Louisiana Guide to Implementing Amplify: Grade 6

Contents

Purpose 2
Standards by Unit 3
Louisiana-Specific Recommendations 4
Companion Lesson Guidance[1] 7
Investigative Phenomena by Unit[1] 8
LDOE Formative Assessment Resources 10

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Purpose

To assist teachers with the implementation of the Amplify curriculum for grade 6, this document provides guidance regarding how Amplify units correlate with the Louisiana Student Standards for Science (LSSS). The Amplify curriculum provides ample instructional guidance for teachers. This Louisiana Guide for Implementing Amplify takes it a step further by highlighting areas where teachers may need to make strategic decisions that consider student needs.

The Amplify Science Grade 6 units may include performance expectations from future grade levels. These units are intentionally designed to provide students with the opportunity to incrementally make sense of phenomena, building understanding and abilities over time through a coherent storyline. Modifications to the sequence or content of lessons within these units could undermine the design and should therefore be approached with caution and careful consideration.

This guidance document is considered a 'living' document, reflecting the expectation that teachers and other educators will continue to identify opportunities for improvement as it is applied in practice. Please send feedback to STEM@la.gov so that the Louisiana Department of Education (LDOE) may incorporate your suggestions when updating this guide.

Standards by Unit

	Unit 1 Microbiome	Unit 2 Populations and Resources	Unit 3 Matter and Energy in Ecosystems	Unit 4 Force and Motion	Unit 5 Magnetic Fields	Unit 6 Earth, Moon, and Sun	Unit 7 Light Waves	Force and Motion Engineering Internship
Number of Lessons	11 lessons 1 flextension	19 lessons *1 companion lesson*	19 lessons *3 companion lessons*	19 lessons	19 lessons	19 lessons	19 lessons *1 companion lesson*	10 lessons
Anchor Phenomenon Question	How can having 100 trillion microorganisms on and in the human body keep us healthy?	What caused the size of the moon jelly population in Glacier Sea to increase?	Why did the biodome ecosystem collapse?	What happened in the missing seconds when the space pod should have docked with the space station?	Why did the tests of a magnetic spacecraft launcher not go as planned?	How can an astrophotographer plan for the best times to take photos of specific features of the moon?	Why is there a higher rate of skin cancer in Australia than in other parts of the world?	Design a supply drop pod for areas affected by natural disasters.
Louisiana Students Standards for Science *(focal only, connecting standards not listed)*	6-MS-LS1-1 6-MS-LS1-2	6-MS-LS2-1 6-MS-LS2-2 6-MS-LS2-3 6-MS-ESS3-4† 7-MS-LS2-5 8-MS-ESS3-3	6-MS-LS2-1 6-MS-LS2-2 6-MS-LS2-3 6-MS-PS1-1 7-MS-LS1-6 7-MS-LS1-7 7-MS-LS2-4	6-MS-PS2-1 6-MS-PS2-2 6-MS-PS3-1	6-MS-PS2-3 6-MS-PS2-4† 6-MS-PS2-5 6-MS-PS3-2	6-MS-ESS1-1 6-MS-ESS1-2† 6-MS-ESS1-3	6-MS-PS4-1 6-MS-PS4-2	6-MS-PS2-1 6-MS-PS2-2 6-MS-PS2-4†
Pacing	14 days	22-23 days	24 days	19 days	19 days	19 days	21 days	10 days

*The performance expectation is only partially addressed using the identified phenomenon and is addressed in other unit(s).
†The identified phenomenon only partially addresses the performance expectation.

Louisiana-Specific Recommendations

The following recommendations highlight opportunities within the Amplify units, outside of the regular in-class lesson activities, that either strongly reinforce or are essential to thorough coverage of specific science ideas within the Louisiana Student Standards for Science (LSSS). Implement the units as designed with these recommendations integrated where they naturally fall and before making any additional modifications. Approach any customization of these materials with a thorough analysis of all three dimensions of the standard across the scope and sequence and with careful consideration.

Unit	Louisiana-Specific Recommendations
Unit 1 Microbiome	**Lesson 1.1:** Utilize the "Hands-On Flextension: Microscopic Evidence of Life" to reinforce 6-MS-LS1-1. If you do not have access to a microscope, consider the following adjustments: ● Part 2: Observing Cells with a Microscope: Display or print the images in the teacher reference section for students to observe and draw. ● Part 4: Examining Objects From Home: Have students suggest objects to look up microscopic images of, then find and sample or print them for students to observe. **Lesson 1.2:** Read and discuss the homework article "Cells: The Basic Unit of Life" as an in-class activity to establish foundational knowledge of the science ideas in 6-MS-LS1-2 that will be built upon in Unit 3: Matter and Energy in Ecosystems. **This unit is designed as a "Launch" unit to orient students to Amplify core student practices. If students have experience with Amplify Science, consider condensing the lessons in Chapter 2 to support year-long pacing.**
Unit 2 Populations and Resources	**Lesson 3.4:** The companion lesson, "Protecting Our Natural Resources," is required to fully address some of the Disciplinary Core Ideas (DCIs) in 6-MS-LS2-3 and 6-MS-ESS3-4. **Lesson 4.3:** Implement the Hands-On Flextension, "Measuring Nonliving Factors in Ecosystems," to address the impacts of nonliving factors on ecosystems. This adds 60 minutes or 1-2 class periods to this lesson. Make the following adjustments, if necessary, to complete the flextension in 1 class period: ● Assign only one test to each group and share data across groups. ● Choose one sample ecosystem and have groups conduct only the tests that are relevant for illustrating change in that ecosystem.

Unit	Louisiana-Specific Recommendations
Unit 3 **Matter and Energy in Ecosystems**	***Note: 6-MS-LS1-2 develops across three units: Metabolism (grade 7), Matter and Energy in Ecosystems (grade 6), and Traits and Reproduction (grade 7).*** The grade 6 unit explicitly develops ideas about cellular structures crucial to cellular respiration and photosynthesis; however, it does not address • the function of the cell membrane (addressed in grade 7 Metabolism); or • the function of the nucleus in relation to the overall function of the cell (addressed in grade 7 Traits and Reproduction). See lesson 1.4 suggestions to incorporate just-in-time support for these concepts. **Lesson 1.2:** The companion lesson, "What's the Matter in Ecosystems?", is required to fully cover the Disciplinary Core Ideas (DCIs) in 6-MS-PS1-1. This adds 80 minutes, or about 2 class periods, to this lesson. Since students have already had practice with annotation in the previous unit, implement the following suggestion to reduce the time to 1 class period: • Eliminate the first reading of the article and begin "Reading 'What's the Matter in Ecosystems?'" at the second read. **Lesson 1.4:** Activity 4 in this lesson is a crucial assessment opportunity for student understanding of cell structures and functions. This is a good place to integrate explicit instruction related to important cell structures not addressed in this unit (nucleus, cell membrane) and their functions. This adds about 20-25 minutes to this lesson. **Lesson 2.2:** The companion lesson, "Modeling Chemical Reactions in Ecosystems," is required to fully cover the Disciplinary Core Ideas (DCIs) in 6-MS-PS1-1. This adds 1 class period to this lesson. **Lesson 2.4:** Read and discuss the homework article "How Did We Get Mitochondria?" as an in-class activity to cover the role of mitochondria in the overall function of the cell (6-MS-LS1-2). This adds about 15-20 minutes to this lesson. **Lesson 3.4:** The companion lesson, "Sugarcane Farm and Pine Forest: The Nitrogen Cycle," is required to fully cover the Disciplinary Core Ideas (DCIs) in 6-MS-LS2-3. This adds 60 minutes, or about 1.5 class periods, to this lesson. Since students have already had practice with annotation in the previous unit, implement the following suggestion to reduce the time to 1 class period or less:

Unit	Louisiana-Specific Recommendations
	• Eliminate the first reading of the article and begin “Reading ‘Sugarcane Farm and Pine Forest: The Nitrogen Cycle’” at the second read.

Guidance for Units 4-7 in development!

Companion Lesson Guidance[1]

Amplify Louisiana Grade 6 Companion Teacher Booklet strategically adds lessons to the storyline to address the Louisiana Student Standards for Science (LSSS) for grade 6 that are not fully addressed in the core unit materials. These companion lessons ensure that the LSSS for grade 6 are covered by building on what students are learning in core units and extending their understanding of unit concepts.

Unit	Companion Lesson	Lesson Placement	Time Frame	Standards
Unit 2 Populations and Resources	Lesson 1, p. 12 Protecting Our Natural Resources	Insert any time after Lesson 3.4	55 minutes (can be spread across multiple class periods)	6-ESS3-4 6-LS2-1
Unit 3 Matter and Energy in Ecosystems	Lesson 2, p. 34 Reading "What's the Matter in Ecosystems?"	Insert after Lesson 1.2	80 minutes (first and second reads can be spread across two class periods)	6-PS1-1
	Lesson 3, p. 48 Modeling Chemical Reactions in Ecosystems	Insert after Lesson 2.2	45 minutes	6-PS1-1
	Lesson 4, p. 59 Reading "Sugarcane Farm and Pine Forest: The Nitrogen Cycle"	Insert after Lesson 3.4	60 minutes (first and second reads can be spread across two class periods)	6-LS2-3
Unit 7 Light Waves	Lesson 5, p. 71 Explaining Rainbows and Blue Skies	Insert any time after Lesson 3.3	80 minutes (can be spread across multiple class periods)	6-PS4-2

[1] *Adapted from guidance developed by Amplify*

Investigative Phenomena by Unit[1]

Unit	Investigative Phenomena Question
Unit 1 Microbiomes	Chapter 1: How small are the microorganisms that live on and in the human body? Chapter 2: How can fecal transplants cure patients infected with harmful bacteria?
Unit 2 Populations and Resources	Chapter 1: What causes the size of the moon jelly population in the Glacier Sea to increase? Chapter 2: What could have caused the births to increase or the deaths to decrease in the moon jelly population? Chapter 3: How could a population besides the zooplankton or sea turtles have caused the moon jelly population to increase? Chapter 4: What was the main cause of the decrease in the size of the orange-bellied parrot population?
Unit 3 Matter and Energy in Ecosystems	Chapter 1: Why didn't the plants and animals in the biodome have enough energy storage molecules? Chapter 2: What caused carbon dioxide to decrease in the air (abiotic matter) of the biodome? Chapter 3: What happened to the carbon that used to be in the air (abiotic matter) of the biodome? Chapter 4: Why does deforestation lead to increased carbon dioxide in the air?
Unit 4 Force and Motion	Chapter 1: What caused the pod to change direction? Chapter 2: The thrusters on the ACM pod exerted the same strength force as thrusters on other pods, so why did this pod move differently? Chapter 3: After the collision, how does the pod's motion compare to the motion of the space station? Chapter 4: Why did Vehicle 2 fall off the cliff in Claire's test of the collision scene, but Vehicle 2 did not fall off the cliff in the film *Iceworld Revenge*?
Unit 5 Magnetic Fields	Chapter 1: How can the launcher make the model spacecraft move without touching it? Chapter 2: Where did the energy to launch the model spacecraft come from? Chapter 3: Why was there so much more potential energy stored in the launcher system on Wednesday than on Tuesday? Chapter 4: Which design will launch the roller coaster cart the fastest?
Unit 6 Earth, Moon, and Sun	Chapter 1: Why is there a border between light and dark on the Moon? Chapter 2: Why does the border between light and dark on the Moon change location? Chapter 3: What are the conditions that cause a lunar eclipse? Chapter 4: During a year, will there be a lunar eclipse of the moon of Kepler-47c?

Unit	Investigative Phenomena Question
Unit 7 Light Waves	Chapter 1: How does light from the sun cause skin cancer? Chapter 2: How can the same amount of sunlight cause different rates of skin cancer? Chapter 3: Why does Australia get more ultraviolet light than other parts of the world? Chapter 4: Can the crabs see the plankton they hear near the ocean floor?
Engineering Design Unit Force and Motion Engineering Internship	Research Phase Design Phase Proposal Phase Application of science content

[1]*Adapted from guidance developed by Amplify*

LDOE Formative Assessment Resources

LDOE formative assessment resources include a library of Louisiana educator-created discrete items and sets, LEAP Practice Test Items, and LEAP Assessment Guide Items correlated to the Louisiana Student Standards for Science. These resources can be used alongside guidance from a high-quality curriculum to provide opportunities for students to showcase their learning.

Unit	Discrete Items	Sets
Unit 1 **Microbiomes**	***LDOE Formative Assessment Items* (Password: Educate2020):** • Minerals (6-MS-LS1-1) • Slugs and Chloroplasts, Plant Cells (6-MS-LS1-2) ***LEAP Practice Test Standalone Items*:** • 21 (6-MS-LS1-2) • 34 (6-MS-LS1-1) ***LEAP Assessment Guide Items:*** • N/A ***LEAP Science Released Items:*** • N/A	***LDOE Formative Assessment Sets* (Password- Educate2020):** • N/A ***LEAP Practice Test Sets*:** • Item Set: Organelles (6-MS-LS1-1; 6-MS-LS1-2) ***LEAP Assessment Guide Sets:*** • N/A ***LEAP Science Released Items:*** • N/A
Unit 2 **Populations and Resources**	***LDOE Formative Assessment Items* (Password-Educate2020):** • Cherry Tree, Wolves, and Moose (6-MS-LS2-2) • Microplastics (6-MS-LS2-3) • Gr6 Red Snapper (6-MS-ESS3-4) ***LEAP Practice Test Standalone Items*:** • 13, 36 (6-MS-LS2-3) • 22 (6-MS-ESS3-4) ***LEAP Assessment Guide Items:*** • Florida Everglades (6-MS-LS2-1)	***LDOE Formative Assessment Sets* (Password- Educate2020):** • Deer (6-MS-LS2-1) ***LEAP Practice Test Sets*:** • N/A ***LEAP Assessment Guide Sets:*** • N/A ***LEAP Science Released Items:*** • N/A

Unit	Discrete Items	Sets
Unit 2 *continued*	***LEAP Science Released Items:*** • Interactions (6-MS-LS2-3)	
Unit 3 **Matter and Energy in Ecosystems**	***LDOE Formative Assessment Items (Password- Educate2020):*** • Cherry Tree, Wolves, and Moose (6-MS-LS2-2) • Microplastics (6-MS-LS2-3) • Models (6-MS-PS1-1) ***LEAP Practice Test Standalone Items:*** • 15 (6-MS-PS1-1) ***LEAP Assessment Guide Items:*** • Lichens (6-MS-LS2-2) ***LEAP Science Released Items:*** • N/A	***LDOE Formative Assessment Sets (Password- Educate2020):*** • N/A ***LEAP Practice Test Sets:*** • Item Set: Anasazi and the Great Drought (6-MS-LS2-1 and 6-MS-LS2-2) ***LEAP Assessment Guide Sets:*** • N/A ***LEAP Science Released Items:*** • Aldabra Tortoises (6-MS-LS2-1 and 6-MS-LS2-2)
Unit 4 **Force and Motion**	***LDOE Formative Assessment Items (Password- Educate2020):*** • Satellite, Shin Guard Design (6-MS-PS2-1) • Juan's Skateboard, Soccer Ball (6-MS-PS2-2) • Sports Balls (6-MS-PS3-1) ***LEAP Practice Test Standalone Items:*** • 14, 33 (6-MS-PS2-2) • 40 (6-MS-PS2-1) ***LEAP Assessment Guide Items:*** • N/A	***LDOE Formative Assessment Sets (Password- Educate2020):*** • Bowling (6-MS-PS3-1 and 6-MS-PS2-2) ***LEAP Practice Test Sets:*** • N/A ***LEAP Assessment Guide Sets:*** • Task Set: Laws of Motion and Bicycle Helmets (6-MS-PS2-1 and 6-MS-PS2-2) ***LEAP Science Released Items:*** • N/A

Unit	Discrete Items	Sets
Unit 4 *continued*	***LEAP Science Released Items:*** • N/A	
Unit 5 **Magnetic Fields**	***LDOE Formative Assessment Items*** ***(Password- Educate2020):*** • Electric Motor (6-MS-PS2-3) • Moons (6-MS-PS2-4) • Popcorn (6-MS-PS2-5) ***LEAP Practice Test Standalone Items:*** • 35 (6-MS-PS3-2) • 37 (6-MS-PS2-5) ***LEAP Assessment Guide Items:*** • Electric and Magnetic Forces (6-MS-PS2-3) • Gravitational Force (6-MS-PS2-4) ***LEAP Science Released Items:*** • Compass Needle (6-MS-PS2-3)	***LDOE Formative Assessment Sets*** ***(Password- Educate2020):*** • N/A ***LEAP Practice Test Sets:*** • Item Set: Changes in the Earth's Magnetic Field (6-MS-PS2-3, 6-MS-PS3-5) • Task Set: Marbles (6-MS-PS3-1, 6-MS-PS3-2) ***LEAP Assessment Guide Sets:*** • N/A ***LEAP Science Released Items:*** • N/A
Unit 6 **Earth, Moon, and Sun**	***LDOE Formative Assessment Items*** ***(Password- Educate2020):*** • Midnight Sun, Moons (6-MS-ESS1-1) • Spitzer (6-MS-ESS1-2) • Dwarf Planet (6-MS-ESS1-3) ***LEAP Practice Test Standalone Items:*** • 23, 32 (6-MS-ESS1-1) • 38 (6-MS-ESS1-2)	***LDOE Formative Assessment Sets*** ***(Password- Educate2020):*** • N/A ***LEAP Practice Test Sets:*** • Item Set: Asteroids in the Solar System (6-MS-ESS1-2, 6-MS-ESS1-3) ***LEAP Assessment Guide Sets:*** • Item Set: Eclipses (6-MS-ESS1-1, 6-MS-ESS1-2)

Unit	Discrete Items	Sets
Unit 6 *continued*	***LEAP Assessment Guide Items:*** • N/A ***LEAP Science Released Items:*** • Eclipses (6-MS-ESS1-1)	***LEAP Science Released Items:*** • Solar System Properties (6-MS-ESS1-3)
Unit 7 **Light Waves**	***LDOE Formative Assessment Items (Password- Educate2020):*** • Trials, Reverberation (6-MS-PS4-1) • Spectral Signature, Telescopes (6-MS-PS4-2) ***LEAP Practice Test Standalone Items:*** • 41 (6-MS-PS4-1) ***LEAP Assessment Guide Items:*** • Sound Waves (6-MS-PS4-1) ***LEAP Science Released Items:*** • N/A	***LDOE Formative Assessment Sets (Password- Educate2020):*** • Ocean Waves (6-MS-PS4-1) ***LEAP Practice Test Sets:*** • Item Set: Properties of Light and Sound Waves (6-MS-PS4-1, 6-MS-PS4-2) ***LEAP Assessment Guide Sets:*** • N/A ***LEAP Science Released Items:*** • N/A
Engineering Design Unit Force and Motion Engineering Internship	***LDOE Formative Assessment Items (Password- Educate2020):*** • Satellite, Shin Guard Design (6-MS-PS2-1) • Juan's Skateboard, Soccer Ball (6-MS-PS2-2) • Moons (6-MS-PS2-4) ***LEAP Practice Test Standalone Items:*** • 39 (6-MS-PS2-4)	***LDOE Formative Assessment Sets (Password- Educate2020):*** • N/A ***LEAP Practice Test Sets:*** • Item Set: Properties of Light and Sound Waves (6-MS-PS4-1, 6-MS-PS4-2) ***LEAP Assessment Guide Sets:*** • N/A

Unit	Discrete Items	Sets
Design Unit *continued*	***LEAP Assessment Guide Items:*** • N/A ***LEAP Science Released Items:*** • N/A	***LEAP Science Released Items:*** • N/A