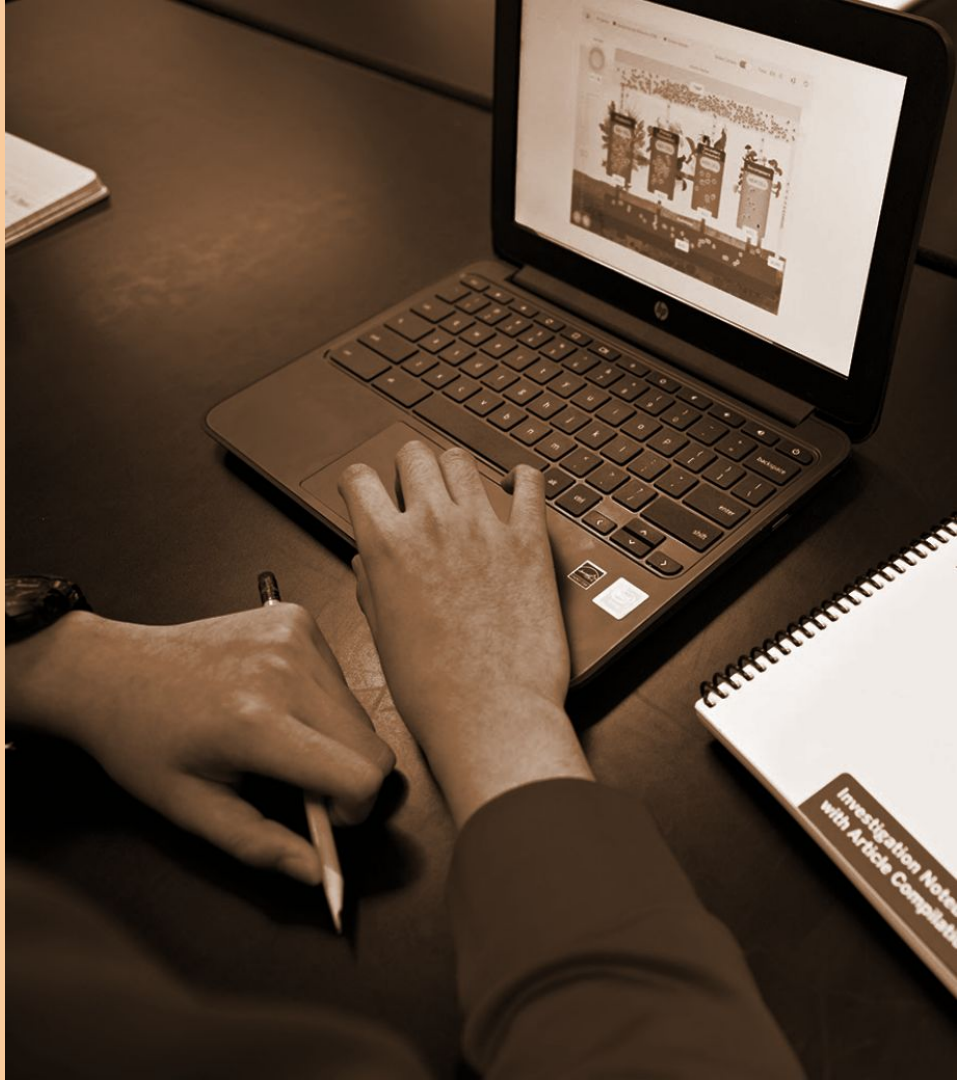
Reflect-Type-Chat! Share and Learn

Which self-study resource on the Program-Hub will you use most often and why?



Plan for the day

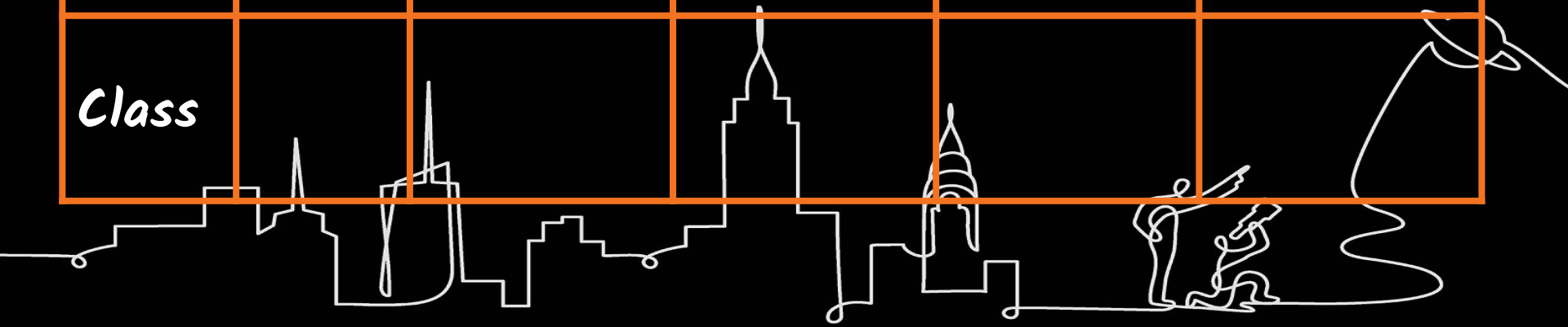
- **Framing the day**
- Unit Internalization
- Explore EI Components
- **Planning**
- Reflection and closing



Think-Type-Chat
Share and Learn

Take a moment to think about your current instructional model. Please share in chat!

	M	T	W	Th	F
Class					
Class					



Guided Planning

Use the lesson adaptation tool to adjust an in-class lesson for remote and hybrid learning.

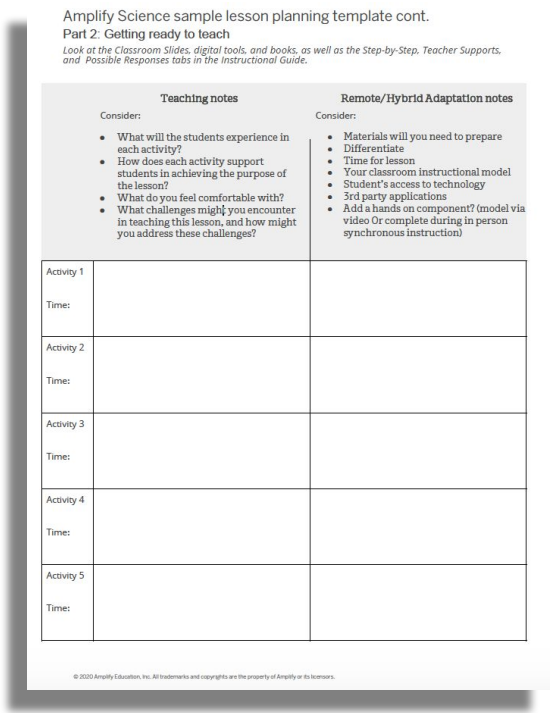
Lesson Adaptation Considerations

While planning consider the information below to select the appropriate resources:

- Do you have more, less, or the same time as last year for Science?
- Your classroom instructional model (Hybrid or Remote)
- Student's access to technology (packet or slides/sheets)
- The 3rd party applications will you pair with Amplify resources (if any)?
- Do I want to add a hands on component? (model via video? Or complete during in person synchronous instruction)

AmplifyScience@Lesson Adaptation Tool (Remote/Hybrid)

Lesson:	Date:
Lesson purpose: [Lesson Brief: Overview]	3-D connections and formative assessment opportunities:
What the students will learn in this lesson and potential challenges.	How will the students be practicing the multiple modalities during this lesson?



Amplify Science sample lesson planning template cont.

Part 2: Getting ready to teach

Look at the Classroom Slides, digital tools, and books, as well as the Step-by-Step, Teacher Supports, and Possible Responses tabs in the Instructional Guide.

	Teaching notes Consider: • What will the students experience in each activity? • How does each activity support students in achieving the purpose of the lesson? • What do you feel comfortable with? • What challenges might you encounter in teaching this lesson, and how might you address these challenges?	Remote/Hybrid Adaptation notes Consider: • Materials will you need to prepare • Differentiate • Time for lesson • Your classroom instructional model • Student's access to technology • 3rd party applications • Add a hands on component? (model via video Or complete during in person synchronous instruction)
Activity 1 Time:		
Activity 2 Time:		
Activity 3 Time:		
Activity 4 Time:		
Activity 5 Time:		

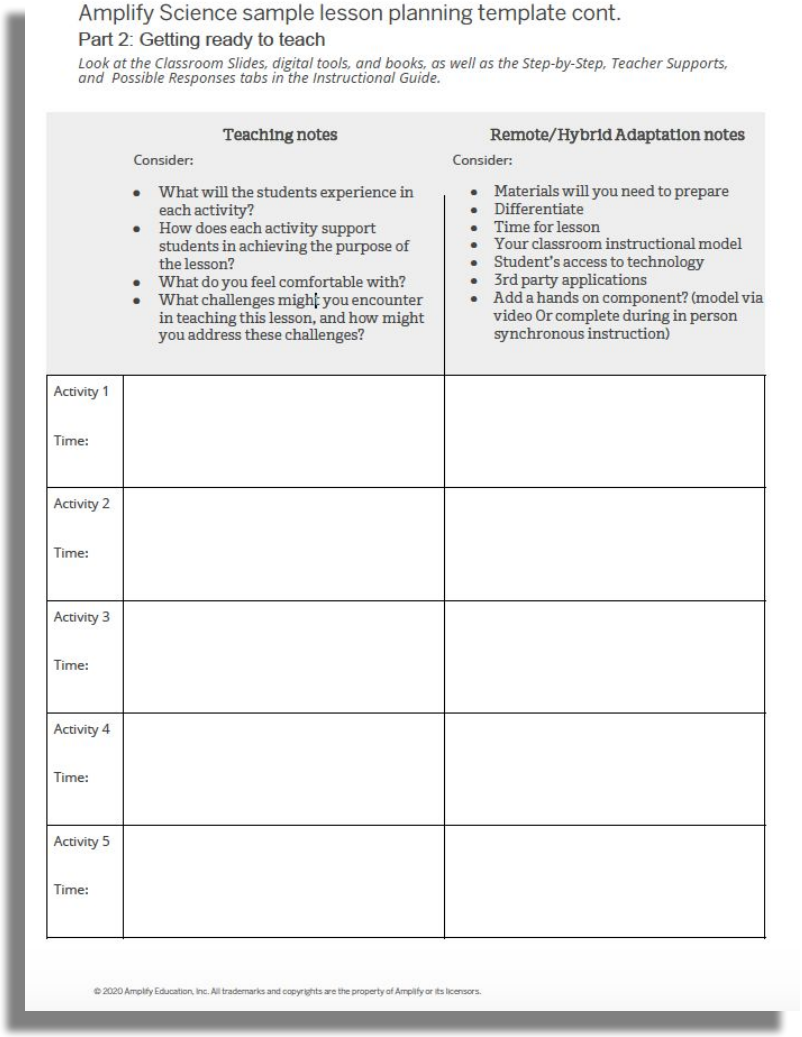
Lesson Adaptation Tool for Remote and Hybrid Learning

AmplifyScience@Lesson Adaptation Tool (Remote/Hybrid)

Lesson:	Date:
Lesson purpose: [Lesson Brief: Overview]	3-D connections and formative assessment opportunities:
What the students will learn in this lesson and potential challenges.	How will the students be practicing the multiple modalities during this lesson?

Lesson Adaptation!

Choose a lesson and use the Lesson Adaptation Tool to begin recording planning information about the lesson.



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Activity 5 Time:		

Lesson Adaptation!

With the Lesson Adaptation Tool begin adjusting the lesson for remote and hybrid learning.

Note begin with in-class slides

Lesson Adaptation Considerations

While planning consider the information below to select the appropriate resources:

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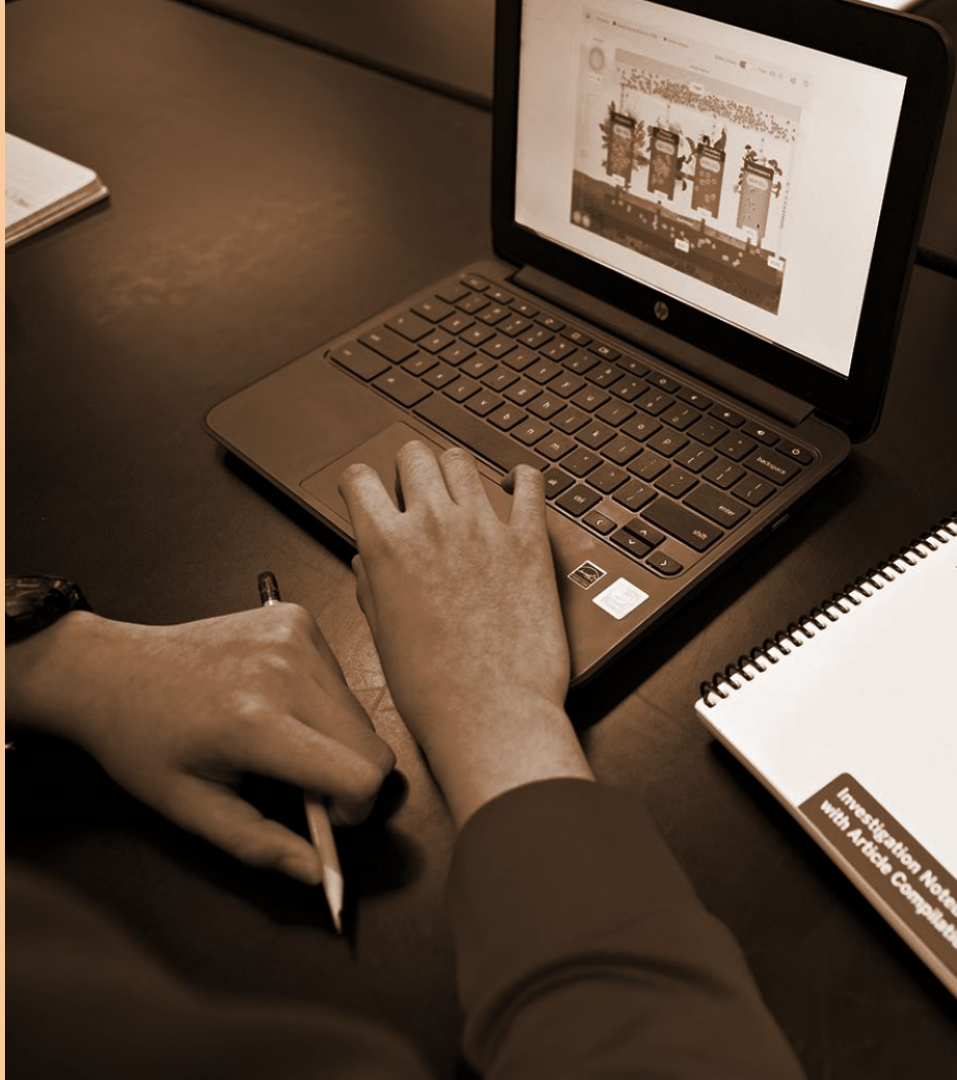

Questions?

NYC Program Guide

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

https://my.amplify.com/programguide/content/national/welcome/nyc/

Amplify Help

Find lots of advice and answers from the Amplify team.

my.amplify.com/help

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