Louisiana Guide to Implementing OpenSciEd: Grade 6

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Purpose

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

The OpenSciEd Grade 6 units may include performance expectations featured in other 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.

Overview of OpenSciEd

OpenSciEd is an effort among science educators, curriculum developers, teachers, and philanthropic foundations to improve the supply of and demand for high-quality K-12 science instructional materials by producing open-source, freely available instructional materials designed for college- and career-ready science standards. OpenSciEd worked with classroom educators, experienced science curriculum developers, state science leaders, individual school districts, education non-profits, and the science education community to create and pilot robust, research-based, open-source science instructional materials.

Field Testing and Release of Units

Ten partner states volunteered to join this effort, including California, Iowa, Louisiana, Massachusetts, Michigan, New Mexico, New Jersey, Oklahoma, Rhode Island, and Washington. After the initial development of the OpenSciEd units, the unit prototypes or field test units went through rigorous external review and robust field testing in participating classrooms across partner states. The field test units were then revised based on the feedback and data collected and submitted to the NextGenScience Peer Review Panel before being made freely and openly available to the public upon earning a quality rating. The entire K-8, Biology, Chemistry, and Physics curricula are now available to download for free online.

Unit Design and Sample Scope and Sequence

The units in the OpenSciEd Sample Scope and Sequence include bundles of performance expectations that are built around an anchoring phenomenon. These units are intentionally designed to allow students to incrementally make sense of phenomena, building understanding and abilities over time through a coherent storyline. Modifying the sequence or content of lessons within these units could undermine the design and should therefore be approached with caution.

Contact

Systems interested in adopting OpenSciEd should contact STEM@la.gov for direct support. For questions or requests for additional information on the OpenSciEd initiative and/or materials, contact info@openscied.org.

2026-2027 Transitional Guidance

The LDOE designed transitional guidance for the 2026-2027 school year. This rolling guidance is aimed at addressing ongoing challenges while maintaining curriculum coherence and alignment with the Louisiana Student Standards for Science (LSSS).

The long-term goals of this guidance are to provide

- suggestions for addressing the unique language of the LSSS;
- coherence across Louisiana customizations; and
- explicit pacing recommendations.

To prevent gaps in learning as guidance evolves, for the 2026-2027 school year only, systems should make the following adjustments:

- Ecosystem Dynamics should be taught in both Grade 6 and Grade 7.
- Genetics should be taught in both Grade 7 and Grade 8.

Updated scope and sequence documents for all grades are included in this document. ***This guidance is intended for one year only and will be updated for the 2027-2028 school year.***

What is new this year for Grade 6:

- Ecosystem Unit added as Unit 7 on the Scope and Sequence
- Customizations for the Louisiana unit order for Unit 8.1 (other units in development)

Transition Year 2026-2027 Standards by Unit

	Unit 1 Light and Matter OpenSciEd 6.1	Unit 2 Contact Forces OpenSciEd 8.1	Unit 3 Sound Waves OpenSciEd 8.2	Unit 4 Forces at a Distance OpenSciEd 8.3	Unit 5 Earth in Space OpenSciEd 8.4	Unit 6 Cells and Systems OpenSciEd 6.6	Unit 7 Ecosystem Dynamics OpenSciEd Unit 7.5
Unit Question	Why do we sometimes see different things when looking at the same object?	Why do things sometimes get damaged when they hit each other?	How can a sound make something move?	How can a magnet move another object without touching it?	Why do we see patterns in the sky, and what else is out there that we can't see?	How do living things heal?	How does changing an ecosystem affect what lives there?
Standards	6-MS-PS4-2*	6-MS-PS2-1 6-MS-PS2-2 6-MS-PS3-1	6-MS-PS4-1 6-MS-PS4-2*	6-MS-PS2-3 6-MS-PS2-5 6-MS-PS3-2	6-MS-ESS1-1 6-MS-ESS1-2 6-MS-ESS1-3 6-MS-PS2-4 6-MS-PS4-2*	6-MS-LS1-1 6-MS-LS1-2 7-MS-LS1-3*	6-MS-LS2-1 6-MS-LS2-2 7-MS-LS2-4 7-MS-LS2-5
Timing	August	September	October	November/ December	January/ February	February/ March	April/May

†6-PS1-1, 6-LS2-3, and 6-ESS3-4 are not addressed by the Grade 6 OpenSciEd units. The performance expectation can be addressed by incorporating the Grade 6 Louisiana Sample Scope and Sequence.
** The performance expectation is partially addressed using the identified phenomenon and is addressed in multiple units.*

Louisiana-Specific Recommendations

Approach modification of the lessons, even in the ways suggested here, with careful consideration. Give additional attention to navigation in lessons where adjustments are made to maintain coherence from the students' perspective.

Unit	Louisiana-Specific Guidance: Pacing and Implications for Unit Order†
Unit 1 **Light and Matter OpenSciEd Unit 6.1**	• **Lessons 1 and 2:** There is an extended self-documentation activity that is introduced in Lesson 1 and revisited three times in Lesson 3. The purpose of the extended activity is to build a documentation board of related experiences; the use of a shorter related phenomenon chart, which is also included in Lesson 1, could be utilized instead. • **Lesson 3:** The lab investigation in this lesson could be completed as a demonstration lab in a Scientist Circle to get a class set of data for small group analysis. • **Lesson 6:** The investigation with flashlights and convex lenses could be cut out or changed to a brief demonstration. • ***LA suggestion*** - **Lesson 6**: Although understanding how light enters the eye and is processed by the brain is important to a cohesive storyline, these are not 6th-grade standards. To condense into one day, assign a video as home learning and focus on refraction extension activities in this lesson. Note that additional adjustments may need to be made in lessons that follow to accommodate the decreased focus on how light enters the eye and how the brain responds to signals. • **Lesson 8:** This entire lesson could be shortened to only test glass in the box model with collaborative sense-making of what was observed, followed by the final transfer task assessment.
Unit 2 **Contact Forces OpenSciEd Unit 8.1**	• ***LA suggestion*** **- Lesson 1** ○ In Parts 2 and 3, to scaffold categorization of related phenomena, have students work in groups to list collisions, model the identification of the objects, and categorize the collisions as a class. (Slides 4-7 on the Sample Revised Lesson 1 Slides) ○ If needed, focus on "factors" rather than "factors and variables" at this time until "variables" can be more clearly defined. (Slides 7, 13, and 15 on the Sample Revised Lesson 1 Slides) ○ In Parts 5 and 6, to scaffold the practice of modeling, provide an example for representing the objects during collisions and more concise guiding and reflection questions. (Slides 8-10 on the Sample Revised Lesson 1 Slides and Sample Revised Handout) ○ Sample revised student-facing lesson resources: ■ Sample Revised Lesson 1 Slides

Unit	Louisiana-Specific Guidance: Pacing and Implications for Unit Order†
Unit 2 **Contact Forces OpenSciEd Unit 8.1**	■ Sample Revised Handout Initial Model: Objects During Collisions • ***LA suggestion*** **- Lesson 2:** ○ In Part 3, to integrate just-in-time support for energy transfer, use a tray of glass marbles to demonstrate that energy transfer occurs during collisions at the microscopic/particle level. Roll one marble into a cluster of stationary marbles, having students observe how the moving marble slows down while the stationary ones speed up. (Slide 6 on Sample Revised Lesson 2 Slides) ○ The marble demonstration adds about 10 minutes. Offset this by shifting Part 9 of the activity ("Brainstorm materials to test") to a quick home-learning prompt or exit ticket. ○ Sample revised student-facing lesson resources: ■ Sample Revised Lesson 2 Slides • ***LA suggestions*** **- Lesson 4:** ○ In Part 3, to integrate just-in-time support for planning and carrying out the investigation with the experimental question, before distributing the variables handout, revisit the example for 6.1 Light & Matter, explicitly define independent and dependent variables, and add them to the Word Wall. Identify variables on the handout for the Deformation Investigation as a class, spending a little extra time defining and discussing controlled variables and adding this term to the Word Wall. (Slides B-C.1 on the Revised L4 Slides) ○ In Part 4, if students need extra support conducting investigations, chunk the instructions and have groups pause before moving on. (Slides C.2-C.5 on the Revised L4 Slides) ○ In Part 5, consider providing pre-labeled coordinate planes instead of having students construct "lines of best fit" to reflect what students have learned in grade-level math. Have students plot points and qualitatively describe the visual pattern (e.g., "As force increases, deformation increases"). (Slides E and F on the Revised L4 Slides and Revised L4 Handout Deformation Results) ○ In Part 10, if students need additional support with providing evidence to support a claim, prompt students to explicitly define "elastic limit" and "breaking point" in their reasoning using sentence frames like, "The evidence from the concrete joint video showed _____. This supports my claim because our science ideas tell us that _____." (Slide L on the Revised L4 Slides) ○ Suggestions for additional scaffolding add 15-20 minutes, but completing the handout as a whole class and eliminating “line of best fit” activities reclaims this time. ○ Student and Teacher Sample Resources:

Unit	Louisiana-Specific Guidance: Pacing and Implications for Unit Order†
Unit 2 **Contact Forces OpenSciEd Unit 8.1**	■ Sample Revised Lesson 4 Slides ■ Revised L4 Handout Deformation Results • ***LA suggestion*** **- Lesson 7:** Remove math that is beyond grade level and the scope of the standard by making the following adjustments: ○ In Part 5, focus on motivating the need to gather additional evidence that changes in speed impact kinetic energy more than changes in mass, rather than making mathematical predictions. ○ In Part 9, replace Investigation 3 with investigations with a fixed mass and a fixed speed. Use the handout "Alternate: Graphing Mass vs. Kinetic Energy" that has axes already labeled. Then, have students compare the visual steepness of the kinetic energy graphs rather than calculating square exponents for exact mathematical calculations. They can satisfy the standard by qualitatively concluding that "increasing speed makes the kinetic energy go up much faster (a steep curve) than increasing mass does (a straight line)". ○ In Part 10, have students construct an explanation without utilizing mathematical calculations. ○ Student and Teacher Sample Resources: ■ Sample Revised Lesson 7 Slides ■ Sample Revised L4 Handout Changes in Kinetic Energy ■ KEY Sample Revised L4 Handout Changes in Kinetic Energy ■ Sample Revised L7 Handout Looking Back • ***LA suggestion*** **- Lessons 8 & 9:** Revisit the particle-level collision example (marble demonstration on Slide E.2 of the Lesson 2 Sample Revised Lesson 2 Slides) to support students in explaining how friction and air resistance cause objects to slow down. Focus the discussion on connecting how the marbles transfer energy as they collide to what happens to particles in air and on the track as the cart makes contact with them. • **Lessons 11-16:** Lesson sets 1 and 2 are anchored in explaining why some objects are damaged when they hit each other, and others don't get damaged. Lesson set 3 is a re-anchor that focuses on designing protective devices for objects that we want to protect from getting damaged in a collision. One natural endpoint for the unit would be at the end of lesson 10, which is the end of lesson set 2. The majority of the core science ideas for the focal standards in this unit are covered by lesson 10.

Unit	Louisiana-Specific Guidance: Pacing and Implications for Unit Order†

Unit 3
 	
Sound Waves OpenSciEd 8.2
	• ***LA suggestion*** **- Lesson 4:**
	  ○ In Part 3, this guidance further supports the practice of planning investigations:
	  ▪ After "Collecting Our Thoughts About the Motion Detector" (Slide E), revisit the Contact Forces unit fair test about how much force it takes to deform an object. (Slide E.2)
	  ▪ Reference the Word Wall if it was utilized per the recommendations to add "independent variable", "dependent variable," and "controlled variables" in Unit 8.1. (Slide E.2)
	  ▪ Facilitate a quick class discussion to practice identifying the variables in the stick apparatus investigation. (Slide E.2)
	  ○ In Part 6, the math students experience is beyond grade level and the scope of the standard. Bypass the optional guidance to have students calculate frequency as a unit rate (the peaks and valleys in one second).
	  ○ Student and Teacher Sample Resources:
	  ▪ Sample Revised Lesson 4 Slides
	• ***LA suggestion*** **- Lesson 5:**
	  ○ In Part 3, this guidance scaffolds the practice of analyzing and interpreting data and, in consideration of grade-level math, implements the following suggestions:
	  ▪ Explicitly introduce the "Identify and Interpret (I^2)" data analysis strategy. (Slide C.2)
	  ▪ Follow the guidance for "If you did not calculate frequency in Lesson 4," and have students count the number of peaks and valleys in one second on the graph when reviewing amplitude and frequency. (Slide D)
	  ▪ Model the "Identify and Interpret (I^2)" data analysis strategy as a whole class for the first graph. (Slide D)
	  ▪ For the assessment checkpoint, instead of calculating unit rate for frequency, have students visually compare the number of peaks and valleys in a second on the graphs to compare frequency. (Slide D)
	  ○ Student and Teacher Sample Resources:
	  ▪ Sample Revised Lesson 5 Slides
	• ***LA suggestion*** **- Lesson 9:** Because this unit comes before the Thermal Energy unit in the Louisiana sequence, students may not have been exposed to ideas about the spacing and movement of particles in different states of matter. If these ideas do not surface as students model matter in Part 2, provide time for student pairs to explore

Unit	Louisiana-Specific Guidance: Pacing and Implications for Unit Order†
	the PhET States of Matter Simulation or demonstrate the simulation to the whole class and lead a discussion to bring these ideas forward. Then, allow partners to revise their models before the consensus discussion. (Slide B.2) ○ Student and Teacher Sample Resources: ▪ Sample Revised Lesson 9 Slides • ***LA suggestion*** **- Lesson 12:** Eliminate this lesson since the Louisiana Standards for Science for Grade 6 do not address how humans hear sound. To maintain coherence, when navigating into lesson 13, have students analyze the completed model of how the ear processes sound and discuss which kinds of sounds could cause the most damage and why. ○ Student and Teacher Sample Resources: ▪ Sample Revised Lesson 13 Slides

† Adapted from the OpenSciEd Teacher Background Knowledge for "How will I need to modify the unit if taught out of sequence?" and "How do I shorten or condense the unit if needed? How can I extend the unit if needed?" for each unit.

Units 4-7 Coming Soon!

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 LSSS. 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
Light and Matter OpenSciEd 6.1	***LDOE Formative Assessment Items* (Password- Educate2020):** • Spectral Signature, Telescopes (6-MS-PS4-2) ***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
Contact Forces OpenSciEd 8.1	***LDOE Formative Assessment Items* (Password- Educate2020):** • Satellite, Shin Guard Design (6-MS-PS2-1) • Soccer Ball, Juan's Skateboard (6-MS-PS2-2) • Sports Balls (6-MS-PS3-1) ***LEAP Practice Test Standalone Items*:** • 40 (6-MS-PS2-1) • 14, 33 (6-MS-PS2-2) ***LEAP Assessment Guide Items:*** • N/A ***LEAP Science Released Items:*** • N/A	***LDOE Formative Assessment Sets* (Password- Educate2020):** • Item Set: Bowling (6-MS-PS3-1, 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, 6-MS-PS2-2) ***LEAP Science Released Items:*** • N/A

Unit	Discrete Items	Sets
Sound Waves OpenSciEd 8.2	***LDOE Formative Assessment Items* (Password- Educate2020):** • Trials, Reverberation (6-MS-PS4-1) ***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):** • Item Set: 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
Forces at a Distance OpenSciEd 8.3	***LDOE Formative Assessment Items* (Password- Educate2020):** • Electric Motor (6-MS-PS2-3) • Popcorn (6-MS-PS2-5) ***LEAP Practice Test Standalone Items*:** • 37 (6-MS-PS2-5) • 35 (6-MS-PS3-2) ***LEAP Assessment Guide Items:*** • Electric and Magnetic Forces (6-MS-PS2-3) ***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-PS2-5) • Task Set: Marbles (6-MS-PS3-1, 6-MS-PS3-2) ***LEAP Assessment Guide Sets:*** • N/A ***LEAP Science Released Items:*** • N/A

Unit	Discrete Items	Sets
Earth in Space OpenSciEd 8.4	***LDOE Formative Assessment Items* (Password- Educate2020):** • Moons, Midnight_Sun (6-MS-ESS1-1) • Spitzer (6-MS-ESS1-2) • Dwarf Planets (6-MS-ESS1-3) • Gr6 Moons (6-MS-PS2-4) ***LEAP Practice Test Standalone Items*:** • 23 and 32 (6-MS-ESS1-1) • 38 (6-MS-ESS1-2) • 39 (6-MS-PS2-4) ***LEAP Assessment Guide Items:*** • Gravitational Force (6-MS-PS2-4) ***LEAP Science Released Items:*** • Eclipses (6-MS-ESS1-1)	***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) ***LEAP Science Released Items:*** • Item Set: Solar System Properties (6-MS-ESS1-3)
Cells and Systems OpenSciEd 6.6	***LDOE Formative Assessment Items* (Password- Educate2020):** • Gr6 Minerals (6-MS-LS1-1) • Slugs and Chloroplast, Plant Cells (6-MS-LS1-2) ***LEAP Practice Test Standalone Items*:** • 34 (6-MS-LS1-1) • 21 (6-MS-LS1-2) ***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	Discrete Items	Sets
Disruptions in Ecosystems	***LDOE Formative Assessment Items* (Password- Educate2020):** • Gr6 Red Snapper (6-MS-ESS3-4) • Cherry Tree, Wolves and Moose (6-MS-LS2-2) • Microplastics (6-MS-LS2-3) ***LEAP Practice Test Standalone Items*:** • 13 (6-MS-LS2-3) • 22 (6-MS-ESS3-4) • 36 (6-MS-LS2-3) ***LEAP Assessment Guide Items:*** • Lichens (6-MS-LS2-2) • Florida Everglades (6-MS-LS2-1) ***LEAP Science Released Items:*** • Interactions (6-MS-LS2-3)	***LDOE Formative Assessment Sets* (Password- Educate2020):** • Item Set: Deer (6-MS-LS2-1) ***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:*** • Task Set: Aldabra Tortoises (6-MS-LS2-1 and 6-MS-LS2-2)
Other standards	***LDOE Formative Assessment Items* (Password- Educate2020):** • Models (6-MS-PS1-1) ***LEAP Practice Test Standalone Items*:** • 15, 34 (6-MS-PS1-1) ***LEAP Assessment Guide Items:*** • N/A ***LEAP Science Released Items:*** • N/A	***LDOE Formative Assessment Sets* (Password- Educate2020):** • N/A ***LEAP Practice Test Sets*:** • N/A ***LEAP Assessment Guide Sets:*** • N/A ***LEAP Science Released Items:*** • N/A