



Teaching and Learning

Louisiana Guide to Implementing Great Minds PhD Science: Grades K-2

To assist teachers with the implementation of the PhD Science curriculum for grades Kindergarten -2, 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.

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.

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Kindergarten Standards by Module¹

	Module 1 Weather	Module 2 Pushes and Pulls	Module 3 Life	Module 4 Environments
Approximate Time Frame	30 days	23 days	28 days	28 days
Anchor Phenomenon	Cliff Dwellings at Mesa Verde	Tugboats Moving Cargo Ships	Life in the Mojave Desert	Life in a Longleaf Pine Forest
Essential Question	How did the cliff dwellings at Mesa Verde protect people from the weather?	How do tugboats move cargo ships through a harbor?	How is Mara different from the Wonderland of Rocks?	Why are gopher tortoises disappearing?
Standards	K-ESS2-1 K-ESS3-2 K-PS3-1 K-PS3-2	K-PS2-1 K-PS2-2	K-ESS3-1 K-LS1-1	K-ESS2-1 K-ESS2-2 K-ESS3-1 K-ESS3-3

¹ Adapted from guidance developed by PhD Science

Kindergarten Concept Focus by Module¹

Module	Concept Focus Questions
Module 1 Weather	<p>Concept 1: What is Weather?</p> <p>Concept 2: What does weather data reveal?</p> <p>Concept 3: How does severe weather affect us?</p> <p>Application of Concept - Engineering Challenge: How can we help archaeologists feel cooler when they work?</p> <p>Application of Concepts - Socratic Seminar: How did the Blizzard of 1978 affect people in Boston?</p>
Module 2 Pushes and Pulls	<p>Concept 1: What causes objects to start moving?</p> <p>Concept 2: What causes moving objects to change direction or stop?</p> <p>Application of Concepts - Engineering Challenge: How can we help a tugboat to stop close to a dock?</p> <p>Application of Concepts - Socratic Seminar: How do people use pushes and pulls to play carnival games?</p>
Module 3 Life	<p>Concept 1: How is Mara different from the Wonderland of Rocks?</p> <p>Concept 2: How do animals get what they need to live?</p> <p>Concept 3: How do humans get what they need to live?</p> <p>Application of Concepts - Socratic Seminar: How did plants, animals, and humans at Mesa Verde get what they needed to live and grow?</p>
Module 4 Environments	<p>Concept 1: How do plants and animals change their environments?</p> <p>Concept 2: How do humans change their environment?</p> <p>Application of Concepts - Engineering Challenge: How can we make a flower pot that does not hurt the environment?</p> <p>Application of Concepts - Socratic Seminar: How do plants, animals, and humans change Joshua Tree National Park?</p>

¹ Adapted from guidance developed by PhD Science

Grade 1 Standards by Module¹

	Module 1 Survival	Module 2 Light	Module 3 Sound	Module 4 Sky
Approximate Time Frame	29 days	23 days	29 days	25 days
Anchor Phenomenon	Life at a Pond	Wayang Shadow Puppetry	The Recycled Orchestra of Cateura	Polynesian Navigation
Essential Question	How do pond plants and pond animals survive in their environment?	How do puppeteers use light to tell stories during wayang shows?	How does the Recycled Orchestra make music?	How did the Polynesians use observations of the Sun, stars, and the Moon to navigate from island to island?
Standards	1-LS1-1 1-LS1-2 1-LS3-1	1-PS4-2 1-PS4-3	1-PS4-1 1-PS4-4	1-ESS1-1 1-ESS1-2

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Grade 1 Concept Focus by Module¹

Module	Concept Focus Questions
Module 1 Survival	<p>Concept 1: How do plants and animals use their body parts to survive in their environment?</p> <p>Concept 2: How do plants and animals respond to their environment?</p> <p>Concept 3: How do parents help their offspring survive?</p> <p>Application of Concepts - Engineering Challenge: How can we help protect scientists at a pond?</p> <p>Application of Concepts - Socratic Seminar: How does a koala use its body parts to find and take in food?</p>
Module 2 Light	<p>Concept 1: Why do we need light to see objects?</p> <p>Concept 2: How does light interact with different objects?</p> <p>Application of Concepts - Science Challenge: What materials work well as wayang screens?</p> <p>Application of Concepts - Socratic Seminar: How do lighthouses help mariners find their way?</p>
Module 3 Sound	<p>Concept 1: What causes sound?</p> <p>Concept 2: What are the effects of sound?</p> <p>Application of Concepts - Engineering Challenge: How can we help a teacher communicate with students at recess?</p> <p>Application of Concepts - Socratic Seminar: Can people use cups and string to communicate?</p>
Module 4 Sky	<p>Concept 1: What changes in our observations of the Sun throughout the day?</p> <p>Concept 2: What changes in our observations of the stars throughout the night?</p> <p>Concept 3: What changes in our observations of the Moon throughout the day or night?</p> <p>Application of Concepts - Socratic Seminar: How do plants and animals respond to patterns in the ways the Sun, stars, and the Moon move?</p>

¹ Adapted from guidance developed by PhD Science

Grade 2 Standards by Module¹

	Module 1 Matter	Module 2 Earth Changes	Module 3 Plants	Module 4 Biomes
Approximate Time Frame	31 days	24 days	29 days	25 days
Anchor Phenomenon	Building Bird Nests	Transformation of Surtsey	Plant Recovery Around Mount St. Helens	Environments On and Below Mount Everest
Essential Question	Why do different kinds of birds use certain materials to build their nests?	How can the island of Surtsey change shape over time?	How did local plants recover after the eruption of Mount St. Helens?	Why do so many kinds of plants and animals live below Mount Everest but so few live on it?
Standards	2-PS1-1 2-PS1-2 2-PS1-3 2-PS1-4	2-ESS1-1 2-ESS2-1 2-ESS2-2 2-PS1-1	2-LS2-1 2-LS2-2	2-LS4-1 2-ESS2-2 2-ESS2-3

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Grade 2 Concept Focus by Module¹

Module	Concept Focus Questions
Module 1 Matter	<p>Concept 1: How can we describe and classify matter?</p> <p>Concept 2: How can matter change?</p> <p>Concept 3: Why is understanding the properties of matter useful?</p> <p>Application of Concepts - Engineering Challenge: What materials are suited to building a shelter that provides protection from rain?</p> <p>Application of Concepts - Socratic Seminar: Why was the sculpture <i>Little Dancer Aged Fourteen</i> remade in bronze?</p>
Module 2 Earth Changes	<p>Concept 1: How can we describe land?</p> <p>Concept 2: How can land change?</p> <p>Concept 3: How long do changes to land take?</p> <p>Application of Concepts - Engineering Challenge: How can we slow changes to the land of Montauk Point to protect the Montauk Point Lighthouse?</p> <p>Application of Concepts - Socratic Seminar: How does a headland become a sea stack?</p>
Module 3 Plants	<p>Concept 1: Do different amounts of natural resources change how well a certain kind of plant grows?</p> <p>Concept 2: How can pollination involve animals?</p> <p>Concept 3: How can seeds travel to new places?</p> <p>Application of Concepts - Engineering Challenge: How can humans pollinate a plant?</p> <p>Application of Concepts - Socratic Seminar: How did plants arrive and grow on Surtsey?</p>
Module 4 Biomes	<p>Concept 1: How can we describe an environment?</p> <p>Concept 2: How do biomes compare with one another?</p> <p>Concept 3: How does biodiversity compare between environments?</p> <p>Application of Concepts - Engineering Challenge: What kinds of plants and animals live in our schoolyard?</p> <p>Application of Concepts - Socratic Seminar: How do different areas of Yellowstone National Park compare with one another?</p>

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