Pacing Guide

Level K Module 2

Life

Each *PhD Science® TEKS Edition* Level K lesson requires 35 minutes of instructional time. This guide is intended for teachers who are providing in-person instruction. This guide presents lesson objectives and activities by concept and multiple pacing options to allow teachers to maximize instructional time while remaining responsive to student needs. Choose one or more options for each lesson. Note that pacing options do not omit parts of lessons.

Pacing Option Key

Lesson Split: This symbol identifies single lessons teachers may split across 2 days.

Cross-Curricular Activity: This symbol identifies parts of lessons teachers may incorporate during instructional time for other content areas, such as English, math, social and emotional learning, and center time. Teachers may implement these parts before or after science instruction; for example, if the class reads a *PhD Science* core text during English instruction, students can discuss the core text during science instruction rather than reading the full text during that time.

Investigation Preparation: This symbol identifies preparation the teacher may do in advance of an investigation. This advance preparation does not interfere with student learning.

Instructional Routine: This symbol identifies opportunities to use alternative instructional routines. See the Implementation Guide for information on instructional routines.

Teacher Think Aloud: This symbol identifies activities that are appropriate for a teacher Think Aloud. Suggested primarily for use during station activities, this option allows completion of these activities as a class. During a teacher Think Aloud, the teacher assumes the role of a student and verbalizes the thought process of a student completing the activity to engage students with intentional questioning techniques. The teacher may also ask students to model appropriate procedures and participate in collaborative conversations.

Shared Media Experience: This symbol identifies media (e.g., videos, images) that the teacher may share with the whole class rather than having students view the media individually or in groups. After students observe the media as a class, they complete an activity.

Focal Point: This symbol identifies parts of lessons teachers should emphasize. For example, in an activity with multiple resources (e.g., videos, texts, charts), a focal point identifies the most important resources, thus ensuring the coherence of the lessons.

Instructional Note: This symbol identifies parts of lessons that have instructional notes that describe time-saving strategies. Examples of such instructional notes are Differentiation supports that provide sentence frames for writing assignments and Teacher Notes that suggest alternative activities.

Module at a Glance

This module contains 35 lessons. Even with lesson splits, this module should take no more than 46 days to complete. This maximum number of days ensures the implementation of all Level K modules within a school year that has 150 days of science instruction.

Life

Anchor Phenomenon: Life in the Mojave Desert **Essential Question: How is Mara different from the Wonderland of Rocks?**	**Recommended Number of Days**	**TEKS and ELPS Alignment**
Concept 1 (Lessons 1–5): Plants **Focus Question:** Why are plants able to live in some environments but not others? Plants live and grow in environments that have the water and light that the plants need.	5–8 days	K.2A, K.2C, K.2D, K.2E, K.3C, K.4B, K.9B, K.10A, K.10B ELPS: 1C, 2E, 3D
Application of Concepts (Lessons 6–10): Science Challenge **Phenomenon Question:** What do plants need to live? Plants need water and light to live.	5–8 days	K.2A, K.2B, K.2C, K.2D, K.2E, K.3B, K.4A, K.8A, K.9B ELPS: 2E, 3H
Concept 1 (Lessons 11–17): Plants **Focus Question:** Why are plants able to live in some environments but not others? Plants live and grow in environments that have the water and light that the plants need.	7–9 days	K.2C, K.2D, K.2E, K.3B, K.4B, K.7C, K.8A, K.9A, K.9B, K.10A, K.10B, K.10C, K.10D ELPS: 2E, 3H, 3J, 4A
Concept 2 (Lessons 18–25): Animals **Focus Question:** How do animals get what they need to live? Animals get what they need from natural resources in their environments.	8–11 days	K.2A, K.2C, K.2D, K.2E, K.3C, K.4A, K.4B, K.7C, K.9A, K.9B, K.10A, K.10B ELPS: 2E, 3E, 3G, 3H
Concept 3 (Lessons 26–32): Humans **Focus Question:** How do humans get what they need to live? Humans use natural resources for everything they do.	7 days	K.2A, K.2C, K.2D, K.2E, K.3C, K.4A, K.4B, K.5A, K.7A, K.7B, K.7C, K.9A, K.9B ELPS: 3E, 3F, 3H, 4C

Application of Concepts (Lessons 33–35): End-of-Module, Socratic Seminar, Assessment, and Debrief **Essential Question:** How is Mara different from the Wonderland of Rocks? Plants and animals, including humans, get what they need from natural resources.	3 days	K.2E, K.4B, K.7A, K.7B, K.7C, K.9A, K.9B, K.10A, K.10B, K.10C, K.10D ELPS: 3E, 3F

Year at a Glance

This year at a glance chart shows where all three modules fit in a year. To ensure completion of each module, it is recommended to teach science five days a week.

Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Module 1			Module 2			Module 3				

Module 2: Life

Concept 1: Why are plants able to live in some environments but not others? 5–8 days

Focus Standards

K.9B Examine evidence that living organisms have basic needs such as food, water, and shelter for animals and air, water, nutrients, sunlight, and space for plants.

K.10A Sort plants and animals into groups based on physical characteristics such as color, size, body covering, or leaf shape.

K.10B Identify basic parts of plants and animals.

Lessons 1–3: Life in the Mojave Desert			Lessons 4–5: Mojave Desert Plants
Lesson 1: Record observations of the Mojave Desert.	**Lesson 2:** Use observations to construct a model of a desert environment.	**Lesson 3:** Develop an anchor model to compare two desert environments.	**Lesson 4:** Observe and identify the basic parts of plants.
Day 1: Launch through Examine Scientist's Notebook **Day 2:** Explore Wonderland of Rocks through Land	**Day 1:** Launch through Explore Mara **Day 2:** Model Desert Environments through Land Use Differentiation note in Model Desert Environments.	**Day 1:** Launch through Develop Anchor Model **Day 2:** Develop Driving Question Board through Land	Use alternative instructional routine in Observe and Describe Different Plants.

Lessons 4–5: Mojave Desert Plants
Lesson 5: Sort and describe plants by their physical characteristics.

Science Challenge: What do plants need to live? 5–8 days

Focus Standards

K.8A Observe and describe weather changes from day to day and over seasons.

K.9B Examine evidence that living organisms have basic needs such as food, water, and shelter for animals and air, water, nutrients, sunlight, and space for plants.

Lessons 6–10: Science Challenge

Lesson 6: Develop an investigation plan to determine what bean plants need to live.	**Lesson 7:** Make initial observations of bean plants.	**Lesson 8:** Analyze ongoing observations of bean plants.	**Lesson 9:** Use evidence to support a claim about what bean plants need to live.
Day 1: Launch through Make a Claim **Day 2:** Plan Investigation through Land	Use inline Teacher Note in Launch for Lessons 7–9. Use second Teacher Note in Record Initial Observations for Lessons 7–9.	**Day 1:** Launch through Discuss Claims and Evidence **Day 2:** Record and Share Observations through Land	**Day 1:** Launch through Observe Plant Changes **Day 2:** Analyze Plant Changes through Land Use a timer to pace plant observations in Observe Plant Changes. Instead of using a Gallery walk, display data charts as students notice and interpret changes in the plants in Observe Plant Changes.
Science Challenge	**Science Challenge**	**Science Challenge**	**Science Challenge**

Lessons 6–10: Science Challenge
Lesson 10: Use multiple examples to support the claim that plants need water and light to live.
 Use a timer to pace the sorting of cards in Sort and Analyze Healthy and Unhealthy Plant Cards.  Use an alternative collaborative conversation routine in Create Anchor Chart.
Science Challenge

Concept 1: Why are plants able to live in some environments but not others? 7–9 days

Focus Standards

K.7C Give examples of ways rocks, soil, and water are useful.

K.8A Observe and describe weather changes from day to day and over seasons.

K.9A Differentiate between living and nonliving things based upon whether they have basic needs and produce offspring.

K.9B Examine evidence that living organisms have basic needs such as food, water, and shelter for animals and air, water, nutrients, sunlight, and space for plants.

K.10A Sort plants and animals into groups based on physical characteristics such as color, size, body covering, or leaf shape.

K.10B Identify basic parts of plants and animals.

K.10C Identify ways that young plants resemble the parent plant.

K.10D Observe changes that are part of a simple life cycle of a plant: seed, seedling, plant, flower, and fruit.

Lessons 11–12: Plant Growth and Change		**Lessons 13–16: Plants and Their Environments**	
Lesson 11: Determine that plants grow and change during their life cycle.	**Lesson 12:** Identify similarities between seedlings and adult plants.	**Lesson 13:** Determine how Joshua trees in the Wonderland of Rocks get the water and light they need to live.	**Lesson 14:** Determine how desert fan palms in Mara get the water and light they need to live.
Day 1: Launch through Determine the Life Cycle of Plants (Bell Pepper Plant Growth Cards) **Day 2:** Determine the Life Cycle of Plants (Pumpkin Plant Growth Cards) through Land			Use first Teacher Note in Look for Water in Mara.

Lessons 13–16: Plants and Their Environments		Lesson 17: Plants
Lesson 15: Develop a model that shows which plants can live in the Wonderland of Rocks and which plants can live in Mara.	**Lesson 16:** Update the anchor model and anchor chart.	**Lesson 17:** Use knowledge of what plants need to explain how a plant can live in an unexpected place.
Use Differentiation note in Match Plants to Their Environments.	Use an alternative collaborative conversation routine in Update Anchor Model.	**Day 1:** Launch through Conceptual Checkpoint Part B **Day 2:** Conceptual Checkpoint Part C through Land
		Conceptual Checkpoint

Concept 2: How do animals get what they need to live? 8–11 days

Focus Standards

K.7C Give examples of ways rocks, soil, and water are useful.

K.9A Differentiate between living and nonliving things based upon whether they have basic needs and produce offspring.

K.9B Examine evidence that living organisms have basic needs such as food, water, and shelter for animals and air, water, nutrients, sunlight, and space for plants.

K.10A Sort plants and animals into groups based on physical characteristics such as color, size, body covering, or leaf shape.

K.10B Identify basic parts of plants and animals.

Lessons 18–20: Animal Needs			**Lessons 21–22: Air**
Lesson 18: Make and record observations of a desert animal.	**Lesson 19:** Analyze observations to determine whether there is evidence to support several claims about what desert animals need to live.	**Lesson 20:** Identify patterns to determine what all animals need to live.	**Lesson 21:** Analyze observations to identify patterns about animal breathing.
 Use an alternative collaborative conversation routine in Identify Possible Claims.  Use Differentiation note in Observe and Record Animal Actions.	 Predetermine three motions in Observe Other Desert Animals.	 Use Differentiation note in Use Patterns to Make a Claim.	 Use Content Area Connection note in Record Evidence.

<table>
<tr><th colspan="2">Lessons 21–22: Air</th><th colspan="2">Lessons 23–24: Animals and Their Environments</th><th>Lesson 25: Animals</th></tr>
<tr><td colspan="2">Lesson 22: Use evidence to support a claim about whether animals need air to live.</td><td colspan="2">Lesson 23: Determine that different kinds of animals use different resources for food, water, and shelter.
Lesson 24: Develop evidence-based claims about where in the Mojave Desert different kinds of animals live.</td><td>Lesson 25: Use knowledge about what animals need to support a claim about how a squirrel can live in a city environment.</td></tr>
<tr><td colspan="2">Day 1: Launch through Distinguish Between Evidence and Opinion
Day 2: Practice Supporting a Claim with Evidence through Land

Use an alternative collaborative conversation routine in Practice Supporting a Claim with Evidence.

Use Differentiation note in Practice Supporting a Claim with Evidence.</td><td colspan="2">Day 1: Launch through Read About Desert Animals
Day 2: Compare Mojave Desert Animals through Land</td><td>Day 1: Launch through Conceptual Checkpoint Part B
Day 2: Debrief Conceptual Checkpoint through Land

Conceptual Checkpoint</td></tr>
</table>

Concept 3: How do humans get what they need to live? 7 days

Focus Standards

K.7A Observe, describe, and sort rocks by size, shape, color, and texture.

K.7B Observe and describe physical properties of natural sources of water, including color and clarity.

K.7C Give examples of ways rocks, soil, and water are useful.

K.9A Differentiate between living and nonliving things based upon whether they have basic needs and produce offspring.

K.9B Examine evidence that living organisms have basic needs such as food, water, and shelter for animals and air, water, nutrients, sunlight, and space for plants.

Lesson 26: Human Needs	**Lessons 27–29: Human Use of Natural Resources**		
Lesson 26: Identify patterns to determine what humans need to live.	**Lesson 27:** Determine how humans who lived in the Mojave Desert long ago got what they needed to live.	**Lesson 28:** Describe how humans who lived in the Mojave Desert long ago used natural resources from their environment.	**Lesson 29:** Describe how humans today use natural resources to get what they need to live.
Use Differentiation note in Use Patterns to Make a Claim.	Use first Teacher Note in Wonder About Mojave Desert People. Use first Teacher Note in Gather Information from Interview.	Think aloud one example in Identify Mojave Desert Natural Resources.	
Lessons 30–31: Describing Natural Resources		**Lesson 32: Humans**	
Lesson 30: Observe and describe properties of rocks.	**Lesson 31:** Observe and describe properties of water.	**Lesson 32:** Make and support a claim about objects at school that come from natural resources.	
Use first Teacher Note in Observe, Describe, and Sort Rocks.	Use first Teacher Note in Observe and Describe Water Samples.	**Conceptual Checkpoint**	

Application of Concepts: How is Mara different from the Wonderland of Rocks? — 3 days

Focus Standards

K.7A Observe, describe, and sort rocks by size, shape, color, and texture.

K.7B Observe and describe physical properties of natural sources of water, including color and clarity.

K.7C Give examples of ways rocks, soil, and water are useful.

K.9A Differentiate between living and nonliving things based upon whether they have basic needs and produce offspring.

K.9B Examine evidence that living organisms have basic needs such as food, water, and shelter for animals and air, water, nutrients, sunlight, and space for plants.

K.10A Sort plants and animals into groups based on physical characteristics such as color, size, body covering, or leaf shape.

K.10B Identify basic parts of plants and animals.

K.10C Identify ways that young plants resemble the parent plant.

K.10D Observe changes that are part of a simple life cycle of a plant: seed, seedling, plant, flower, and fruit.

Lessons 33–35: Life in the Mojave Desert		
Lesson 33: Explain how Mara is different from the Wonderland of Rocks.	**Lesson 34:** Explain how plants, animals, and humans at Mesa Verde got what they needed to live and grow.	**Lesson 35:** Explain how plants, animals, and humans get what they need to live and grow.
 Use Teacher Note in Engage in Socratic Seminar.	**End-of-Module Assessment**	**End-of-Module Debrief**
Socratic Seminar		

Texas Essential Knowledge and Skills (TEKS)

Focus Standards	
K.7	Earth and space. The student knows that the natural world includes earth materials. The student is expected to
	K.7A observe, describe, and sort rocks by size, shape, color, and texture;
	K.7B observe and describe physical properties of natural sources of water, including color and clarity; and
	K.7C give examples of ways rocks, soil, and water are useful.
K.8	Earth and space. The student knows that there are recognizable patterns in the natural world and among objects in the sky. The student is expected to
	K.8A observe and describe weather changes from day to day and over seasons.
K.9	Organisms and environments. The student knows that plants and animals have basic needs and depend on the living and nonliving things around them for survival. The student is expected to
	K.9A differentiate between living and nonliving things based upon whether they have basic needs and produce offspring; and
	K.9B examine evidence that living organisms have basic needs such as food, water, and shelter for animals and air, water, nutrients, sunlight, and space for plants.
K.10	Organisms and environments. The student knows that organisms resemble their parents and have structures and processes that help them survive within their environments. The student is expected to
	K.10A sort plants and animals into groups based on physical characteristics such as color, size, body covering, or leaf shape;
	K.10B identify basic parts of plants and animals;
	K.10C identify ways that young plants resemble the parent plant; and
	K.10D observe changes that are part of a simple life cycle of a plant: seed, seedling, plant, flower, and fruit.
Investigation and Reasoning Standards	
K.1	Scientific investigation and reasoning. The student conducts classroom and outdoor investigations following home and school safety procedures and uses environmentally appropriate and responsible practices. The student is expected to
	K.1A identify, discuss, and demonstrate safe and healthy practices as outlined in Texas Education Agency-approved safety standards during classroom and outdoor investigations, including wearing safety goggles or chemical splash goggles, as appropriate, washing hands, and using materials appropriately; and
	K.1B demonstrate how to use, conserve, and dispose of natural resources and materials such as conserving water and reusing or recycling paper, plastic, and metal.

K.2	Scientific investigation and reasoning. The student develops abilities to ask questions and seek answers in classroom and outdoor investigations. The student is expected to
	K.2A ask questions about organisms, objects, and events observed in the natural world;
	K.2B plan and conduct simple descriptive investigations;
	K.2C collect data and make observations using simple tools;
	K.2D record and organize data and observations using pictures, numbers, and words; and
	K.2E communicate observations about simple descriptive investigations.
K.3	Scientific investigation and reasoning. The student knows that information and critical thinking are used in scientific problem solving. The student is expected to
	K.3B make predictions based on observable patterns in nature; and
	K.3C explore that scientists investigate different things in the natural world and use tools to help in their investigations.
K.4	Scientific investigation and reasoning. The student uses age-appropriate tools and models to investigate the natural world. The student is expected to
	K.4A collect information using tools, including computing devices, hand lenses, primary balances, cups, bowls, magnets, collecting nets, and notebooks; timing devices; non-standard measuring items; weather instruments such as demonstration thermometers; and materials to support observations of habitats of organisms such as terrariums and aquariums; and
	K.4B use the senses as a tool of observation to identify properties and patterns of organisms, objects, and events in the environment.