LOUISIANA STUDENT STANDARDS SCIENCE

Louisiana Guide to Implementing Amplify: Grade 7

Table of Contents

Purpose 2
Standards by Unit 3
Louisiana-Specific Recommendations 4
Companion Lesson Guidance[1] 6
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 7, this document provides guidance for 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 7 units may include performance expectations from previous and 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) can incorporate your suggestions when updating this guide.

Standards by Unit

	Unit 1 Metabolism	Unit 2 Phase Change	Unit 3 Chemical Reactions	Unit 4 Traits and Reproduction	Unit 5 Ocean, Atmosphere, & Climate	Unit 6 Weather Patterns	Unit 7 Earth's Changing Climate	Metabolism Engineering Internship
Number of Lessons	19 lessons 1 flextension	19 lessons *1 companion lesson*	19 lessons	19 lessons *2 companion lessons*	19 lessons *1 companion lesson*	19 lessons *1 companion lesson*	19 lessons *3 companion lessons*	10 lessons
Anchor Phenomenon or Design Problem	What is causing Elisa, a young patient, to feel tired all the time?	Why did the methane lake on Titan disappear?	Why is there a mysterious reddish -brown substance in the tap water of Westfield?	Why do Darwin's bark spider offspring have different silk flexibility traits even though they have the same parents?	During El Niño years, why is Christchurch, New Zealand's air temperature cooler than usual?	Why have recent rainstorms in Galestown been so severe?	Why is the ice on Earth's surface melting?	Design a health bar to meet the metabolic needs of populations affected by natural disasters.
Louisiana Students Standards for Science *(focal only, connecting standards not listed)*	7-MS-LS1-3 7-MS-LS1-6 7-MS-LS1-7* 6-MS-LS1-1 6-MS-LS1-2	7-MS-PS1-4* 7-MS-PS3-4	7-MS-PS1-2 7-MS-PS1-5 7-MS-LS1-6† 7-MS-LS1-7* 7-MS-ESS3-5* 6-MS-PS1-1 6-MS-PS1-3	7-MS-LS1-3* 7-MS-LS3-2 7-MS-LS4-5 6-MS-LS1-2* 8-MS-LS1-4* 8-MS-LS1-5* 8-MS-LS3-1* *Companion lessons:* 7-MS-LS4-4	7-MS-PS1-4* 7-MS-ESS2-6	7-MS-ESS2-4 7-MS-ESS2-5	7-MS-ESS3-5 6-MS-ESS3-4 8-MS-ESS3-3* *Companion lessons:* 7-MS-LS1-6† 7-MS-LS2-4† 7-MS-LS2-5†	7-MS-LS1-7
Pacing *(see LA-specific recommendations)*	20-21 days	20-25 days	19 days	24 days	21 days	21 days	22 days	10 days

** The performance expectation is only partially addressed using the identified phenomenon. The performance expectation is addressed in other unit(s).*
†The performance expectation is only partially addressed in the Grade 7 scope and sequence.

Louisiana-Specific Recommendations

The following recommendations highlight opportunities within the Amplify units, outside 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 **Metabolism**	**Lesson 3.3:** Implement the Hands-On Flextension, "Investigating the Nervous System", to develop conceptual understanding of the role of the nervous system in information processing. If short on time or materials, consider implementing the following suggestions: • "Explore and Activate Prior Knowledge": Complete steps 1-3 as written, then have students complete only one or two of the hands-on investigations in groups. • "Construct New Ideas": Adapt step 15 based on which investigation(s) students completed, implement steps 15-25 as written, and eliminate step 26. • "Apply New Ideas": Eliminate steps 27-30 if students did not complete the "Taste Investigation", complete part 31 as a class discussion for whichever investigation(s) students completed, and eliminate step 32.
Unit 2 **Phase Change**	**Lesson 1.2:** Complete the homework, the "Air Pressure and Boyle's Law" article, and page 9 of the Investigation Notebook as an in-class activity. This will add 15-20 minutes to the lesson and will require completing the lesson during the next class period before beginning Lesson 2.1 **Lesson 2.1:** Implement the Hands-On Flextension, "Investigations with Dry Ice." Completing the activities as written adds 2.5-3 class periods. Make the following adjustments, if necessary, to complete the flextension in 1-1.5 class periods: • Conduct Part 1 as a class demonstration. • Conduct Part 2 as a class discussion. • Have students complete Part 3. • Omit Parts 4 and 5.

Unit	Louisiana-specific recommendations
	Lesson 2.2: Implement the following suggestions to integrate the concept that energy always moves from hotter areas to colder ones. This adds 15-20 minutes to this lesson, but eliminates the need for the 1.5 class period "Icy Heat" companion lesson. ● Following "Zooming in on Phase Change," facilitate a discussion by asking, "We have seen what happens to the molecules in a substance when energy moves in and out, but how does the energy move?" Allow students to share their ideas with a partner or table group. ● Then say, "If we let a stick of butter sit in a hot pan like in the video, it will begin to melt. What is happening? Does the energy move into the butter?" Facilitate a class discussion and incorporate a model of the butter in the pan on the stove. As you draw the model, ask students where the energy is coming from and where it's moving to. Based on their experience with the simulation, they should suggest that energy is moving into the butter since the molecules are moving more and the phase changes. ● Draw arrows showing the energy moving from the stove to the pan and into the butter. Explain that energy always moves from hotter areas to colder ones. Add this concept to a slide in the presentation and to the key concepts wall. ● Transition to Activity 4 in the lesson. **Lesson 3.3:** Complete the homework, the "Pressure and Temperature" article, and pages 83–84 of the Investigation Notebook as an in-class activity. This will add 15-20 minutes to the lesson and will require finishing the next class period before starting Lesson 3.4.
Unit 3 Chemical Reactions	There are no additional recommendations at this time.

Guidance for Units 4-7 in development!

Companion Lesson Guidance[1]

Guidance provided in the Amplify Louisiana Grade 7 Companion Teacher Booklet has strategically added lessons to the storyline to address the Louisiana Student Standards for Science for grade 7, which are not fully addressed in the core unit materials. These companion lessons ensure that the Louisiana Student Standards for Science for grade 7 are covered by building on what students are learning in core units and extending their understanding of the unit concepts.

Unit	Companion Lesson	Lesson Placement	Time Frame	Standards
Unit 2 Phase Change	Lesson 1, p. 12 Icy Heat **optional if following LA-specific suggestions for Lesson 2.2*	Insert after Lesson 2.2	60 minutes (can be spread across multiple class periods)	7-PS1-4 7-PS3-4
Unit 4 Traits & Reproduction	Lesson 2, p. 25 How to Make a Venomous Cabbage	Insert after Lesson 3.3	65 minutes (can be spread across multiple class periods)	7-LS4-5
	Lesson 3, p. 40 Investigating Changes to Traits in a Population	Insert after Lesson 3.6	120 minutes (can be spread across multiple class periods)	7-LS4-5
Unit 5 Ocean, Atmosphere, & Climate	Lesson 4, p. 64 A Tale of Two Cities	Insert after Lesson 2.4	90 minutes (can be spread across multiple class periods)	7-PS1-4 7-PS3-4
Unit 6 Weather Patterns	Lesson 5, p. 85 How the Water Cycle Cleans Louisiana's Water	Insert after Lesson 1.2	60 minutes (can be spread across multiple class periods)	7-ESS2-4

Unit	Companion Lesson	Lesson Placement	Time Frame	Standards
Unit 7 Earth's Changing Climate	Lesson 6, p 98 Engineering with Photosynthesis	Insert after Lesson 3.3	105 minutes (can be spread across multiple class periods)	7-LS1-6
	Lesson 7, p. The Amazing Variety of Life in a Coral Reef	Insert after Lesson 4.4 (and before Louisiana Companion Lesson 8)	60 minutes (can be spread across multiple class periods)	7-LS2-5
	Lesson 8, p. 131 Changes in the Great Barrier Reef Ecosystem	Insert after Lesson 4.4 (and after Louisiana Companion Lesson 7)	60 minutes (can be spread across multiple class periods)	7-LS2-4

[1]*Adapted from guidance developed by Amplify.*

Investigative Phenomena by Unit[1]

Unit	Investigative Phenomena Question
Unit 1 Metabolism	Chapter 1: Why does Elisa feel tired all the time? Chapter 2: What is happening in Elisa's body that could be preventing molecules from getting to her cells? Chapter 3: How do molecules in the cells of the body release energy? Chapter 4: Students apply what they learn to a new question - How did the athlete increase his cellular respiration and improve his performance?
Unit 2 Phase Change	Chapter 1: What happened to the liquid in Titan's lake? Chapter 2: What could cause liquid methane to change phases? Chapter 3: Why didn't the liquid methane change phase before 2007? Chapter 4: Students apply what they learn to a new question - Why is the liquid oxygen machine producing less liquid oxygen than normal?
Unit 3 Chemical Reactions	Chapter 1: What is the reddish-brown substance in the water? Chapter 2: How did the rust form? Chapter 3: What was produced during the reaction between the iron pipes and the fertilizer? Chapter 4: Students apply what they learn to a new question - Who might have used the unknown substance to steal the diamond?
Unit 4 Traits & Reproduction	Chapter 1: Why do traits for silk flexibility vary within this family of Darwin's bark spiders? Chapter 2: Why do Darwin's bark spiders make different proteins for silk flexibility? Chapter 3: Why do Darwin's bark spider offspring have different gene combinations even though they have the same parents? Chapter 4: Students apply what they learn to a new question - Why is Jackie an elite distance runner when no one else in her family has that trait?
Unit 5	Chapter 1: What determines the air temperature of Christchurch, New Zealand? Chapter 2: Other than latitude, what else affects the air temperature of Christchurch?

Unit	Investigative Phenomena Question
Ocean, Atmosphere, & Climate	Chapter 3: What determines how the ocean currents near Christchurch move? Chapter 4: Students apply what they learn to a new question - In South China during the late Carboniferous period, was the air temperature warmer or cooler than the air temperature in that location today?
Unit 6 Weather Patterns	Chapter 1: What causes the rainfall in Galetown? Chapter 2: Why is the amount of rain in Galetown different from storm to storm? Chapter 3: Why did the most recent storm in Galetown have the greatest amount of rain? Chapter 4: Students apply what they learn to a new question: How was the Carson Wilderness Education Center damaged?
Unit 7 Earth's Changing Climate	Chapter 1: Why is the ice on Earth's surface melting? Chapter 2: Why do temperatures on Earth increase when the amount of carbon dioxide or methane in the Earth system increases? Chapter 3: What can be done to stop the carbon dioxide and methane in Earth's atmosphere from increasing? Chapter 4: Students apply what they learn to a new question - How is Earth's climate affected in the five to ten years after a large volcanic eruption?
Engineering Design Unit: Metabolism Engineering Internship Unit	Research Phase Design Phase Proposal Phase Application of Science Content

[1]*Adapted from guidance developed by Amplify Science*

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 **Metabolism**	***LDOE Formative Assessment Items*** ***(Password: Educate2020)*** • Artificial Windpipe (7-MS-LS1-3) ***LEAP Practice Test Standalone Items:*** • 15, 41 (7-MS-LS1-3) • 33 (7-MS-LS1-7) ***LEAP Assessment Guide Items:*** • N/A ***LEAP Science Released Items:*** • Neurons (7-MS-LS1-3)	***LDOE Formative Assessment Sets*** ***(Password: Educate2020)*** • N/A ***LEAP Practice Test Sets:*** • N/A ***LEAP Assessment Guide Sets:*** • N/A ***LEAP Science Released Items:*** • Task Set: Marathon Runner (7-MS-LS1-7 and 7-MS-LS1-6)*
Unit 2 **Phase Change**	***LDOE Formative Assessment Items*** ***(Password: Educate2020)*** • Brass Experiment, Jeff's Models (7-MS-PS1-4) • Temperature Increase (7-MS-PS3-4) ***LEAP Practice Test Standalone Items:*** • 22 (7-MS-PS1-4) • 40 (7-MS-PS3-4) ***LEAP Assessment Guide Items:*** • N/A	***LDOE Formative Assessment Sets*** ***(Password: Educate2020)*** • N/A ***LEAP Practice Test Sets:*** • Item Set: Melting Icebergs (7-MS-PS1-4, 7-MS-PS3-4) ***LEAP Assessment Guide Sets:*** • Task Set: Properties of water (7-MS-PS1-4, 7-MS-PS3-4)

Unit	Discrete Items	Sets
Unit 2 *continued*	***LEAP Science Released Items:*** • Heat Transfer (7-MS-PS3-4)	***LEAP Science Released Items:*** • N/A
Unit 3 **Chemical Reactions**	***LDOE Formative Assessment Items*** ***(Password: Educate2020)*** • Two Solids, Hydrogen Iodide (7-MS-PS1-2) • Pesticides (7-MS-PS1-5) ***LEAP Practice Test Standalone Items:*** • 14, 34, 37 (7-MS-PS1-2) ***LEAP Assessment Guide Items:*** • Properties of substances (7-MS-PS1-2) ***LEAP Science Released Items:*** • N/A	***LDOE Formative Assessment Sets*** ***(Password: Educate2020)*** • N/A ***LEAP Practice Test Sets:*** • N/A ***LEAP Assessment Guide Sets:*** • N/A ***LEAP Science Released Items:*** • N/A
Unit 4 **Traits & Reproduction**	***LDOE Formative Assessment Items*** ***(Password: Educate2020)*** • Whiptails, Siblings, Cystic Fibrosis, Amoebas (7-MS-LS3-2) • Anoles, Feral Chickens (7-MS-LS4-4) • Arctic Apples, Shar Pei (7-MS-LS4-5) ***LEAP Practice Test Standalone Items:*** • 35 (7-MS-LS4-4) • 39 (7-MS-LS4-5) ***LEAP Assessment Guide Items:*** • N/A	***LDOE Formative Assessment Sets*** ***(Password: Educate2020)*** • N/A ***LEAP Practice Test Sets:*** • Item Set: Spider Plants (7-MS-LS3-2, 7-MS-LS4-4 ***LEAP Assessment Guide Sets:*** • Item Set: Reintroduction of the Takhi (7-MS-LS4-4, 7-MS-LS4-5) ***LEAP Science Released Items:*** • N/A

Unit	Discrete Items	Sets
Unit 4 *continued*	***LEAP Science Released Items:*** • N/A	
Unit 5 Ocean, Atmosphere, & Climate	***LDOE Formative Assessment Items*** ***(Password: Educate2020)*** • N/A ***LEAP Practice Test Standalone Items:*** • 23 (7-MS-ESS2-6) ***LEAP Assessment Guide Items:*** • N/A ***LEAP Science Released Items:*** • N/A	***LDOE Formative Assessment Sets*** ***(Password: Educate2020)*** • N/A ***LEAP Practice Test Sets:*** • N/A ***LEAP Assessment Guide Sets:*** • N/A ***LEAP Science Released Items:*** • N/A
Unit 6 **Weather Patterns**	***LDOE Formative Assessment Items*** ***(Password: Educate2020)*** • Water Cycle (7-MS-ESS2-4) • Rainfall in Washington (7-MS-ESS2-5) ***LEAP Practice Test Standalone Items:*** • 21 (7-MS-ESS2-4) ***LEAP Assessment Guide Items:*** • Weather fronts (7-MS-ESS2-5) ***LEAP Science Released Items:*** • N/A	***LDOE Formative Assessment Sets*** ***(Password: Educate2020)*** • N/A ***LEAP Practice Test Sets:*** • Item Set: Arizona Monsoon (7-MS-ESS2-5, 7-MS-ESS2-6)* ***LEAP Assessment Guide Sets:*** • N/A ***LEAP Science Released Items:*** • N/A

Unit	Discrete Items	Sets
Unit 7 **Earth's Changing Climate**	***LDOE Formative Assessment Items*** ***(Password: Educate2020)*** • Which Chuck Glacier (7-MS-ESS3-5) ***LEAP Practice Test Standalone Items:*** • 36 (7-MS-ESS3-5) • 38 (7-MS-LS2-4) • 13 (7-MS-LS2-5) ***LEAP Assessment Guide Items:*** • N/A ***LEAP Science Released Items:*** • N/A	***LDOE Formative Assessment Sets*** ***(Password: Educate2020)*** • Coral (7-MS-LS2-4, 7-MS-LS4-4)* • Dead Zone (7-MS-LS1-7, 7-MS-LS2-5)* ***LEAP Practice Test Sets:*** • Task Set: Zebra Mussels (7-LS2-4, 7-LS2-5) ***LEAP Assessment Guide Sets:*** • N/A ***LEAP Science Released Items:*** Item Set: El Niño (7-MS-ESS2-6 and 7-MS-ESS3-5)*
Engineering Design Unit: Metabolism Engineering Internship Unit	***LDOE Formative Assessment Items*** ***(Password: Educate2020)*** • N/A ***LEAP Practice Test Standalone Items:*** • N/A ***LEAP Assessment Guide Items:*** • N/A ***LEAP Science Released Items:*** • N/A	***LDOE Formative Assessment Sets*** ***(Password: Educate2020)*** • N/A ***LEAP Practice Test Sets:*** • N/A ***LEAP Assessment Guide Sets:*** • N/A ***LEAP Science Released Items:*** • N/A

**The item set includes a performance expectation that is covered across multiple units*