LOUISIANA DEPARTMENT OF EDUCATION

Teaching and Learning

Louisiana Guide to Implementing Activate Learning OpenSciEd: Grade 6

To assist teachers with the implementation of the Activate Learning OpenSciEd curriculum for grade 6, this document provides guidance regarding how Activate Learning OpenSciEd units correlate with the Louisiana Student Standards for Science (LSSS). The Activate Learning OpenSciEd curriculum provides ample instructional guidance for teachers. This Louisiana Guide for Implementing Activate Learning OpenSciEd goes a step further to point out places in which teachers may need to make strategic decisions considering student needs.

Activate Learning OpenSciEd Grade 6 may include performance expectations featured in other grade levels. These units are intentionally designed to provide students the opportunity to incrementally make sense of phenomena to build understanding and abilities over time through a coherent storyline. Modification to the sequence or content of lessons within these units could undermine the design, and therefore should be approached with caution and careful consideration.

This guidance document is considered a "living" document as we believe that teachers and other educators will find ways to improve the document as they use it. Please send feedback to STEM@la.gov so that we may use your input when updating this guide.

May 9, 2024

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Standards by Unit

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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?
Standards	6-PS42*	6-PS2-1 6-PS2-2 6-PS3-1	6-PS4-1 6-PS4-2*	6-PS2-3 6-PS2-5 6-PS3-2	6-ESS1-1 6-ESS1-2 6-ESS1-3 6-PS2-4 6-PS4-2* 8-LS4-3	6-LS1-1 6-LS1-2 7-LS1-3*
Unit Materials	Complete Unit	Complete Unit	Complete Unit	Complete Unit	Complete Unit	Complete Unit

†6-PS1-1, 6-LS2-1, 6-LS2-2, L-LS2-3, & 6-ESS3-4 are not addressed by the Grade 6 Activate Learning OpenSciEd units. The performance expectation can be addressed by incorporating the Grade 6 Louisiana Sample Scope and Sequence and/or Chapters 1-4 of Disruptions in Ecosystems Alternative Unit as needed.

**The performance expectation is partially addressed using the identified phenomenon and is addressed in multiple units.*

Pacing and Unit Order Guidance

**Modification of the lessons, even in the ways suggested here, should be approached with careful consideration. Additional attention should be given to navigation in lessons where adjustments are made in order to maintain coherence from the student perspective.*

Unit	Relevant OpenSciEd Guidance † for Teaching Units in a Different Sequence	**Relevant OpenSciEd Guidance† for Condensing**(This includes guidance directly from OpenSciEd as well as Louisiana-specific suggestions.)
Unit 1 **Light & Matter OpenSciEd Unit 6.1**	This is the first unit in the OpenSciEd Scope and Sequence and intended to be used at the start of 6th grade.	• **Lesson 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 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.

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Unit 2
 	
Contact Forces OpenSciEd Unit 8.1
	• If taught before 6.2, supplemental teaching of the following would be required:
	  ○ Energy transfer as the result of two colliding objects at the particle level.
	  ○ The role of independent and dependent variables, along with controlled variables, in an investigation.
	  ○ What criteria and constraints are, and how they can be used to inform design decisions.
	• If taught before 6.5, supplemental teaching of the following would be required:
	  ○ What a stakeholder is, and the role of stakeholders in the iterative design process.
		• ***LA suggestion*** **- Lesson 11:** To condense to a one-day lesson, conduct Parts 1-3 as a whole-class discussion, develop designs individually then share in groups (eliminate Gallery Walk), and combine the discussions in Parts 7-9.
		• ***LA suggestion*** **- Lesson 12:** To condense to a one-day lesson, conduct a combined whole-class discussion for Parts 1-3, conduct investigations in groups, as suggested, combine Parts 6-8 into one whole-class discussion and have students finish Part 9 at home if needed.
		• ***LA suggestion*** **- Lesson 14:** To condense into a one-day lesson, remove Parts 5-10 and focus more heavily on Parts 3 and 4.
		• ***LA suggestion*** **- Lesson 16:** To condense, remove this optional lesson.
		• **Lessons 11-16:** Since in some ways, lesson sets 1 and 2 are anchored in explaining why things sometimes get damaged when they hit each other and others don't and 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 end point for the unit would be at the end of lesson 10, which is the end of lesson set 2.

Unit 3 **Sound Waves OpenSciEd Unit 8.2**	• Students may not have the prior knowledge that air is matter and has mass. Additional investigation may be needed to establish these ideas. (e.g. massing a soda bottle before and after opening it; massing a volleyball before and after adding air).	• ***LA suggestion*** **- Lesson 2:** If condensing is needed, reduce time for observations in Part 2 and complete Part 5 at the end of Day 1. On Day 2, combine navigation in Part 9 with navigation on Part 1 of Lesson 3 and begin planning investigation. For Lesson 3 Day 1, pick up at Part 2, omit writing of clams and build into the Part 4 discussion. Continue with Parts 5 & 6 on Day 1 and Part 7 if time allows. Part 7 may need to be addressed on the next day if there is not time to fully engage.

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Unit 3 **Sound Waves OpenSciEd Unit 8.2** ***continued from previous page***	• If taught before 6.2, students will need to develop some ideas around particle motion including the behavior and spacing of particles in the different states of matter. • The unit rests on explaining sound as the collision of particles that transfers energy -- if needed, extra time can be spent on Lessons 7-9 to develop ideas of matter as composed particles and how they move.	• **Lesson 3:** If students have completed 6.1, they will have established the idea that all objects bend. You could shorten this lesson to only focus on how the vibration changes with more force. • ***LA suggestion*** **- Lesson 4:** If previous suggestions are used and Lesson 3 Building Understanding Discussion must be continued or completed on Day 1 of Lesson 4, some small adjustments will need to be made to complete Lesson 4 in two days. • ***LA suggestion*** **- Lesson 7 and 8:** If condensing is needed, combine Lessons 7 & 8 by reducing time spent on the investigations on both days and revisiting the initial model in Lesson 7. Navigation from Part 1 in Lesson 8 can be combined with Part 4 of Lesson 7 in order to move into Lesson 8 activities on the same day. Students may finish updating their progress trackers as a home learning assignment or at the beginning of Lesson 9 if more time is needed. • **Lesson 11:** This lesson provides an opportunity to apply what they have learned to a new phenomenon and to get feedback from peers before then individually revising their model for the anchoring phenomenon. If short on time, you could use either phenomenon and still have students give feedback and revise that one model. • **Lesson 12:** Eliminate - Our standard does not cover how we hear. This DCI is spread across multiple units; if this lesson is skipped, more time or support might be needed in future units to address this DCI. ***LA Addition***: To maintain coherence, consider navigating at the end of Lesson 11 and having students read and annotate the article as home learning. Integrate Part 4 class discussion into Lesson 13 navigation.

Unit	Relevant OpenSciEd Guidance † for Teaching Units in a Different Sequence	Relevant OpenSciEd Guidance† for Condensing(This includes guidance directly from OpenSciEd as well as Louisiana-specific suggestions.)
Unit 4 **Forces at a Distance OpenSciEd Unit 8.3**	No relevant guidance for LA suggested scope and sequence.	• ***LA suggestion*** **- Lesson 1:** If condensing is needed, combine Days 2 & 3 by conducting Parts 6 & 7 together. Begin Part 8 on Day 1, complete for home learning, and follow the additional suggestions. Parts 9-14 can be completed on Day 4. If needed, have students submit additional investigation ideas for home learning. Navigation from the end of Lesson 1 can be combined with the beginning of Lesson 2. • **Lesson 1:** The speaker dissection is best as a real-time investigation to do with your students. However, there are two alternative approaches to the speaker dissection: using a previously dissected speaker or playing a video of a speaker dissection. If you select an alternative approach, the advance preparation is different. Watch the speaker dissection video yourself to orient yourself to how you would do it as a real-time investigation with students. • ***LA suggestion*** **- Lesson 2:** If condensing is needed and students seem to have a great deal of prior knowledge about magnets, Part 2 can be conducted a bit more quickly followed by a quick navigation to Part 6 and the Building Understanding Discussions (Parts 3 & 7) can be combined following Part 6. • ***LA suggestion*** **- Lesson 4:** If condensing is needed, begin Part 3 discussion during the Part 2 demonstration, combine the discussions in Parts 4 & 5 and complete the investigation in Part 7 on Day 1. Finish with Part 8 and assign home learning. Begin Day 2 by combining navigation in Parts 9 & 10 and complete the rest of the lesson as written.

Unit	Relevant OpenSciEd Guidance † for Teaching Units in a Different Sequence	**Relevant OpenSciEd Guidance† for Condensing**(This includes guidance directly from OpenSciEd as well as Louisiana-specific suggestions.)
Unit 4 **Forces at a Distance OpenSciEd Unit 8.3** ***continued from previous page***		• **Lesson 8:** In previous lessons students designed many aspects of the investigations they carried out and had a relatively long amount of time to do them. In the very short investigations students do in this lesson, the planning aspect is not the main focus of their work. And they have a very short amount of time for each investigation. This shift in focus for this lesson is because the goal of these investigations is different. Students are carrying out these investigations in order to produce data to serve as the basis for evidence that is framed around trying to figure out answers to a series of questions the class will narrow in on at different points in the lesson. These explorations do not require students to follow a predetermined procedure. In order to accomplish the goal of each investigation in a short amount of time, students will need to attend to how they communicate, cooperate, and take turns with their group members. • ***LA suggestion*-Lesson 9-** If streamlining is needed and students are able to move through Part 2 more quickly than allotted, Parts 3 & 5 can be combined to make a consensus model on Day 1. Parts 6, 7 & 8 can be completed on Day 2 by reducing time spent on each activity by a few minutes.
Unit 5 **Earth in Space OpenSciEd Unit 8.4**	No relevant guidance for LA suggested scope and sequence.	• **Lesson 4 Condense Option :** If students don't have as many questions about deep space interactions, you may want to trim some of the lessons from Lesson Set 4 (Lesson 13–17).

Unit	Relevant OpenSciEd Guidance † for Teaching Units in a Different Sequence	Relevant OpenSciEd Guidance† for Condensing(This includes guidance directly from OpenSciEd as well as Louisiana-specific suggestions.)
Unit 6 **Cells and Systems OpenSciEd Unit 6.6**	• If taught before 6.4, students will benefit from additional scaffolding for scale, proportion, and quantity. • If taught before 6.2 and 6.4, students will benefit from additional scaffolding for systems and system models. • If taught before, 6.2 and 6.3, students will benefit from additional scaffolding for planning and carrying out investigations. • If taught before, 6.2 students benefit from additional scaffolding for engaging in argument from evidence.	• **Lesson 4:** If you do not have microscopes available, you can shorten this lesson by one day by taking out the orientation to the microscopes. • **Lesson 6 :** This is a two day lesson that includes using the microscopes to look at skin, bone and muscle slides. These images are in the https://www.openscied.org/general/microscope-blood/ . If you have the technology available, you could have students make observations of the images as home learning and do the sense making over the course of one day afterwards.

† Adapted from the OpenSciEd TeacherBackground 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.

LDOE Formative Assessment Resources

Created by Louisiana educators to support formative assessment in the classroom, LDOE has released a library of discrete items and item sets correlated to the Louisiana Student Standards for Science. These items, along with LEAP 2025 Practice Test Items, may be used in conjunction with guidance from high-quality curriculum as opportunities for students to demonstrate what they have learned. LDOE Formative Assessment Resources can be found on the K-12 Science Resources web page.

Unit	Discrete Items	Item Sets and Practice Test Items
Light and Matter OpenSciEd 6.1	Spectral Signature (6-MS-PS4-2) Telescopes (6-MS-PS4-2)	
Contact Forces OpenSciEd 8.1	Satellite (6-MS-PS2-1) Shin Guard Design (6-MS-PS2-1) Soccer Ball (6-MS-PS2-2) Juan's Skateboard (6-MS-PS2-2) Sports Balls (6-MS-PS3-1)	Bowling (6-MS-PS3-1, 6-MS-PS2-2)
Sound Waves OpenSciEd 8.2	Trials (6-MS-PS4-1) Reverberation (6-MS-PS4-1)	Ocean Waves (6-MS-PS4-1)
Forces at a Distance OpenSciEd 8.3	Electric Motor (6-MS-PS2-3) Gr6 Moons (6-MS-PS2-4) Popcorn (6-MS-PS2-5)	Marbles (6-MS-PS3-1, 6-MS-PS3-2) Changes in the Earth's Magnetic Field (6-MS-PS2-3, 6-MS-PS2-5
Earth in Space OpenSciEd 8.4	Moons (6-MS-ESS1-1) Midnight_Sun (6-MS-ESS1-1) Spitzer (6-MS-ESS1-2)	Dwarf Planets (6-MS-ESS1-3) Asteroids in the Solar System (6-MS-ESS1-2, 6-MS-ESS1-3)
Cells and Systems OpenSciEd 6.6	Gr6 Minerals (6-MS-LS1-1) Models (6-MS-PS1-1) Slugs and Chloroplast (6-MS-LS1-2) Plant Cells (6-MS-LS1-2)	Organelles (6-MS-LS1-1, 6-MS-LS1-2)

Unit	Discrete Items	Item Sets and Practice Test Items
Disruptions in Ecosystems	Gr6 Red Snapper (6-MS-ESS3-4) Cherry Tree (6-MS-LS2-2) Wolves and Moose (6-MS-LS2-2) Microplastics (6-MS-LS2-2)	Deer (6-MS-LS2-1) Anasazi and the Great Drought (6-MS-LS2-1, 6-MS-LS2-2)