Pacing Guide

Level K Module 2

LIFE

Each *PhD Science® Texas* 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. Teacher choice days are also included in this pacing guide to allow for review, reteaching, assessment, and extension activities.

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.

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.

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

Module at a Glance

This module contains 36 lessons. Even with lesson splits and teacher choice days, this module should take no more than 49 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?

Concept	Recommended Number of Days	TEKS Alignment	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 what the plants need.	5–8 days	K.1A, K.1D, K.1E, K.1F, K.1G, K.3B, K.3C, K.4B, K.5A, K.5C, K.5F, K.12A, K.13A	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.1B, K.1D, K.1E, K.1F, K.1G, K.2B, K.2C, K.3B, K.5A, K.5B, K.5C, K.5G, K.12A, K.13C	2E, 3H
Concept 1 (Lessons 11–19): Plants **Focus Question:** Why are plants able to live in some environments but not others? Plants live and grow in environments that have what the plants need.	9–12 days	K.1A, K.1C, K.1E, K.1F, K.1G, K.2B, K.3A, K.3B, K.3C, K.5A, K.5B, K.5D, K.5G, K.11, K.12A, K.13A, K.13C, K.13D	2D, 2E, 3H, 4A, 4C
Concept 2 (Lessons 20–27): 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.1A, K.1E, K.1F, K.1G, K.2B, K.3A, K.3B, K.3C, K.4B, K.5A, K.5D, K.5F, K.11, K.12A, K.12B, K.13B	2C, 2E, 3B, 3E, 3H, 4D
Concept 3 (Lessons 28–33): Humans **Focus Question:** How do humans get what they need to live? Humans use natural resources for everything they do.	6 days	K.1C, K.1D, K.1E, K.1F, K.1G, K.2B, K.3A, K.3B, K.5A, K.5D, K.5F, K.6, K.10A, K.11, K.12B, K.13B	3E, 3F, 3H, 4C

Concept	Recommended Number of Days	TEKS Alignment	ELPS Alignment
Application of Concepts (Lessons 34–36): 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.	3–4 days	K.1A, K.1E, K.2B, K.3A, K.3B, K.3C, K.5A, K.5B, K.5D, K.5F, K.10A, K.11, K.12A, K.12B, K.13A, K.13B, K.13C, K.13D	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 5 days a week.

Module 1	Module 2	Module 3
August	November	February
September	December	March
October	January	April

MODULE 2

Life

CONCEPT 1

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

Lessons 1–3: Life in the Mojave Desert

TEKS K.12A, K.1A, K.1D, K.1E, K.1F, K.1G, K.3B, K.3C, K.4B, K.5C **ELPS** 3D

Lessons	Pacing Options
Lesson 1: Record observations of the Mojave Desert.	**Day 1:** Launch through Examine Scientist's Notebook **Day 2:** Explore Wonderland of Rocks through Land
Lesson 2: Use observations to construct a model of a desert environment.	**Day 1:** Launch through Explore Mara **Day 2:** Model Desert Environments through Land Use Differentiation note in Model Desert Environments.
Lesson 3: Develop an anchor model to compare two desert environments.	**Day 1:** Launch through Develop Anchor Model **Day 2:** Develop Driving Question Board through Land

Lessons 4–5: Mojave Desert Plants

TEKS K.13A, K.1E, K.3B, K.3C, K.4B, K.5A, K.5F **ELPS** 2E

Lessons	Pacing Options
Lesson 4: Observe and identify the basic parts of plants.	Use fourth sidebar Teacher Note in Observe, Describe, and Identify Plant Parts. Use alternative instructional routine in Observe and Describe Different Plants.
Lesson 5: Sort and describe plants by their physical characteristics.	None

APPLICATION OF CONCEPTS

What do plants need to live? 5–8 days

Lessons 6–10: Science Challenge

TEKS K.12A, K.13C, K.1B, K.1D, K.1E, K.1F, K.1G, K.2B, K.2C, K.3B, K.5A, K.5B, K.5C, K.5G **ELPS** 2E, 3H

Lessons	Pacing Options
Lesson 6: Develop an investigation plan to determine what bean plants need to live.	**Day 1:** Launch through Make a Claim **Day 2:** Plan Investigation through Land **Science Challenge**
Lesson 7: Make initial observations of bean plants.	Use inline Teacher Note in Launch for Lessons 7 through 9. Use second Teacher Note in Record Initial Observations for Lessons 7 through 9. **Science Challenge**
Lesson 8: Analyze ongoing observations of bean plants.	**Day 1:** Launch through Discuss Claims and Evidence **Day 2:** Record and Share Observations through Land **Science Challenge**
Lesson 9: Use evidence to support a claim about what bean plants need to live.	**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. **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? 9–12 days

Lessons 11–12: Plant Needs

TEKS K.11, K.12A, K.1E, K.3B, K.3C, K.5A, K.5B, K.5G **ELPS** 2D

Lessons	Pacing Options
Lesson 11: Make observations to determine that plants need nutrients.	Use an alternative collaborative conversation routine in Observe and Analyze Plant Photographs.
Lesson 12: Predict how plants are affected when they do not have enough space or air.	None

Lessons 13–14: Plant Growth and Change

TEKS K.13C, K.13D, K.1C, K.1E, K.1F, K.3A, K.5A, K.5D **ELPS** 2E, 3H

Lessons	Pacing Options
Lesson 13: Determine that plants grow and change during their life cycle.	**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/Green Pea Plant Growth Cards) through Land
Lesson 14: Identify similarities between seedlings and adult plants.	Instead of using a Gallery Walk, display each group's matched seedling and adult plant cards and have groups share how they matched the cards in Match Seedlings to Adult Plants.

Lessons 15–18: Plants and Their Environments

TEKS K.12A, K.13A, K.1A, K.1E, K.1F, K.1G, K.2B, K.3A, K.3B, K.5D **ELPS** 4C

Lessons	Pacing Options
Lesson 15: Determine how Joshua trees in the Wonderland of Rocks get what they need to live.	**Day 1:** Launch through Notice and Wonder About Joshua Trees **Day 2:** Look for Water in the Wonderland of Rocks through Land
Lesson 16: Determine how desert fan palms in Mara get what they need to live.	Use first Teacher Note in Look for Water in Mara.
Lesson 17: Develop a model that shows which plants can live in the Wonderland of Rocks and which plants can live in Mara.	Use Differentiation note in Start a Model of Mojave Desert Environments. Use Differentiation note in Match Plants to Their Environments.
Lesson 18: Update the anchor model and anchor chart.	Use an alternative collaborative conversation routine in Update Anchor Model.

Lesson 19: Plants

TEKS K.12A, K.13A, K.13C, K.13D, K.1E, K.1F, K.3B, K.5A **ELPS** 4A

Lessons	Pacing Options
Lesson 19: Use knowledge of what plants need to explain how a plant can live in an unexpected place.	**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

Lessons 20–22: Animal Needs

TEKS K.12A, K.12B, K.13B, K.1A, K.1E, K.1F, K.2B, K.4B, K.5A, K.5F **ELPS** 3B

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

Lessons 23–24: Air

TEKS K.12B, K.1E, K.2B, K.3A, K.3B, K.3C, K.5A **ELPS** 2E, 3E

Lessons	Pacing Options
Lesson 23: Analyze observations to identify patterns about animal breathing.	Prepare class chart by adding Phenomenon Question and claims before the lesson in Make a Claim. Use first Teacher Note in Make a Claim. Use Content Area Connection note in Record Evidence.
Lesson 24: Use evidence to support a claim about whether animals need air to live.	**Day 1:** Launch through Distinguish Between Evidence and Opinion **Day 2:** Practice Supporting a Claim with Evidence through Land Use Differentiation note in Practice Supporting a Claim with Evidence.

Lessons 25–26: Animals and Their Environments

TEKS K.11, K.12B, K.13B, K.1E, K.1G, K.3A, K.5D **ELP** 2C, 2E, 4D

Lessons	Pacing Options
Lesson 25: Determine that different kinds of animals use different resources for food, water, and shelter.	**Day 1:** Launch through Read About Desert Animals **Day 2:** Compare Mojave Desert Animals through Land
Lesson 26: Develop evidence-based claims about where in the Mojave Desert different kinds of animals live.	None

Lessons 27: Animals

TEKS K.12B, K.13B, K.1E, K.5F **ELPS** 3H

Lessons	Pacing Options
Lesson 27: Use knowledge about what animals need to support a claim about how a squirrel can live in a city environment.	**Day 1:** Launch through Conceptual Checkpoint Part B **Day 2:** Debrief Conceptual Checkpoint through Land **Conceptual Checkpoint**

CONCEPT 3

How do humans get what they need to live? 6 days

Lesson 28: Human Needs

TEKS K.12B, K.13B, K.1E, K.2B, K.3B, K.5A **ELPS** 3F

Lessons	Pacing Options
Lesson 28: Identify patterns to determine what humans need to live.	Use Differentiation note in Use Patterns to Make a Claim.

Lessons 29–31: Human Use of Natural Resources

TEKS K.11, K.12B, K.1E, K.1F, K.1G, K.3A, K.3B, K.5D **ELPS** 4C

Lessons	Pacing Options
Lesson 29: Determine how humans who lived in the Mojave Desert long ago got what they needed to live.	Use first Teacher Note in Wonder About Mojave Desert People. Use first Teacher Note in Gather Information from Interview.
Lesson 30: Describe how humans who lived in the Mojave Desert long ago used natural resources from their environment.	Think Aloud one example in Identify Mojave Desert Natural Resources.
Lesson 31: Describe how humans today use natural resources to get what they need to live.	None

Lesson 32: Describing Rocks

TEKS K.6, K.10A, K.11, K.1C, K.1D, K.1E, K.1F, K.5F **ELPS** 3H

Lessons	Pacing Options
Lesson 32: Observe and describe properties of rocks.	Use first Teacher Note in Observe, Describe, and Sort Rocks.

Lesson 33: Humans

TEKS K.11, K.1F, K.2B, K.3A, K.5A **ELPS** 3E

Lessons	Pacing Options
Lesson 33: Make and support a claim about objects at school that come from natural resources.	**Conceptual Checkpoint**

APPLICATION OF CONCEPTS

How is Mara different from the Wonderland of Rocks? 3–4 days

Lessons 34–36: End-of-Module Socratic Seminar, Assessment, and Debrief

TEKS K.10A, K.11, K.12A, K.12B, K.13A, K.13B, K.13C, K.13D, K.1A, K.1E, K.2B, K.3A, K.3B, K.3C, K.5A, K.5B, K.5D, K.5F

ELPS 3E, 3F

Lessons	Pacing Options
Lesson 34: Explain how Mara is different from the Wonderland of Rocks.	Use Teacher Note in Engage in Socratic Seminar. **Socratic Seminar**
Lesson 35: Explain how plants, animals, and humans at Mesa Verde got what they needed to live and grow.	**End-of-Module Assessment**
Lesson 36: Explain how plants, animals, and humans get what they need to live and grow.	**End-of-Module Assessment Debrief**
Teacher Choice Day	Review, reteach, assess, or complete extension activities.

Texas Essential Knowledge and Skills (TEKS)

Content Standards

K.6 Matter and its properties. The student knows that objects have physical properties that determine how they are described and classified. The student is expected to

- **K.6** identify and record observable physical properties of objects, including shape, color, texture, and material, and generate ways to classify objects.

K.10 Earth and space. The student knows that the natural world includes earth materials and systems that can be observed. The student is expected to

- **K.10A** describe and classify rocks by the observable properties of size, shape, color, and texture.

K.11 Earth and space. The student knows that earth materials are important to everyday life. The student is expected to

- **K.11** observe and generate examples of practical uses for rocks, soil, and water.

K.12 Organisms and environments. The student knows that plants and animals depend on the environment to meet their basic needs for survival. The student is expected to

- **K.12A** observe and identify the dependence of plants on air, sunlight, water, nutrients in the soil, and space to grow; and
- **K.12B** observe and identify the dependence of animals on air, water, food, space, and shelter.

K.13 Organisms and environments. The student knows that organisms resemble their parents and have structures and undergo processes that help them interact and survive within their environments. The student is expected to

- **K.13A** identify the structures of plants, including roots, stems, leaves, flowers, and fruits;
- **K.13B** identify the different structures that animals have that allow them to interact with their environment such as seeing, hearing, moving, and grasping objects;
- **K.13C** identify and record the changes from seed, seedling, plant, flower, and fruit in a simple plant life cycle; and
- **K.13D** identify ways that young plants resemble the parent plant.

Scientific and Engineering Practices

K.1 Scientific and engineering practices. The student asks questions, identifies problems, and plans and safely conducts classroom, laboratory, and field investigations to answer questions, explain phenomena, or design solutions using appropriate tools and models. The student is expected to

- **K.1A** ask questions and define problems based on observations or information from text, phenomena, models, or investigations;
- **K.1B** use scientific practices to plan and conduct simple descriptive investigations and use engineering practices to design solutions to problems;
- **K.1C** identify, describe, and demonstrate safe practices during classroom and field investigations as outlined in Texas Education Agency-approved safety standards;

K.1D use tools, including hand lenses, goggles, trays, cups, bowls, sieves or sifters, notebooks, terrariums, aquariums, samples (rocks, sand, soil, loam, gravel, clay, seeds, and plants), windsocks, demonstration thermometers, rain gauges, straws, ribbons, non-standard measuring items, blocks or cubes, tuning forks, various flashlights, small paper cups, items that roll, noise makers, hot plates, opaque objects, transparent objects, foil pie pans, foil muffin cups, wax paper, Sun-Moon-Earth models, and plant life cycle models to observe, measure, test, and compare;

K.1E collect observations and measurements as evidence;

K.1F record and organize data using pictures, numbers, words, symbols, and simple graphs; and

K.1G develop and use models to represent phenomena, objects, and processes or design a prototype for a solution to a problem.

K.2 Scientific and engineering practices. The student analyzes and interprets data to derive meaning, identify features and patterns, and discover relationships or correlations to develop evidence-based arguments or evaluate designs. The student is expected to

K.2B analyze data by identifying significant features and patterns; and

K.2C use mathematical concepts to compare two objects with common attributes.

K.3 Scientific and engineering practices. The student develops evidence-based explanations and communicates findings, conclusions, and proposed solutions. The student is expected to

K.3A develop explanations and propose solutions supported by data and models;

K.3B communicate explanations and solutions individually and collaboratively in a variety of settings and formats; and

K.3C listen actively to others' explanations to identify important evidence and engage respectfully in scientific discussion.

K.4 Scientific and engineering practices. The student knows the contributions of scientists and recognizes the importance of scientific research and innovation on society. The student is expected to

K.4B identify scientists and engineers such as Isaac Newton, Mae Jemison, and Ynés Mexía and explore what different scientists and engineers do.

Recurring Themes and Concepts

K.5 Recurring themes and concepts. The student uses recurring themes and concepts to make connections across disciplines. The student is expected to

K.5A identify and use patterns to describe phenomena or design solutions;

K.5B investigate and predict cause-and-effect relationships in science;

K.5C describe the properties of objects in terms of relative size (scale) and relative quantity;

K.5D examine the parts of a whole to define or model a system;

K.5F describe the relationship between the structure and function of objects, organisms, and systems; and

K.5G describe how factors or conditions can cause objects, organisms, and systems to either change or stay the same.

English Language Proficiency Standards (ELPS)

2C Learn new language structures, expressions, and basic and academic vocabulary heard during classroom instruction and interactions.

2D Monitor understanding of spoken language during classroom instruction and interactions and seek clarification as needed.

2E Use visual, contextual, and linguistic support to enhance and confirm understanding of increasingly complex and elaborated spoken language.

3B Expand and internalize initial English vocabulary by learning and using high-frequency English words necessary for identifying and describing people, places, and objects, by retelling simple stories and basic information represented or supported by pictures, and by learning and using routine language needed for classroom communication.

3D Speak using grade-level content area vocabulary in context to internalize new English words and build academic language proficiency.

3E Share information in cooperative learning interactions.

3F Ask and give information ranging from using a very limited bank of high-frequency, high-need, concrete vocabulary, including key words and expressions needed for basic communication in academic and social contexts, to using abstract and content-based vocabulary during extended speaking assignments.

3H Narrate, describe, and explain with increasing specificity and detail as more English is acquired.

4A Learn relationships between sounds and letters of the English language and decode (sound out) words using a combination of skills such as recognizing sound-letter relationships and identifying cognates, affixes, roots, and base words.

4C Develop basic sight vocabulary, derive meaning of environmental print, and comprehend English vocabulary and language structures used routinely in written classroom materials.

4D Use prereading supports such as graphic organizers, illustrations, and pretaught topic-related vocabulary and other prereading activities to enhance comprehension of written text.