

A New Vision for Science Standards and Assessments

The [Louisiana Student Standards for Science](#) (LSS for Science) were created by over eighty content experts and educators with input from parents and teachers from across the state. Educators envisioned what students should know and be able to do to compete in our communities and created standards that would allow students to do so. The LSS for Science provide appropriate content for all grades or courses, maintain high expectations and create a logical connection of content across and within grades. The LSS for Science represent the knowledge and skills needed for students to successfully transition to postsecondary education and the workplace. The standards call for students to

- 1) apply content knowledge;
- 2) investigate, evaluate, and reason scientifically; and
- 3) connect ideas across disciplines.

INTRODUCTION TO THE FIELD TEST

Transition to New Science Assessments

Students in grades 3-8 will take a science **field test only** during the regular testing window, and will not take an operational science test in Spring 2018. New full-length science assessments will be developed from successful field-tested items. This will allow the Department to end the multi-grade assessments in grades 4 and 8, and align the assessment in all tested grades to the LSS for Science.

The EOC biology assessment administered to students in Spring 2018 will include **field test items** aligned to the LSS for Science. The purpose of the field test is to try out the questions to determine if they are functioning as intended. In 2018-2019, a new full-length, 5-level biology assessment will be developed from successful field-tested items. Information about the operational EOC Biology assessment for 2017-2018, including the structure of the test and the specifications for the multiple-choice and task sessions, can be found in the [EOC Assessment Guide for Biology](#).

Key Goals for New Science Assessments

Starting in the 2018-2019 school year, students in grades 3-8 will take the new LEAP 2025 science assessments, which provide

- questions that have been reviewed by Louisiana educators to ensure their alignment to the (LSS for Science) and appropriateness for Louisiana students;
- measurement of the full range of student performance, including that of high- and low-performing students; and
- information for educators and parents about student readiness in science and whether students are “on track” for college and careers.

ITEM AND SET DESIGN

Supporting Key Shifts in Science Instruction

The spring 2018 field test is designed to produce questions for a spring 2019 operational test that will assess a student’s understanding of the grade 3 LSS for Science, reflecting the multiple dimensions of the standards.

Shift: Apply content knowledge and skills (Disciplinary Core Idea, DCI)

In the classroom, students develop skills and content knowledge reflected in the Performance Expectations (PE) and detailed in the Disciplinary Core Ideas (DCI), the key ideas in science that have broad importance within or across multiple science or engineering disciplines. However, simply having content knowledge and scientific skills are not enough. Students must investigate and apply content knowledge to scientific phenomena.

Phenomena are real world observations that can be explained through scientific knowledge and reasoning (e.g., water droplets form on the outside of a water glass, plants tend to grow toward their light source, different layers of rock can be seen on the side of the road).

On the field test, students answer questions aligned to PE bundles (groupings of like PEs) and the corresponding DCIs. The students begin each set of questions by reading through stimulus materials connected to a scientific phenomenon.

Shift: Investigate, evaluate, and reason scientifically (Science and Engineering Practice, SEP)

In the classroom, students do more than learn about science; they “do” science. Science instruction must integrate the practices, or behaviors, of scientists and engineers as students investigate real-world phenomena and design solutions to problems.

On the field test, students do more than answer recall questions about science; they apply the practices, or behaviors, of scientists and engineers as students investigate each real-world phenomenon and design solutions to problems.

Shift: Connect ideas across disciplines (Crosscutting Concept, CCC)

In the classroom, students develop a coherent and scientifically-based view of the world, they must make connections across the domains of science (life science, physical science, earth and space science, environmental science, and engineering, technology, and applications of science). These connections are identified as crosscutting concepts (CCC). The crosscutting concepts have applications across all domains.

On the field test, sets of questions assess student application of knowledge across the domains of science for a comprehensive picture of student readiness for their next grade or course in science.

Set-Based Design

The field tests include item sets, task sets, and discrete items. A scientific **phenomenon** provides the focus for the sets. Stimulus materials, related to the scientific phenomenon, provides context for and anchor both **item sets** and **task sets** comprised of four to five questions. In addition to the information presented in the stimulus materials, the questions require students to bring in content knowledge from the course to demonstrate their understanding of science. The questions include selected-response (multiple-choice and/or multiple-select), technology-enhanced, and two-part questions. Some **item sets** culminate with a short constructed-response, and the **task set** culminates in an extended-response item. Each field test includes a few **discrete items** made of selected-response, technology-enhanced, and two-part questions.

The Phenomenon and Stimulus Materials

A variety of stimulus materials provide context for each described phenomenon. Art is used to help convey information in a simplified form, examples include maps, charts, data tables, bar or line graphs, diagrams, pictures, photographs, or artist's renderings.

Item Types

- Selected Response (SR): includes traditional multiple-choice (MC) questions with four answer options and only one correct answer, as well as multiple-select (MS) questions with five to seven answer options and more than one correct answer. For MS items, the question identifies the number of correct answers. All SR items are worth one point each.
- Technology Enhanced (TE): uses technology to capture student comprehension in authentic ways, previously difficult to score by machine for large-scale assessments. TE items are worth up to two points and may include item types such as, but not limited to, drag and drop, dropdown menus, and hot spots. The Online Tools Training allows students to experience TE items and practice answering them to prepare for the computer-based test. Only grades 5 through 8 and Biology have TE items.
- Two-part Item: requires students to answer two related questions, worth two points. Two-part items may combine SR and/or TE item types.
 - Two-part Dependent (TPD): the first part must be correct in order to earn credit for the second part.
 - Two-part Independent (TPI): each part is scored independently.
- Constructed Response (CR): requires a brief response provided by the student and will be scored using a 2-point rubric. These items may require a brief paragraph, a few sentences, and/or completion of a chart.
- Extended Response (ER): asks students to write an in-depth response that expresses the students' ability to apply all three dimensions of the LSS for Science and will be scored using a 6-point rubric for grades 3 and 4 and a 9-point rubric for grades 5 through 8 and Biology.

Resources

- [K-12 Louisiana Student Standards for Science \(2017\)](#) provides the performance expectations and three-dimensional learning for all grades
- [Science Standards: Shifts In Science](#) supports teachers in understanding how three-dimensional learning impacts instruction
 - [Appendix A: Learning Progressions](#) describes the development of science and engineering practices (SEPs), disciplinary core ideas (DCIs), and crosscutting concepts (CCCs) as appropriate for grade spans across K-2, 3-5, middle school, and high school
 - [Appendix B: Connections to ELA and Math K-12](#) details the connection between the Louisiana Student Standards for Science and the Louisiana Student Standards for Math and ELA
- Online Tools Training (OTT) (*Winter 2017-2018*) provides students and teachers opportunities to become familiar with the tools available in INSIGHT or [here](#) using a Chrome browser
- [LEAP Accessibility and Accommodations Manual](#) provides information about Louisiana's accessibility features and accommodations for testing
- [LEAP 2025 Technology-Enhanced Item Types](#) provides a summary of technology-enhanced items students may encounter in any of the computer-based tests across courses and grade levels
- [2017-2018 Louisiana Assessment Calendar](#) includes information on testing windows