How to Read Louisiana Student Standards for Science

The Louisiana Student Standards for Science establish grade-level performance expectations for students. Specifically this means that the standards will define *what* Louisiana students will learn. The Louisiana Student Standards for Science must represent the knowledge and skills needed for students to successfully transition to postsecondary educations and the workplace. These standards do not dictate curriculum or teaching methods. Decisions about *how* to teach these expectations are left to local districts, schools, and teachers.

Vision

Historically, K-12 science education has emphasized factual knowledge and encouraged breadth over depth of content knowledge. As stated by the National Research Council, "Science is not just a body of knowledge that reflects current understanding of the world; it is also a set of practices used to establish, extend, and refine that knowledge. Both elements – knowledge and practice – are essential." (NRC 2012) The Louisiana science standards review committee and workgroups acknowledge that K-12 science must prepare students to meet the demands of today's society.

Past Science Instruction	Drafted Louisiana Student Standards for Science
Focus on content acquisition	Students develop and apply knowledge in new situations
Many topics, little depth	Fewer topics, more depth
Teacher dominated discourse and instruction	Students engage in developmentally appropriate experiences using similar behaviors as a scientist

Organization of the Standards

The Louisiana Student Standards for Science are built on three components that serve as the foundations: science and engineering practices, disciplinary core ideas, and crosscutting concepts. The graphic below details these components.

1 Coding and Descriptors identify every performance expectation.

Example: 1-LS3-1 Heredity: Inheritance and Variation of Traits

2 Performance Expectations state what students should be able to do to demonstrate that they have met the standard. Performance expectations integrate science and engineering practice(s), disciplinary core idea(s), and crosscutting concept(s).

Example: Make observations to construct an evidence-based account that young plants and animals are like, but not exactly like, their parents.

3 Clarification Statements, when needed, provide examples or additional clarification of the performance expectation. The performance expectations are the standards and define what students *will* learn; they do not dictate curriculum or teaching methods.

Example: Examples of patterns could include features plants or animals share. Examples of observations could include leaves from the same kind of plant are the same shape but can differ in size; and, a particular breed of dog looks like its parents but is not exactly the same.

4 Science and Engineering Practices detail the behaviors that students should engage in that mimic those of scientists and engineers. The performance expectation integrates the science and engineering practice that is in bold print; however, instruction may integrate any practice.

Example

1. Asking questions (for science) and defining problems (for engineering).
2. Developing and using models
3. Planning and carrying out investigations
4. Analyzing and interpreting data
5. Using mathematics and computational thinking
6. Constructing explanations (for science) and designing solutions (for engineering)

•Make observations to construct an evidence-based account for natural phenomena.

7. Engaging in argument from evidence
8. Obtaining, evaluating, and communicating information.

5 Disciplinary Core describe the most essential ideas (content) in the major science disciplines. Each disciplinary core idea has a code descriptor made up of letters and a number. The letters represent the domain and the number represent the topic.

Example

LS3.A Inheritance of Traits

-Young animals are very much, but not exactly like, their parents. Plants also are very much, but not exactly like, their parents.

LS3.B Variation of Traits

-Individuals of the same kind of plant or animal are recognizable as similar but can also vary in many ways.

6 Crosscutting Concepts are ideas that have applications across all areas of science. The eight crosscutting concepts are:

- Patterns
- Cause and effect
- Scale, proportion, and quantity
- Systems and system models
- Energy and matter: Flows, cycles, and conservation
- Structure and Function
- Stability and change

Example

Patterns in the natural world can be observed, used to describe phenomena, and used as evidence.