



# Pacing Guide

## Level 2 Module 1

### MATTER

#### with Spotlight Lessons on Weather Events

Each *PhD Science*® *Texas* Level 2 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 34 lessons plus 14 spotlight lessons on Weather Events. Even with lesson splits and teacher choice days, this module should take no more than 52 days to complete. This maximum number of days ensures the implementation of all Level 2 modules within a school year that has 150 days of science instruction.

## Matter

### ANCHOR PHENOMENON:

#### Birds Building Nests

### ESSENTIAL QUESTION:

Why do different kinds of birds use certain materials to build their nests?

| Concept  | Recommended Number of Days | TEKS Alignment  | ELPS Alignment                 |
|--|----------------------------|---|--------------------------------|
| <p><b>Concept 1 (Lessons 1–16):</b> Properties of Matter<br/> <b>Focus Question:</b> How can we describe and classify matter?<br/>           Matter can be described and classified by its properties.</p>   | 16–18 days                 | 2.1A, 2.1B, 2.1C, 2.1D, 2.1E, 2.1F, 2.1G, 2.2A, 2.2B, 2.2C, 2.3A, 2.3B, 2.5A, 2.5C, 2.5D, 2.5E, 2.6A, 2.6C, 2.7A, 2.7B  | 1D, 1E, 2E, 3C, 3D, 3E, 4A, 4C |
| <p><b>Concept 2 (Lessons 17–22):</b> Matter Can Change<br/> <b>Focus Question:</b> How can matter change?<br/>           Matter can change in different ways.</p>  | 6 days                     | 2.1A, 2.1B, 2.1C, 2.1D, 2.1E, 2.1F, 2.1G, 2.2A, 2.5B, 2.5E, 2.5G, 2.6A, 2.6B  | 3D, 3F                         |
| <p><b>Concept 3 (Lessons 23–26):</b> Suitability<br/> <b>Focus Question:</b> Why is understanding the properties of matter useful?<br/>           The properties of matter make materials suited to different purposes.</p>  | 4 days                     | 2.1A, 2.1D, 2.1F, 2.1G, 2.2C, 2.2D, 2.3B, 2.4A, 2.4B, 2.5E, 2.5F, 2.6A, 2.6B, 2.6C, 2.7A, 2.11A                         | 3H, 4C, 4F                     |
| <p><b>Application of Concepts (Lessons 27–31):</b><br/>           Engineering Challenge<br/> <b>Phenomenon Question:</b> What materials are suited to building a shelter that provides protection from rain?<br/>           People can apply their knowledge of materials and their properties to solve problems.</p>  | 5 days                     | 2.1A, 2.1B, 2.1C, 2.1D, 2.1E, 2.1F, 2.1G, 2.2B, 2.2D, 2.3A, 2.3B, 2.3C, 2.4A, 2.4B, 2.5F, 2.6A, 2.6B, 2.6C, 2.7A, 2.11A | 3D, 3E                         |
| <p><b>Application of Concepts (Lessons 32–34):</b><br/>           End-of-Module Socratic Seminar, Assessment, and Debrief<br/> <b>Essential Question:</b> Why do different kinds of birds use certain materials to build their nests?<br/>           Understanding the properties of matter and the ways matter can change helps people use materials for specific purposes.</p> | 3–4 days                   | 2.1C, 2.1D, 2.1E, 2.1G, 2.3A, 2.3B, 2.3C, 2.5E, 2.5G, 2.6A, 2.6B, 2.6C, 2.7A, 2.7B, 2.11A                               | 3D, 3E                         |

## Spotlight Lessons on Weather Events

| Lesson Sets   | Recommended Number of Days | TEKS Alignment  | ELPS Alignment |
|---|----------------------------|---|----------------|
| <p><b>Lessons 1–2:</b> 1900 Galveston Hurricane</p> <p><b>Phenomenon Question:</b> What happened in Galveston, Texas, in 1900?</p> <p>Severe weather can cause damage to land and structures.</p>   | 2 days                     | 2.1A, 2.1G, 2.5G, 2.10C   | 1A, 4F         |
| <p><b>Lessons 3–5:</b> Describing Weather Conditions</p> <p><b>Phenomenon Question:</b> How can we describe what the weather is like where we live?</p> <p>People use tools and observations to collect information about weather and to describe weather conditions.</p> | 3 days                     | 2.1C, 2.1D, 2.1E, 2.1F, 2.3A, 2.5A, 2.5G, 2.10B                     | 2E, 3D         |
| <p><b>Lessons 6–7:</b> Weather Patterns</p> <p><b>Phenomenon Question:</b> How do we use data to describe patterns in weather?</p> <p>Analyzing weather data over time can reveal patterns.</p>   | 2 days                     | 2.1F, 2.2B, 2.5A, 2.10B   | 3E             |
| <p><b>Lessons 8–10:</b> Severe Weather</p> <p><b>Phenomenon Question:</b> What happens when the weather becomes severe?</p> <p>Severe weather events have weather hazards that can affect humans and land.</p>  | 3 days                     | 2.1B, 2.1C, 2.1D, 2.1E, 2.1F, 2.1G, 2.5B, 2.5G, 2.10A, 2.10C        | 2C             |
| <p><b>Lessons 11–12:</b> Severe Weather Patterns</p> <p><b>Phenomenon Question:</b> How can people prepare for and protect themselves from hurricanes?</p> <p>People can use patterns to predict severe weather events.</p>   | 2 days                     | 2.1G, 2.2B, 2.3A, 2.4A, 2.5A, 2.5G, 2.10C                           | 2I             |
| <p><b>Lessons 13–14:</b> Flash Floods</p> <p><b>Phenomenon Question:</b> How can severe weather cause flash floods?</p> <p>Severe weather can cause flash floods.</p>   | 2–3 days                   | 2.1A, 2.1E, 2.1F, 2.1G, 2.2B, 2.3A, 2.5A, 2.5G, 2.10A, 2.10B, 2.10C | 4F             |

# 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

August  
September  
October

## Module 2

November  
December  
January

## Module 3

February  
March  
April









## MODULE 1 Matter

### CONCEPT 1

## How can we describe and classify matter? 16–18 days





### Lessons 1–3: Bird Nests

**TEKS** 2.6A, 2.6C, 2.1A, 2.1C, 2.1D, 2.1E, 2.1G, 2.2A, 2.5C, 2.5D **ELPS** 2E, 4C, 4D

| Lessons   | Pacing Options   |
|---|--|
| <b>Lesson 1:</b> Develop an initial model of a bird nest by exploring materials birds might use to build nests. |  <b>Day 1:</b> Launch through Develop Initial Models<br> <b>Day 2:</b> Compare Bird Nests through Land<br> Use an alternative collaborative conversation routine in Compare Bird Nests. |
| <b>Lesson 2:</b> Observe materials different kinds of birds use to build their nests.                           |  <b>Day 1:</b> Launch through Read About Bird Nests<br> <b>Day 2:</b> Develop Anchor Model through Land  |
| <b>Lesson 3:</b> Compare spoons and forks to describe properties of materials and objects.                      |  Use third Teacher Note in Examine Objects and Materials.   |





### Lessons 4–7: Solids and Liquids

**TEKS** 2.6A, 2.7A, 2.1A, 2.1B, 2.1C, 2.1D, 2.1E, 2.1F, 2.2B, 2.3B, 2.5E **ELPS** 3E, 4A

| Lessons   | Pacing Options   |
|---|--|
| <b>Lesson 4:</b> Observe objects and materials to describe their properties.          |  Use an alternative collaborative conversation routine in Launch.<br> Think Aloud one sample in Observe Samples. |
| <b>Lesson 5:</b> Classify objects and materials by their properties.                  |  Think Aloud first round of classification of samples in Classify Objects and Materials.  |
| <b>Lesson 6:</b> Investigate solids and liquids to observe their properties.          |  Use Differentiation note in Explore Solids and Liquids.  |
| <b>Lesson 7:</b> Demonstrate that pushes and pulls may change the shape of an object. | None   |



**Lessons 8–10: Pushes and Pulls**

**TEKS** 2.7B, 2.1B, 2.1E, 2.1F, 2.3A, 2.3B, 2.5A **ELPS** 1D, 1E

| Lessons   | Pacing Options  |
|---|---|
| <p><b>Lesson 8:</b> Plan an investigation to demonstrate how the strength of a push or a pull changes an object’s motion.</p> |  Use an alternative collaborative conversation routine in Describe and Model Strengths of Pushes and Pulls.  |
| <p><b>Lesson 9:</b> Investigate how the strength of a push and pull changes an object’s motion.</p>                           |  Use Teacher Note in Investigate Pushes and Pulls.   |
| <p><b>Lesson 10:</b> Use evidence from an investigation to support a claim.</p>   |  Use an alternative collaborative conversation routine in Evaluate Evidence.<br> Use Differentiation note in Evaluate Evidence. |




**Lessons 11–12: Defining Matter**

**TEKS** 2.6A, 2.7A, 2.1B, 2.1C, 2.1D, 2.1E, 2.2C, 2.5A, 2.5C **ELPS** 3D, 3E

| Lessons  | Pacing Options   |
|--|--|
| <p><b>Lesson 11:</b> Investigate objects and materials to determine that weight is a property of matter.</p> |  Think Aloud one set of objects in Compare Weight of Objects.    |
| <p><b>Lesson 12:</b> Investigate objects and materials to determine that volume is a property of matter.</p> |  Use inline English Language Development note in Define Matter. |


**Lessons 13–14: Pieces of Objects**

**TEKS** 2.6A, 2.6C, 2.7A, 2.1C, 2.1D, 2.1E, 2.5D, 2.5E **ELPS** 3C

| Lessons  | Pacing Options  |
|--|---|
| <p><b>Lesson 13:</b> Build two different structures by using the same set of smaller pieces.</p> |  Use an alternative instructional routine in Compare Block Structures.   |
| <p><b>Lesson 14:</b> Observe parts of an orange to identify their different properties.</p>      |  Use Differentiation note in Observe Orange Parts.<br> Use second Teacher Note in Observe Orange Parts. |

**Lessons 15–16: Properties of Matter**

**TEKS** 2.6A, 2.1D, 2.1E, 2.1G, 2.3B, 2.5E **ELPS** 2E




| Lessons   | Pacing Options  |
|---|---|
| <p><b>Lesson 15:</b> Observe and classify the materials in honey bee nests.</p>                     |  Use Differentiation note in Conceptual Checkpoint.<br><p><b>Conceptual Checkpoint</b></p> |
| <p><b>Lesson 16:</b> Observe honey bee nests and identify ways to describe and classify matter.</p> | <p>None</p>   |

## CONCEPT 2

### How can matter change? 6 days



#### Lessons 17–19: Reversible Changes

**TEKS** 2.6A, 2.6B, 2.1A, 2.1B, 2.1C, 2.1D, 2.1E, 2.1F, 2.1G, 2.2A, 2.5B, 2.5E, 2.5G **ELPS** 3D

| Lessons   | Pacing Options   |
|---|--|
| <b>Lesson 17:</b> Heat objects to determine a cause and effect relationship between heating and kind of matter. |  Think Aloud properties of an object in Observe and Record Object Properties. |
| <b>Lesson 18:</b> Compare the properties of objects before heating, during heating, and after cooling.          |  Think Aloud color band thermometer in Launch.                                |
| <b>Lesson 19:</b> Model the reversible changes that heating and cooling cause in kind of matter.                |  Think Aloud ice in Model Changes in Kind of Matter.                          |

#### Lessons 20–21: Irreversible Changes

**TEKS** 2.6B, 2.1B, 2.1C, 2.1E, 2.1F, 2.5E, 2.5G **ELPS** 3F

| Lessons  | Pacing Options  |
|--|---|
| <b>Lesson 20:</b> Observe the properties of a slice of bread before and after toasting.    |  Project bread slices while students observe and record properties in Observe Bread Before and After Toasting. |
| <b>Lesson 21:</b> Gather evidence that toasting bread demonstrates an irreversible change. |  Project bread slices while students observe and record properties in Observe Cooled Toasted Bread.            |

#### Lesson 22: Matter Can Change





**TEKS** 2.6A, 2.6B, 2.1A, 2.1G, 2.5B, 2.5G **ELPS** 3D

| Lessons   | Pacing Options               |
|---|------------------------------|
| <b>Lesson 22:</b> Investigate and explain the changes beeswax undergoes during heating and cooling. | <b>Conceptual Checkpoint</b> |




## CONCEPT 3

**Why is understanding the properties of matter useful?** 4 days**Lessons 23–25: Material Suitability****TEKS** 2.6A, 2.6C, 2.7A, 2.11A, 2.1A, 2.1D, 2.1F, 2.1G, 2.2C, 2.2D, 2.4A, 2.4B, 2.5E, 2.5F **ELPS** 3H, 4D, 4F

| Lessons   | Pacing Options  |
|---|---|
| <b>Lesson 23:</b> Explain how the properties of a crayon make it suited to writing and drawing.                       |  Read <i>The Crayon Man: The True Story of the Invention of Crayola Crayons</i> by Natascha Biebow and Steven Salerno (2019) in Read About Edwin Binney before the lesson.   |
| <b>Lesson 24:</b> Test different writing tools to determine how well each is suited to writing on different surfaces. |  Use first Teacher Note in Test Writing Tools.<br> Prepare class graph with axes and title in Graph and Analyze Data before the lesson. |
| <b>Lesson 25:</b> Model how the properties of nest building materials are suited to building bird nests.              |  Read <i>The Crayon Man: The True Story of the Invention of Crayola Crayons</i> in Launch before the lesson.   |

**Lesson 26: Suitability****TEKS** 2.6A, 2.6B, 2.6C, 2.2D, 2.3B, 2.5E **ELPS** 4C

| Lessons  | Pacing Options  |
|--|---|
| <b>Lesson 26:</b> Explain why beeswax is suited to building honey bee nests. |  Use Content Area Connection: English note in Conceptual Checkpoint.<br><b>Conceptual Checkpoint</b> |





## APPLICATION OF CONCEPTS

## What materials are suited to building a shelter that provides protection from rain?

5 days

**Lessons 27–31: Engineering Challenge**

**TEKS** 2.6A, 2.6B, 2.6C, 2.7A, 2.11A, 2.1A, 2.1B, 2.1C, 2.1D, 2.1E, 2.1F, 2.1G, 2.2B, 2.2D, 2.3A, 2.3B, 2.3C, 2.4A, 2.4B, 2.5F **ELPS** 3D, 3E


| Lessons   | Pacing Options  |
|---|---|
| <b>Lesson 27:</b> Apply the engineering design process to build a shelter that provides protection from rain. |  Read <i>A Nest is Noisy</i> before the lesson.<br><b>Engineering Challenge</b>  |
| <b>Lesson 28:</b> Apply the engineering design process to build a shelter that provides protection from rain. |  Use sidebar Teacher Note in Launch.<br> Think Aloud one material in Imagine a Shelter.<br><b>Engineering Challenge</b> |
| <b>Lesson 29:</b> Apply the engineering design process to build a shelter that provides protection from rain. | <b>Engineering Challenge</b>  |
| <b>Lesson 30:</b> Apply the engineering design process to build a shelter that provides protection from rain. |  Use Differentiation note in Create a Shelter.<br><b>Engineering Challenge</b>   |
| <b>Lesson 31:</b> Apply the engineering design process to build a shelter that provides protection from rain. | <b>Engineering Challenge</b>  |

APPLICATION OF CONCEPTS

## Why do different kinds of birds use certain materials to build their nests? 3–4 days

**Lessons 32–34: End-of-Module Socratic Seminar, Assessment, and Debrief**

**TEKS** 2.6A, 2.6B, 2.6C, 2.7A, 2.7B, 2.11A, 2.1C, 2.1D, 2.1E, 2.1G, 2.3A, 2.3B, 2.3C, 2.5E, 2.5G **ELPS** 3D, 3E



| Lessons  | Pacing Options  |
|--|---|
| <p><b>Lesson 32:</b> Explain why different kinds of birds use certain materials to build their nests. (Socratic Seminar)</p>   |  Use first Teacher Note in Engage in Socratic Seminar.<br><br><p style="color: #6a3d9a; font-weight: bold;">Socratic Seminar</p> |
| <p><b>Lesson 33:</b> Explain how the materials of the original <i>Little Dancer Aged Fourteen</i> sculpture are each suited to their purpose. (End-of-Module Assessment)</p> | <p style="color: #6a3d9a; font-weight: bold;">End-of-Module Assessment</p>  |
| <p><b>Lesson 34:</b> Explain how matter can be described and used. (End-of-Module Debrief)</p>   | <p style="color: #6a3d9a; font-weight: bold;">End-of-Module Assessment Debrief</p>  |
| <p><b>Teacher Choice Day</b></p>   | <p>Review, reteach, assess, or complete extension activities.</p>   |

SPOTLIGHT LESSONS

## Weather Events 14 days




**Lessons 1–2: 1900 Galveston Hurricane**

**TEKS** 2.10C, 2.1A, 2.1G, 2.5G **ELPS** 1A, 4F

| Lessons  | Pacing Options   |
|--|--|
| <p><b>Lesson 1:</b> Examine photographs and quotes to learn about what happened during the 1900 Galveston hurricane.</p> |  Use an alternative collaborative conversation routine in Land. |
| <p><b>Lesson 2:</b> Develop a model to describe the damage that occurred during the 1900 Galveston hurricane.</p>        |  Use Differentiation note in Develop Initial Models.            |


**Lessons 3–5: Describing Weather Conditions**

**TEKS** 2.10B, 2.1C, 2.1D, 2.1E, 2.1F, 2.3A, 2.5A, 2.5G **ELPS** 2E, 3D

| Lessons   | Pacing Options   |
|---|--|
| <b>Lesson 3:</b> Review different kinds of weather, and describe cloud cover and wind conditions. |  Complete weather observations in Launch before the lesson.   |
| <b>Lesson 4:</b> Define precipitation and investigate ways to measure precipitation.              |  Think Aloud one rain gauge station in Measure Precipitation. |
| <b>Lesson 5:</b> Measure temperature and record temperature and other weather information.        |  Use Teacher Note in Land.                                    |






**Lessons 6–7: Weather Patterns**

**TEKS** 2.10B, 2.1F, 2.2B, 2.5A **ELPS** 3E

| Lessons   | Pacing Options  |
|---|---|
| <b>Lesson 6:</b> Graph and analyze data to describe changes in temperature throughout a year.   |  Use Differentiation note in Analyze Temperature Data. |
| <b>Lesson 7:</b> Graph and analyze data to describe changes in precipitation throughout a year. | None  |


**Lessons 8–10: Severe Weather**

**TEKS** 2.10A, 2.10C, 2.1B, 2.1C, 2.1D, 2.1E, 2.1F, 2.1G, 2.5B, 2.5G **ELPS** 2C

| Lessons   | Pacing Options   |
|---|--|
| <b>Lesson 8:</b> Describe different kinds of severe weather events and their potential effects. |  Think Aloud one station in Identify Weather Hazards and Their Effects.<br> Share severe weather videos and pictures as students observe and record in Identify Weather Hazards and Their Effects. |
| <b>Lesson 9:</b> Use models to investigate how wind moves land materials.                       |  Use Teacher Note in Investigate Effects of Wind on Land.<br> Use Differentiation note in Investigate Effects of Wind on Land.   |
| <b>Lesson 10:</b> Use models to investigate how water moves land materials.                     |  Use Differentiation note in Investigate Effects of Water on Land.  |



**Lessons 11–12: Severe Weather Patterns**

**TEKS** 2.10C, 2.1G, 2.2B, 2.3A, 2.4A, 2.5A, 2.5G **ELPS** 2I

| Lessons  | Pacing Options   |
|--|--|
| <b>Lesson 11:</b> Identify patterns related to when and where hurricanes occur.              | None   |
| <b>Lesson 12:</b> Compare weather forecasting methods from 1900 with the methods used today. |  Use Differentiation note in Compare Weather Forecasting. |

**Lessons 13–14: Flash Floods**

**TEKS** 2.10A, 2.10B, 2.10C, 2.1A, 2.1E, 2.1F, 2.1G, 2.2B, 2.3A, 2.5A, 2.5G **ELPS** 4F

| Lessons  | Pacing Options  |
|--|---|
| <b>Lesson 13:</b> Explain how severe weather can cause flash floods. (End-of-Spotlight Assessment)         |  Use an alternative instructional routine in Launch.<br><b>End-of-Spotlight Assessment</b>   |
| <b>Lesson 14:</b> Explain how severe weather can cause flash floods. (End-of-Spotlight Assessment Debrief) |  Use Differentiation note in Reflect on Recurring Themes and Concepts in Spotlight Learning.<br><b>End-of-Spotlight Assessment Debrief</b> |
| <b>Teacher Choice Day</b>  | Review, reteach, assess, or complete extension activities.  |

# Texas Essential Knowledge and Skills (TEKS)

## Content Standards

- 2.6** Matter and its properties. The student knows that matter has physical properties that determine how it is described, classified, and used. The student is expected to
- 2.6A** classify matter by observable physical properties, including texture, flexibility, and relative temperature, and identify whether a material is a solid or liquid;
  - 2.6B** conduct a descriptive investigation to explain how physical properties can be changed through processes such as cutting, folding, sanding, melting, or freezing; and
  - 2.6C** demonstrate that small units such as building blocks can be combined or reassembled to form new objects for different purposes and explain the materials chosen based on their physical properties.
- 2.7** Force, motion, and energy. The student knows that forces cause changes in motion and position in everyday life. The student is expected to
- 2.7A** explain how objects push on each other and may change shape when they touch or collide; and
  - 2.7B** plan and conduct a descriptive investigation to demonstrate how the strength of a push and pull changes an object's motion.
- 2.10** Earth and space. The student knows that the natural world includes earth materials that can be observed in systems and processes. The student is expected to
- 2.10A** investigate and describe how wind and water move soil and rock particles across the Earth's surface such as wind blowing sand into dunes on a beach of a river carrying rocks as it flows;
  - 2.10B** measure, record, and graph weather information, including temperature and precipitation; and
  - 2.10C** investigate different types of severe weather events such as a hurricane, tornado, or flood and explain that some events are more likely than others in a given region.
- 2.11** Earth and space. The student knows that earth materials and products made from these materials are important to everyday life. The student is expected to
- 2.11A** distinguish between natural and manmade resources.

## Scientific and Engineering Practices

- 2.1** 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
- 2.1A** ask questions and define problems based on observations or information from text, phenomena, models, or investigations;
  - 2.1B** use scientific practices to plan and conduct simple descriptive investigations and use engineering practices to design solutions to problems;
  - 2.1C** identify, describe, and demonstrate safe practices during classroom and field investigations as outlined in Texas Education Agency–approved safety standards;
  - 2.1D** use tools, including hand lenses, goggles, heat-resistant gloves, trays, cups, bowls, beakers, notebooks, stream tables, soil, sand, gravel, flowering plants, student thermometer, demonstration thermometer, rain gauge, flashlights, ramps, balls, spinning tops, drums, tuning forks, sandpaper, wax paper, items that are flexible, non-flexible items, magnets, hot plate, aluminum foil, Sun-Moon-Earth model, and frog and butterfly life cycle models to observe, measure, test, and compare;
  - 2.1E** collect observations and measurements as evidence;
  - 2.1F** record and organize data using pictures, numbers, words, symbols, and simple graphs; and
  - 2.1G** develop and use models to represent phenomena, objects, and processes or design a prototype for a solution to a problem.
- 2.2** 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
- 2.2A** identify basic advantages and limitations of models such as their size, properties, and materials;
  - 2.2B** analyze data by identifying significant features and patterns;
  - 2.2C** use mathematical concepts to compare two objects with common attributes; and
  - 2.2D** evaluate a design or object using criteria to determine if it works as intended.
- 2.3** Scientific and engineering practices. The student develops evidence-based explanations and communicates findings, conclusions, and proposed solutions. The student is expected to
- 2.3A** develop explanations and propose solutions supported by data and models,
  - 2.3B** communicate explanations and solutions individually and collaboratively in a variety of settings and formats; and
  - 2.3C** listen actively to others' explanations to identify important evidence and engage respectfully in scientific discussion.
- 2.4** Scientific and engineering practices. The student knows the contributions of scientists and recognizes the importance of scientific research and innovation for society. The student is expected to
- 2.4A** explain how science or an innovation can help others and
  - 2.4B** identify scientists and engineers such as Alexander Graham Bell, Marie Daly, Mario Molina, and Jane Goodall and explore what different scientists and engineers do.

## Recurring Themes and Concepts

- 2.5** Recurring themes and concepts. The student uses recurring themes and concepts to make connections across disciplines. The student is expected to
- 2.5A** identify and use patterns to describe phenomena or design solutions;
  - 2.5B** investigate and predict cause-and-effect relationships in science;
  - 2.5C** measure and describe the properties of objects in terms of size and quantity;
  - 2.5D** examine the parts of a whole to define or model a system;
  - 2.5E** identify forms of energy and properties of matter;
  - 2.5F** describe the relationship between structure and function of objects, organisms, and systems; and
  - 2.5G** describe how factors or conditions can cause objects, organisms, and systems to either change or stay the same.

## English Language Proficiency Standards (ELPS)

- 1A** Use prior knowledge and experiences to understand meanings in English.
- 1D** Speak using learning strategies such as requesting assistance, employing non-verbal cues, and using synonyms and circumlocution (conveying ideas by defining or describing when exact English words are not known).
- 1E** Internalize new basic and academic language by using and reusing it in meaningful ways in speaking and writing activities that build concept and language attainment.
- 2C** Learn new language structures, expressions, and basic and academic vocabulary heard during classroom instruction and interactions.
- 2E** Use visual, contextual, and linguistic support to enhance and confirm understanding of increasingly complex and elaborated spoken language.
- 2I** Demonstrate listening comprehension of increasingly complex spoken English by following directions, retelling or summarizing spoken messages, responding to questions and requests, collaborating with peers, and taking notes commensurate with content and grade-level needs.
- 3C** Speak using a variety of grammatical structures, sentence lengths, sentence types, and connecting words with increasing accuracy and ease as more English is acquired.
- 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.
- 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.
- 4F** Use visual and contextual support and support from peers and teachers to read grade-appropriate content area text, enhance and confirm understanding, and develop vocabulary, grasp of language structures, and background knowledge needed to comprehend increasingly challenging language.