Amplify Science

New York City Department of Education

Grade 7: Microbiome and Metabolism Summer Institute: Day 1



Date

Presented by Your Name

Overarching goals

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

- Navigate program resources and describe how Amplify Science addresses 3-D learning and NGSS.
- Use unit resources to plan lessons that support ALL learners.

Getting to know the units Day 1



Day 1 Objectives

By the end of today, you will be able to:

- Explain what students learn in the units, and how they learn it.
- Navigate the Amplify Science curriculum.
- Recognize how lessons engage students in the three dimensions of NGSS.

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.



- What is Amplify Science?

Microbiome/Metabolism

- Navigating the Digital Guide
- Amplify Science approach

Experiencing the launch unit

- Microbiome model lesson
- Argumentation

Experiencing the core unit

- Metabolism instructional sequence
- Reflecting on the sequence

Closing

- NYC specific updates
- Reflection
- Questions



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Closing

- NYC specific updates
- Reflection
- Questions

The purpose of this part of the day is for you to

• Navigate the Amplify Science curriculum



Amplify Science

Middle School Curriculum New York City Edition

Grade	6

- Launch: Harnessing Human Energy
- Thermal Energy
- Populations and Resources
- Matter and Energy in Ecosystems
- Weather Patterns
- Ocean, Atmosphere,and Climate
- 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
- Earth, Moon, and Sun
- Force and Motion
- Engineering Internship: Force and Motion
- Magnetic Fields
- Light Waves
- Traits and Reproduction
- Natural Selection
- Evolutionary History





Middle School Curriculum New York City Edition

Grade 7

Grade 6 Launch: Harnessing Human Energy

- Thermal Energy
- Populations and Resources
- Matter and Energy in Ecosystems
- Weather Patterns
- Ocean, Atmosphere,and Climate
- Earth's Changing Climate

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

Grade 8 • Launch: Geology on Mars Launch units

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





Middle School Curriculum New York City Edition

Grade 7

Core units

Grade 6	
• Launch: Harnessing Human Energy	
 Thermal Energy 	
 Populations and Resources 	
 Matter and Energy in Ecosystems 	
• Weather Patterns	
 Ocean, Atmosphere, and Climate 	
 Earth's Changing Climate 	
	•
	1

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



AmplifyScience

Middle School Curriculum New York City Edition

Grade	6

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- Grade 7
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- Grade 8
- Launch: Geology on Mars
- Earth, Moon, and Sun

Engineering Internships

- Force and Motion
- Engineering Internship: Force and Motion
- Magnetic Fields
- Light Waves
- Traits and Reproduction
- Natural Selection
- Evolutionary History





New York City Companions



New York City Companion

Teacher Booklet: Grade 7

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Middle school components



Digital instructional materials



Optional investigation notebook



Digital library



Hands-on materials



Simulations & other digital tools



Assessments & reporting

Amplify Science: What's new for 2019-2020



AmplifyScience	Name: Date:
	Part 1: Conducting the Soil Profile Test
Ecosystem Restoration: Matter and Energy in a Rain Forest	1. On the line below, write the name of the soil you will test. 2. Add 2-3 cm of soil to your container. 3. Add a pinch of dum. 4. Fill the container with wates, leaving 1 cm empty at the top. 5. Pact he lid on the container. 5. Shoke the container for 5 seconds. 7. Place the container on a flat surface. 8. In the box leaving, drow all babel your prediction of what you will observe in the container drafter several minutes have passed. Soith
Flextension Compilation	Ecosystem Restoration—Soil Profile Test 1 © The Reports of the University of California Afrightoneomed.

Hands-on Flextensions

Amplify Science: What's new for 2019-2020

• 8th Grade 🔸					
			ACTIVITIES	6	LEVELS
UNIT	CHAPTER	LESSON	ACTIVITY	-TYPE	
Force and Motion	▼ 1 Force and Velocity	▼ 1 Pre ×	2 Des × ▼ All		•
ACTIVITY		SUBMISSIONS	LAST SUBMISSION	FEEDBACK	
CLASS Multiple Choice Lesson 1		26/26	5:38 PM Wed. 4/17/19	0	>
CLASS Written-Response O Lesson 1	Question #1	23/26	5:00 PM Wed. 4/17/19	2 awaiting	>
CLASS Written-Response O Lesson 1	Question #2	23/26	4:57 PM Wed. 4/17/19	0	>
WARM-UP Warm-Up Lesson 2		23/26	1:42 PM Thu. 4/18/19	0	>

Classwork

Teacher's Guide navigation







Questions?

Problem-based deep dives Students inhabit the role of scientists and engineers to explain or predict phenomena. They use what they figure out to solve realworld problems.



Amplify Science approach





Figure out, not learn about

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Standards as three-dimensional performance expectations that integrate **disciplinary core ideas**, **science and engineering practices**, and **crosscutting concepts**





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- Metabolism instructional sequence
- Reflecting on the sequence

Closing

- NYC specific updates
- Reflection
- Questions

Experiencing the launch unit

The purpose of this part of the day is for you to

- Gain experience with the goals and structure of launch units.
- Learn about how the practice of argumentation is introduced in a launch unit to students.

Middle School Curriculum New York City Edition

Grade 7

G	rade 🖸
•	Launch: Harnessing Human
	Energy

~

- Thermal Energy
- Populations and Resources
- Matter and Energy in Ecosystems
- Weather Patterns
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- Natural Selection
- Evolutionary History





What is a Launch Unit?

- First unit of the year
- Focused on an interesting, immersive, and often surprising problem.
- Introduces practices that are integral to science, such as:
 - Argumentation
 - Reading
 - Writing
 - Talking about science ideas
 - Using models
- Introduces routines such as:
 - Active reading
 - Discourse routines

Launch unit: Microbiome





Argumentation in Amplify Science



Goals for argumentation in Amplify Science

- To provide students an authentic opportunity to engage in the practice of argumentation
- To make clear to students the purpose of argumentation and the role it plays in building and communicating scientific knowledge
- To help students build their own knowledge through argumentation



Microbiome/Metabolism Plan for the day – Day 1

• Framing the day

- What is Amplify Science?
- Navigating the Digital Guide
- Amplify Science approach

Experiencing the launch unit

- Microbiome model lesson
- Argumentation

• Experiencing the core unit

- Metabolism instructional sequence
- Reflecting on the sequence

Closing

- NYC specific updates
- Reflection
- Questions

Experiencing the core unit

The purpose of this part of the day is for you to

- Explain what students learn in the core unit, and how they learn it.
- Recognize how lessons engage students in the three dimensions of NGSS (as appropriate).

Amplify Science approach



Introduce a phenomenon and a related problem



Metabolism Instructional sequence
JUMP DOWN TO CHAPTER OVERVIEW

Lesson 2.1: Exploring the Classroom Body Systems Model	Lesson 2.2: Patient Stories: Problems with Body Systems	Lesson 2.3: Learning More About a Condition
Lesson 2.4: Conducting Sim Tests	Lesson 2.5: Critical Juncture Assessment	Lesson 2.6: Playing Guess My Model
Lesson 2.7: Diagnosing Elisa		

Amplify.

JUMP DOWN TO CHAPTER OVERVIEW



JUMP DOWN TO CHAPTER OVERVIEW

Lesson 2.1: Lesson 2.2: Lesson 2.3: Exploring the **Patient Stories:** Learning More About a Condition Classroom Body Problems with Body Systems Model Systems Lesson 2.4: Lesson 2.5: Lesson 2.6: Conducting Sim **Critical Juncture** Playing Guess My Assessment Model Tests SETTINGS Lesson 2.7: Diagnosing Elisa

Amplify.

JUMP DOWN TO CHAPTER OVERVIEW

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Lesson 2.4: Conducting Sim Tests	Lesson 2.5: Critical Juncture Assessment	Lesson 2.6: Playing Guess My Model
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• Framing the day

- What is Amplify Science?

Microbiome/Metabolism

- Navigating the Digital Guide
- Amplify Science approach

Experiencing the launch unit

- Microbiome model lesson
- Argumentation

Experiencing the core unit

- Metabolism instructional sequence
- Reflecting on the sequence

Closing

- Amplify Science in NYC
- Reflection
- Questions

Amplify Science in NYC





Planning your year

Overview: Amplify Science 6-8 course structure and pacing

Sep	pt.	Oct. Nov.						Nov. Dec.)ec. Jar					Feb.			Mar.					Ар	r.		Ma	ay		Jun.				
6/6	9/16	9/23	9/30	10/7	10/14	10/21	10/28	11/4	11/11	11/18	11/25	12/2	12/9	12/16	12/30	1/6	1/13	1/20	1/27	2/3	2/10	2/24	3/2	3/9	3/16	3/23	3/30	4/6	4/20	4/27	5/4	5/11	5/18	5/25	6/1	6/8	6/15	6/22
auno	ch Uni	t: Harn	essing	Ther	mal En	ergy		•	•	Рори	Jation	s and R	esourc	es	Matt	er and	Energy	y in Ec	osyster	ms	Weat	ther Pa	atterns			Oce	an, Atr	nosph	ere, and	d Clima	ate	Eart	h's Ch	anging	Climat	e	-0	
aunc	an Ene	rgy	Meta	abolisn				1	Phas	e Char	nge				Cherr	nical R	eaction	ns la	5.	j.	Plate	Motio	'n			Engin	meering nship:		Rock	Transf	formati	ions		Engir	neering nship: 1	Earth's		
auno	ch Unit	: Mars	Eart	h, Moo	n, and	Sun		Force	e and l	Motion			Engin	eering	Drce	Мар	netic F	Fields			Light	t Waves		~	Trait	Plate	Motio	uction		Natu	ral Sele	ection		Chan	ging Cl	limate	ry	
6/	/16	/23	/30	0/7	0/14	0/21	0/28	1/4	1/11	1/18	1/25	2/2	and M	lotion	2/30	/6	/13	/20	/27	/3	/10	/24	/2	6/	/16	/23	/30	/6	/20	/27	/4	/11	/18	/25	/1	/8	/15	/22

Self-reflection and closing

The purpose of this part of the day is for you to

• Reflect on your ability to navigate the Teacher's Guide and your understanding of the Amplify Science Approach and how it supports three-dimensional learning.



Questions?



Day 1 Objectives

By the end of today, you will be able to:

- Explain what students learn in the units, and how they learn it.
- Navigate the Amplify Science Curriculum.
- Recognize how lessons engage students in the three dimensions of NGSS (as appropriate).

Overarching goals

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

- Navigate program resources and describe how Amplify Science addresses 3-D learning and NGSS.
- Use unit resources to plan lessons that support ALL learners.



Amplify Science

New York City Department of Education

Grade 7: Microbiome and Metabolism Summer Institute: Day 2

Date

Presented by Your Name

Overarching goals

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

- Navigate program resources and describe how Amplify Science addresses 3-D learning and NGSS.
- Use unit resources to plan lessons that support ALL learners.

Day 1 Objectives

After yesterday, you should be able to:

- Explain what students learn in the unit, and how they learn it.
- Navigate the Amplify Science Curriculum.
- Recognize how lessons engage students in the three dimensions of NGSS (as appropriate).

Day 2 Objectives

By the end of today, you will be able to:

- Articulate how lesson activities support ALL students with building complex explanations.
- Identify the multiple types of assessments embedded within the Amplify Science curriculum.
- Apply program resources to plan to teach.

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.

• Framing the day

- Culture building
- Unit Guide navigation

Story of the unit

- Coherence
- Progress Build

Supports for instructional decisions

- Amplify Science assessment System

- Formative assessmentReporting
- Planning to teach
 - Classwork
 - NYC Companion explore
 - Unit pacing
- Closing and reflection
 - Reflection
 - Survey

• Framing the day

- Culture building
- Unit Guide navigation

Story of the unit

- Coherence
- Progress Build

Supports for instructional decisions

- Amplify Science assessment System

- Formative assessmentReporting
- Planning to teach
 - Classwork
 - NYC Companion explore
 - Unit pacing
- Closing and reflection
 - Reflection
 - Survey

• Framing the day

- Culture building
- Unit Guide navigation

Story of the unit

- Coherence
- Progress Build
- Supports for instructional decisions
 - Amplify Science assessment System

- Formative assessmentReporting
- Planning to teach
 - Classwork
 - NYC Companion explore
 - Unit pacing
- Closing and reflection
 - Reflection
 - Survey

Coherence









Questions?



Build increasingly complex explanations

Amplify Science approach

Introduce a phenomenon and a related problem Collect evidence from multiple sources Build increasingly complex explanations

Apply knowledge to a different context



Questions?



• Framing the day

- Culture building
- Unit Guide navigation

Story of the unit

- Coherence
- Progress Build
- Supports for instructional decisions
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- Closing and reflection
 - Reflection
 - Survey

Supports for instructional decisions The purpose of this part of the day is for you to

• Identify the multiple types of assessments embedded within the Amplify Science curriculum.

Amplify Assessment System

- Credible
- Actionable
- Timely





Pre- and End-of-Unit Assessments



Critical Juncture Assessments



On-the-Fly Assessments



Student Self-Assessments





Portfolio Assessment



Investigation Assessment



E AmplifyScience > Metabolism





Launch unit assessments












Formative assessment



Reporting





Reporting







Microbiome/Metabolism Plan for the day – Day 2

• Framing the day

- Culture building
- Unit Guide navigation

Story of the unit

- Coherence
- Progress Build

Supports for instructional decisions

- Amplify Science assessment System

- Formative assessmentReporting
- Planning to teach
 - Classwork
 - NYC Companion explore
 - Unit pacing
- Closing and reflection
 - Reflection
 - Survey

Planning to teach

The purpose of this part of the day is for you to

• Apply program resources to plan to teach.

Classwork

• 8th Grade •		ACTIVITI	ES	LEVELS
UNIT CHAPTER Force and Motion I Force and Velocity 	LESSON ▼ 1 Pre-U X	2 Descr ×	ТҮРЕ	•
ACTIVITY	SUBMISSIONS	LAST SUBMISSION	FEEDBACK	
1. CLASS Multiple Choice Lesson 1	26/26	5:38 PM Wed. 4/17/19	0	>
2. CLASS Written-Response Question #1 Lesson 1	23/26	5:00 PM Wed. 4/17/19	2 awaiting	>
3. CLASS Written-Response Question #2 Lesson 1	23/26	4:57 PM Wed. 4/17/19	0	>
1. WARM-UP Warm-Up Lesson 2	23/26	1:42 PM Thu. 4/18/19	0	>

Formative assessments not recommended for grading

- Pre-Unit Assessment
- Critical Juncture Assessment
- On-the-Fly Assessments







2019-2020 NYC unit pacing



NYC Companion Lessons



NYC Grade 7 Companion Lesson 1 Reading "How You Are Like a Sneezing Iguana"

Lesson 1: Reading "How You Are Like a Sneezing Iguana"

Overview

The article "How You Are Like a Sneezing Iguana" leverages students' understanding of interactions between body systems in order to introduce how body systems work together to maintain homeostasis. Following the Active Reading approach, students first read and annotate the article on their own, then they discuss their annotations with a partner. To deepen their understanding, students reread a section of the article that describes how the human body maintains homeostasis during physical exertion. The purpose of this lesson is for students to learn that body systems, including cells, tissues, and organs, work together to maintain homeostasis.

Recommended Placement: Metabolism, after Lesson 3.2 Suggested Time Frame: 60 minutes

NYS P-12 Science Learning Standards

Performance	•	MS-LS1-3: Construct an explanation supported by evidence for
Expectations		how the body is composed of interacting systems consisting
		of cells, tissues, and organs working together to maintain homeostasis.

Disciplinary · PS3.D: Energy in Chemical Processes and Everyday Life:

Core Ideas
Cellular respiration in plants and animals involves chemical reactions with oxygen that release stored energy. In these processes, complex molecules containing carbon react with oxygen to produce carbon dioxide and other materials. (secondary to MS-LS7)

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Instructional Guide

NYC Grade 7 Companion Lesson 1 Reading "How You Are Like a Sneezing Iguana"

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Instructional Guide

First Read of "How You Are Like a Sneezing Iguana"

1. Introduce the article and make a connection to students' background knowledge.

- You have been learning about how human body systems work together to get important molecules to the cells so they can release energy. Today, you will read an article called "How You Are Like a Sneezing Iguana" that builds on what you know about body systems.
- It may seem strange to compare humans and sneezing iguanas. What could you have in common with a sneezing iguana? In a moment, you will read to find out more.
- Model Active Reading. Read the first few sentences of the article aloud. Ask questions and make connections as you model the Active Reading process.
- Review Active Reading Guidelines. Before students begin reading, point out the Active Reading Guidelines on the classroom wall.
- Prompt students to read and annotate independently. Direct students to the article in their student booklets. Circulate as students read, providing support as needed.
- 5. Review the process for discussing annotations. When most students have finished reading and annotating, explain that students will choose one or two annotations to share with a partner. They should select questions or connections that they find interesting or those that will help them better understand what they read.
- Provide a moment for students to select the annotations they will share with their partners.
- Prompt partners to discuss annotations. Circulate as pairs discuss, using the Annotation Tracker and listening for questions and connections that you would like to invite students to share during the class discussion.
- Prompt partners to prepare for class discussion. Ask them to choose an interesting or unanswered question or connection that they would like to share with the class. Explain that they can discuss the same annotations they shared with their partners if the questions are still unresolved.
- Facilitate a brief class discussion about annotations. Invite students to share their questions and connections. Encourage students to respond to one another and to look back at the article in order to answer their peers' questions.
- 10. Highlight exemplary or noteworthy annotations. Refer to your Annotation Tracker and invite students to share those annotations you noted. Provide specific, positive feedback as students share, noting when annotations show evidence of Active Reading. Examples might include annotations that make a connection to science ideas. use vocabulary from the unit, or instances in which students were able to answer their own questions.

Possible Student Responses

NYC Grade 7 Companion Lesson 1 Reading "How You Are Like a Sneezing Iguana"

Amplity

Second Read of "How You Are Like a Sneezing Iguana"

Part 1

Reread paragraphs 2 and 3 of the article "How You Are Like a Sneezing Iguana." As you read, highlight information that helps you explain why you breathe faster when you exercise. You will use that information to help you answer the questions in Part 2.

Part 2

A cyclist starts a race. As she pedals, she begins to breathe faster. Why?

The cyclist breathes faster to take in more oxygen. Her

muscle cells are using more oxygen, so taking in more oxygen helps keep the level of oxygen in her body stable.

How do the cyclist's body systems work together as she breathes faster? You can add notes to the diagram below to explain your thinking.



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Microbiome/Metabolism Plan for the day – Day 2

• Framing the day

- Culture building
- Unit Guide navigation

Story of the unit

- Coherence
- Progress Build
- Supports for instructional decisions
 - Amplify Science assessment System

- Formative assessmentReporting
- Planning to teach
 - Classwork
 - NYC Companion explore
 - Unit pacing
- Closing and reflection
 - Reflection
 - Survey

Closing and reflection

The purpose of this part of the day is for you to

• Reflect on the learning for the day.

Overarching goals

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

- Navigate program resources and describe how Amplify Science addresses 3-D learning and NGSS.
- Use unit resources to plan lessons that support ALL learners.

