



Teaching and Learning

# Louisiana Guide to Implementing Great Minds PhD Science: Grade 5

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## Purpose

To assist teachers with the implementation of the PhD Science curriculum for grade 5, this document provides guidance regarding how PhD Science units correlate with the [Louisiana Student Standards for Science](#) (LSSS). The PhD Science curriculum provides ample instructional guidance for teachers. This Louisiana Guide for Implementing Great Minds PhD Science goes a step further to point out places in which teachers may need to make strategic decisions, considering student needs.

The PhD Science Grade 3 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, 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](mailto:STEM@la.gov) so that the LDOE may incorporate your suggestions when updating this guide.

## Standards by Module<sup>1</sup>

|                        | Module 1                                               | Module 2                                 | Module 3                                                           | Module 4                                                                                                      |
|------------------------|--------------------------------------------------------|------------------------------------------|--------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|
|                        | Matter                                                 | Ecosystems                               | Earth Systems                                                      | Orbit & Rotation                                                                                              |
| Approximate Time Frame | 26 days                                                | 26 days                                  | 27 days                                                            | 26 days                                                                                                       |
| Anchor Phenomenon      | Changes to the Statue of Liberty's Appearance          | Life Around a Mangrove Tree              | Balinese Rice Farming                                              | Views From Earth and Space                                                                                    |
| Essential Question     | What caused the Statue of Liberty to change over time? | How can trees support so much life?      | How has Balinese rice farming endured for 1,000 years?             | How can we explain our observations of the Sun, Moon, and stars from Earth?                                   |
| Instructional Texts    | <i>Statue of Liberty: A Tale of Two Countries</i>      | <i>The Mangrove Tree Living Sunlight</i> | <i>Cycle of Rice, Cycle of Life</i><br><i>The Buffalo are Back</i> | <i>Look to the Stars</i><br><i>Look Up! Henrietta Leavitt</i><br><i>Pioneering Woman</i><br><i>Astronomer</i> |
| Standards              | 5-PS1-1<br>5-PS1-2<br>5-PS1-3<br>5-PS1-4               | 5-LS1-1<br>5-LS2-1<br>5-PS3-1            | 5-ESS2-1<br>5-ESS2-2<br>5-ESS3-1                                   | 5-ESS1-1<br>5-ESS1-2<br>5-PS2-1                                                                               |

<sup>1</sup>Adapted from guidance developed by PhD Science

## Concept Focus by Module<sup>1</sup>

| Module                       | Concept Focus Questions                                                                                                                                                                                                                                                                                                                         |
|------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Module 1<br>Matter           | <p>Concept 1: How do we describe different materials?</p> <p>Concept 2: How do temperature changes affect substances?</p> <p>Concept 3: What happens when substances are mixed?</p> <p>Engineering Challenge: How can we apply our knowledge of substances to solve a problem?</p> <p>Application of Concept</p>                                |
| Module 2<br>Ecosystems       | <p>Concept 1: How do plants grow?</p> <p>Concept 2: Where does life's matter come from?</p> <p>Concept 3: Where does life's energy come from?</p> <p>Engineering Challenge: How can the balance of an ecosystem change? How can we reduce the damage an invasive species causes to an ecosystem?</p> <p>Application of Concepts</p>             |
| Module 3<br>Earth Systems    | <p>Concept 1: Where does freshwater come from?</p> <p>Concept 2: How do water and land interact?</p> <p>Concept 3: How do Earth's systems respond to change?</p> <p>Engineering Challenge: How can we apply our knowledge of Earth's systems to conserve fresh water?</p> <p>Application of Concepts</p>                                        |
| Module 4<br>Orbit & Rotation | <p>Concept 1: How can we explain our observations of the Sun?</p> <p>Science Challenge: How can we use the Earth-Sun system to tell time at different locations on Earth?</p> <p>Concept 2: How can we explain our observations of the Moon?</p> <p>Concept 3: How can we explain our observations of stars?</p> <p>Application of Concepts</p> |

<sup>1</sup>Adapted from guidance developed by PhD Science

## 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 Louisiana Student Standards for Science. These resources can be used alongside guidance from a high-quality curriculum to provide opportunities for students to showcase their learning.

| Module                 | Discrete Items                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Item Sets and Practice Test Items                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Module 1<br>Matter     | <p><b><u>LDOE Formative Assessment Items (PasswordEducate2020):</u></b></p> <ul style="list-style-type: none"> <li>Gas Particles (5-PS1-1)</li> <li>Coolers, Burning Wood, Mixing Substances (5-PS1-2)</li> <li>Water Quality (5-PS1-3)</li> <li>Hoey (5-PS1-4)</li> </ul> <p><b><u>LEAP Practice Test Standalone Items:</u></b></p> <ul style="list-style-type: none"> <li>35 (5-PS1-1)</li> <li>22, 32 (5-PS1-2)</li> <li>41 (5-PS1-3)</li> <li>14 (5-PS1-4)</li> </ul> <p><b><u>LEAP Assessment Guide Items:</u></b></p> <ul style="list-style-type: none"> <li>Milk Investigation (5-PS1-4)</li> </ul> <p><b><u>LEAP Science Released Items:</u></b></p> <ul style="list-style-type: none"> <li>Mass Experiments (5-PS1-2)</li> </ul> | <p><b><u>LDOE Formative Assessment Sets (PasswordEducate2020):</u></b></p> <ul style="list-style-type: none"> <li>Item Set: Diamond Mining (5-PS1-3 and 5-PS1-4)</li> </ul> <p><b><u>LEAP Practice Test Sets:</u></b></p> <ul style="list-style-type: none"> <li>Item Set: Mineral Identification (5-PS1-3 and 5-PS1-1)</li> <li>Item Set: Mixing Liquids (5-PS1-2 and 5-PS1-4)</li> </ul> <p><b><u>LEAP Assessment Guide Sets:</u></b></p> <ul style="list-style-type: none"> <li>N/A</li> </ul> <p><b><u>LEAP Science Released Items:</u></b></p> <ul style="list-style-type: none"> <li>Item Set: Saltwater Reactions (5-PS1-3 and 5-PS1-4)</li> <li>Task Set: Melting Fruit Pops (5-PS1-1 and 5-PS1-2)</li> </ul> |
| Module 2<br>Ecosystems | <p><b><u>LDOE Formative Assessment Items (PasswordEducate2020):</u></b></p> <ul style="list-style-type: none"> <li>Plant Project, Atchafalaya Basin (5-LS1-1)</li> <li>Water Hyacinths, African Ecosystems, Walter's Food Web (5-LS2-1)</li> <li>Pond (5-PS3-1)</li> </ul> <p><b><u>LEAP Practice Test Standalone Items:</u></b></p> <ul style="list-style-type: none"> <li>23, 38 (5-PS3-1)</li> <li>13, 33 (5-LS1-1)</li> <li>15 (5-LS2-1)</li> </ul> <p><b><u>LEAP Assessment Guide Items:</u></b></p> <ul style="list-style-type: none"> <li>Forest Ecosystem (5-PS3-1)</li> </ul> <p><b><u>LEAP Science Released Items:</u></b></p> <ul style="list-style-type: none"> <li>N/A</li> </ul>                                            | <p><b><u>LDOE Formative Assessment Sets (PasswordEducate2020):</u></b></p> <ul style="list-style-type: none"> <li>Item Set: Australian Ecosystem (5-LS1-1 and 5-PS3-1)</li> </ul> <p><b><u>LEAP Practice Test Sets:</u></b></p> <ul style="list-style-type: none"> <li>Item Set: Rafflesia (5-LS1-1 and 5-LS2-1)</li> </ul> <p><b><u>LEAP Assessment Guide Sets:</u></b></p> <ul style="list-style-type: none"> <li>Item Set: Cordgrass Ecosystem (5-LS1-1 and 5-LS2-1)</li> </ul> <p><b><u>LEAP Science Released Items:</u></b></p> <ul style="list-style-type: none"> <li>N/A</li> </ul>                                                                                                                            |

| Module                                             | Discrete Items                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Item Sets and Practice Test Items                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|----------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Module 3</b><br><br><b>Earth Systems</b>        | <p><b><u>LDoe Formative Assessment Items (PasswordEducate2020):</u></b></p> <ul style="list-style-type: none"> <li>• Briksdal, Precipitation (5-ESS2-1)</li> <li>• Water Distribution (5-ESS2-2)</li> <li>• Air Pollution, Dust Storms (5-ESS3-1)</li> </ul> <p><b><u>LEAP Practice Test Standalone Items:</u></b></p> <ul style="list-style-type: none"> <li>• 34, 39 (5-ESS2-2)</li> </ul> <p><b><u>LEAP Assessment Guide Items:</u></b></p> <ul style="list-style-type: none"> <li>• Water on Earth (5-ESS2-2)</li> </ul> <p><b><u>LEAP Science Released Items:</u></b></p> <ul style="list-style-type: none"> <li>• Wave Tank (5-ESS2-1)</li> <li>• Oil Spill (5-ESS3-1)</li> </ul>                                         | <p><b><u>LDoe Formative Assessment Sets (PasswordEducate2020):</u></b></p> <ul style="list-style-type: none"> <li>• Item Set: Biomes (5-ESS3-1 and 5-LS1-1)*</li> </ul> <p><b><u>LEAP Practice Test Sets:</u></b></p> <ul style="list-style-type: none"> <li>• Item Set: Louisiana Black Bears (5-ESS3-1)</li> </ul> <p><b><u>LEAP Assessment Guide Sets:</u></b></p> <ul style="list-style-type: none"> <li>• N/A</li> </ul> <p><b><u>LEAP Science Released Items:</u></b></p> <ul style="list-style-type: none"> <li>• N/A</li> </ul>                    |
| <b>Module 4</b><br><br><b>Orbit &amp; Rotation</b> | <p><b><u>LDoe Formative Assessment Items (PasswordEducate2020):</u></b></p> <ul style="list-style-type: none"> <li>• Gravity (5-PS2-1)</li> <li>• Skies, Two Stars (5-ESS1-1)</li> <li>• Constellations, Moon Cycle (5-ESS1-2)</li> </ul> <p><b><u>LEAP Practice Test Standalone Items:</u></b></p> <ul style="list-style-type: none"> <li>• 40 (5-PS2-1)</li> <li>• 37 (5-ESS1-1)</li> <li>• 21, 36 (5-ESS1-2)</li> </ul> <p><b><u>LEAP Assessment Guide Items:</u></b></p> <ul style="list-style-type: none"> <li>• Sky Patterns (5-ESS1-2)</li> </ul> <p><b><u>LEAP Science Released Items:</u></b></p> <ul style="list-style-type: none"> <li>• Distance from Earth (5-ESS1-1)</li> <li>• Diving Board (5-PS2-1)</li> </ul> | <p><b><u>LDoe Formative Assessment Sets (PasswordEducate2020):</u></b></p> <ul style="list-style-type: none"> <li>• N/A</li> </ul> <p><b><u>LEAP Practice Test Sets:</u></b></p> <ul style="list-style-type: none"> <li>• Task Set: Brightness and Shadows (5-ESS1-1 and 5-ESS1-2)</li> </ul> <p><b><u>LEAP Assessment Guide Sets:</u></b></p> <ul style="list-style-type: none"> <li>• Task Set: Landslides (5-PS2-1 and 5-ESS2-1)**</li> </ul> <p><b><u>LEAP Science Released Items:</u></b></p> <ul style="list-style-type: none"> <li>• N/A</li> </ul> |