Louisiana Believes

LEAP 2025 and PhD Science

2019 Teacher Leader Summit

DEPARTMENT of EDUCATION

Purpose

Quality science instruction requires that teachers

- understand the standards and the shifts called for by the standards,
- have access to a high quality curriculum, and
- understand what students will be held accountable for on the assessment.

This segment of the session will help you understand the connections between the standards, instruction, and assessment.

Instructional Shifts

	In the classroom, students	On the test, students
Apply Content Knowledge (DCI)	• develop skills and content knowledge • investigate and apply content knowledge to scientific phenomena	• answer questions that require skills and content knowledge • use stimulus materials connected to a scientific phenomenon
Investigate, Evaluate, and Reason Scientifically (SEP)	• do more than learn about science concepts • model and apply the practices of scientists and engineers • investigate real-world phenomena and solve design problems	• do more than answer recall questions about science • apply the practices of scientists and engineers • investigate each real-world phenomenon and design solutions to given problems
Connect Ideas Across Disciplines (CCC)	• make connections across the domains of science: life science; physical science; earth and space science; environmental science; and engineering, technology, and applications of science	• respond to sets of questions that assess application of knowledge across the domains of science for a comprehensive picture of student readiness for their next grade or course in science

PhD Science and Assessment

The Great Minds module assessments and LEAP 2025 science assessments align to the instructional shifts inherent in the LSSS.

> Students will apply content knowledge and skills as they investigate, evaluate, and reason scientifically about a given phenomenon that may require connecting ideas across disciplines.

Let's compare the Grade 4, Module 2 Assessment on energy and the constructed-response item set "Marble Experiment" from the LEAP 2025 Practice Test for Science Grade 4.

PhD Science and Assessment

Compare the phenomena from Module 2 and "Marble Experiment."

The phenomenon for the PhD module comes from the lessons and is not directly attached to the assessment set.

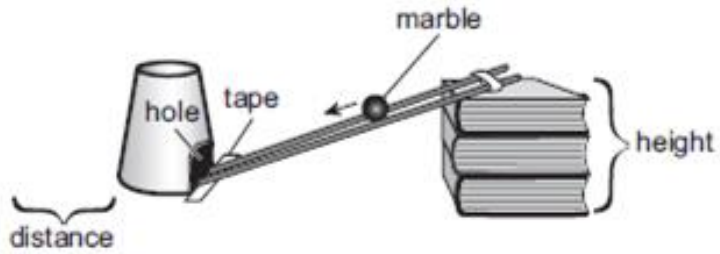
Like LEAP 2025 test items and sets, the questions and tasks in the curriculum are anchored with a phenomenon specifically chosen to require student investigation, evaluation, and reasoning.

LEAP 2025 assessment sets are anchored in phenomena and students need to use content knowledge from DCIs, SEPs, and CCCs to make sense of the phenomena and successfully answer assessment questions.

"Marble Experiment" from LEAP 2025 Practice Test

Savannah sets up an experiment with a marble, a foam cup, and a ramp. The cup has a hole on the side. The marble rolls down the ramp and pushes the cup. Savannah's experiment setup is shown in Figure 1.

Figure 1. Marble Experiment Setup



Savannah measures the distance that the cup moves when the marble pushes it. Next she changes the height of the ramp and repeats the experiment. She completes three trials. Her observations are shown in Table 1.

Table 1. Experimental Data

Experiment	Ramp Height (centimeters)	Time (seconds)	Distance the Cup Moves (centimeters)
1	10	1.8	2.5
2	20	1.5	3.0
3	30	1.3	5.0

PhD Science and Assessment

Compare question 3 from Module 2 and question 9 from “Marble Experiment.”

What content knowledge and skills do students need to have to answer these questions?

Like LEAP 2025 test items and sets, the questions and tasks in this curriculum require students to determine *what* of the content knowledge and skills they have acquired through their course of study *can and should* be used to answer questions and solve problems about the phenomenon.

Both sets include questions that have students use information from the phenomenon and their own science knowledge to construct scientific explanations and design solutions.

“Marble Experiment” from LEAP 2025 Practice Test

Use the information in Table 1 to answer the question.

Savannah concludes that in each experiment, the marble hit the cup with a different amount of energy.

Which evidence **best** supports her conclusion?

- Ⓐ the height of the ramp in each experiment
- Ⓑ the time the marble took to reach the cup in each experiment
- Ⓒ the mass of the marble used in the experiments
- Ⓓ the distance that the cup moved in each experiment

PhD Science and Assessment

Compare question 2 from Module 2 and question 10 from “Marble Experiment.”

Like LEAP 2025 test items and sets, the questions and tasks in the curriculum allow students to pull in understanding of Crosscutting Concepts to find similarities and differences in patterns and demonstrate the understanding that energy can be transferred in various ways and between objects.

Both sets include questions that have students recognize and apply patterns reflected in data associated with experiments in energy.

“Marble Experiment” from LEAP 2025 Practice Test

Use the information in Table 1 to answer the question.

Which statement **best** explains why the marble had a different amount of energy in each experiment?

- Ⓐ The marble started with different speeds.
- Ⓑ The times it took for the marble to hit the cup were different.
- Ⓒ The marble had a different speed each time it hit the cup.
- Ⓓ The cup moved a different distance each time the marble hit it.

Resources

LEAP 2025 Assessment Guide for Grade 4

LEAP 2025 Grade 4 Science Practice Test

- **Teacher Access**:
  - Google Chrome browser: https://wbte.drcedirect.com/LA/#portal/la/510848/ott/8/username/password/false
  - Paper-based practice test available in eDIRECT and in the Practice Test Library
- **Student Access** (available Fall 2019): requires INSIGHT; available online or braille
- **Materials** for administering, scoring, and using
  - Practice Test Quickstart Guide
  - LEAP 2025 Grade 4 Science Practice Test Answer Key
  - LEAP 2025 Science Practice Test Guidance
  - LEAP 2025 Practice Test Webinar for Teachers

EAGLE and Practice Test Items

PhD Science	EAGLE and Practice Test Items	
Module 1	• Climates (3-ESS2-2) • LA_BOS (3-ESS2-2) • Gr3 Tornadoes (3-ESS3-1)	• Levees (3-ESS3-1) • Winter Storms (3-ESS2-1, 3-ESS3-1)
Module 2	• Gulf Birds (3-LS4-3) • Red Snapper (3-LS4-4) • Tortoises (3-LS4-4)	• Penguins (3-LS2-1) • 1014384 (3-LS2-1) • 1014382 (3-LS4-1)
Module 3	• Moth (3-LS4-2) • Black Bears (3-LS1-1) • Butterfly Cycle (3-LS1-1) • Pythons (3-LS3-1, 3-LS3-2)	• Amazon River Dolphins (3-LS2-1, 3-LS1-1) • Rattlesnake (3-LS3-1, 3-LS4-2) • Plants and Heat (3-LS3-2, 3-ESS2-1)
Module 4	• Cradle (3-PS2-1) • Ball Type (3-PS2-2) • Oil Spill (3-PS2-2, 3-PS2-3)	• Bowling (3-PS2-1, 3-PS2-2) • Seesaws (3-PS2-2, 3-PS2-2)

EAGLE and Practice Test Items

PhD Science	EAGLE and Practice Test Items	
Module 1	• 998125 (4-ESS2-1) • Ashfall (4-ESS3-2) • Grand Canyon (4-ESS2-1) • Dam (4-ESS2-1)	• Wind Power 136574 (4-ESS3-1) • Sierra Nevada (4-ESS1-1, 4-ESS2-2) • Hawaiian Volcanoes (4-ESS2-2, 4-ESS3-2)
Module 2	• 1025192 (4-PS3-1) • 1025194 (4-PS3-2) • 1025196 (4-PS3-4) • 1025361 (4-PS3-3)	• Heating with Solar Energy (4-PS3-4, 4-ESS3-1) • Marble Experiment (4-PS3-1, 4-PS3-3) • Striking Flint (4-PS3-3, 4-PS3-2)
Module 3	• Green Pitcher 1025204 (4-LS1-1) • Spiders 4 1025223 (4-LS1-2) • Puddles 1025227 (4-PS4-1)	• Hurricanes (4-ESS2-1, 4-PS4-1) • Beavers (4-ESS2-3, 4-LS1-1)
Module 4	• 1025238 (4-PS4-2)	• Predator and Prey (4-LS1-2, 4-PS4-2)
Not Addressed	• Termite (4-ESS2-3)	• Blackbirds (4-ESS2-3, 4-LS1-1)

EAGLE and Practice Test Items

PhD Science	EAGLE and Practice Test Items	
Module 1	• Coolers (5-PS1-2) • SoccerBalls (5-PS1-1) • Water Quality (5-PS1-3) • Hoey (5-PS1-4)	• Diamond Mining (5-PS1-3, 5-PS1-4) • Mixing Liquids (5-PS1-2, 5-PS1-4) • Mineral Identification (5-PS1-3, 5-PS1-1)
Module 2	• Plant Project (5-LS1-1) • Pond (5-PS3-1) • Biomes (5-ESS3-1, 5-LS1-1)	• Controlling Runoff (5-ESS2-1, 5-ESS3-1) • Louisiana Black Bears (5-ESS3-1)
Module 3	• Water (5-ESS2-2)	• Brightness and Shadows (5-ESS1-1, 5-ESS1-2)
Module 4	• Gravity (5-PS2-1) • Skies (5-PS2-1)	• Brightness and Shadows (5-ESS1-1, 5-ESS1-2)
Not addressed	• Water Hyacinths (5-LS2-1) • Australia (5-LS2-1, 5-PS3-1)	• Rafflesia (5-LS1-1, 5-LS2-1)

Questions about Assessment?

- What questions do you have concerning the instructional shifts in assessment?
- What questions do you have about the LEAP 2025 science assessments or the resources?
- What other assessment-related questions do you have?

Next Steps

- Dig into your curriculum and the built-in assessments.
- Examine how the science instructional shifts are evidenced throughout.
- Discuss these findings with teachers in your school and school system.

Email assessment@la.gov with any assessment and/or accountability questions.

Email Lydia.Hill@la.gov with content questions.

Thank you!