FBISD
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TEACHING & LEARNING

Department of Teaching & Learning

2nd Grade Science
Overview
2024 - 2025

This document is designed to provide parents/guardians/community an overview of the curriculum taught in the FBISD classroom. This document supports families in understanding the learning goals for the course, and how students will demonstrate what they know and are able to do. The overview offers suggestions or possibilities to reinforce learning at home.

Included at the end of this document, you will find:

- A glossary of curriculum components
- The content area instructional model
- Parent resources for this content area

To advance to a particular grading period, click on a link below.

The standards below describe ways in which students are expected to engage with the content. The Scientific and Engineering Practices (SEPs) describe practices that students need to do in the classroom in order to learn the content. The Recurring Themes and Concepts (RTCs) describe how students need to think about the content in order to learn it.

Scientific and Engineering Practices (SEPs) TEKS:

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.
2.1G Develop and use models to represent phenomena, objects, and processes or design a prototype for a solution to a problem.
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.
2.2D Evaluate a design or object using criteria to determine if it works as intended.
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.
2.3C Listen actively to others' explanations to identify important evidence and engage respectfully in scientific discussion.
2.4A Explain how science or an innovation can help others.
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 (RTCs) TEKS:

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 Describe the properties of objects in terms of relative size (scale) and relative 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 the structure and function of objects, organisms, and systems.
2.5G Describe how factors or conditions can cause objects, organisms, and systems to either change or stay the same.

Grading Period 1

Unit 1: Matter and its Properties

Estimated Date Range: 8/8/24 – 9/20/24
Estimated Time Frame: 31 Days

Unit Overview:
In this unit, students will begin their science learning by engaging in discussions about safety in science and the scientific practices that scientists implement when conducting investigations. The unit focuses on using the physical properties of matter to determine how it is described, classified, and used. Students will expand their understanding about the physical properties of objects learned in previous grade levels (color, shape, texture, material of an object, size, weight) to now include flexibility, relative temperature, and to identify whether a material is a solid or liquid. Additionally, students will conduct descriptive investigations to explain how the physical properties of objects can be changed through a variety of processes, including cutting, folding, sanding, melting, or freezing. Students will be able to describe the physical properties of an object after it has changed. Moreover, students will demonstrate how small units, or parts, can be combined or reassembled to form new objects with a different purpose, and explain why the materials were chosen based on the physical properties. These specific materials are connected to the object's purpose. Students will build on these concepts in 3rd grade as they deepen their understanding of how observable, measurable, and testable physical properties can be changed or modified and used for various purposes.

At home connections:

- Have your child find objects around the house and classify them by different physical properties.
- As you cook breakfast, lunch, or dinner, have your child compare different things as you heat or cool them.
- Your child can demonstrate how they can change different objects by cutting, folding, sanding, and melting (e.g. cutting fabric, folding clothes, etc.).

Concepts within Unit #1 Link to TEKS	**Success Criteria for this Concept** *Students can…*
Concept #1: Launching Scientific Mindsets 2.1B, 2.1C	• Identify safe practices that must be followed when conducting classroom and field investigations. • Describe the use of safety equipment to keep everyone safe. • Describe the Scientific and Engineering Practices that they will use to conduct investigations and design solutions to problems. • Describe how scientists' work and engineers' work are different from each other. • Describe common mindsets that they will use to conduct investigations and design solutions to problems. • Set up their interactive notebook.
Concept #2: Physical Properties 2.6A	• Analyze data to identify patterns to classify matter by observable physical properties: Color, shape, texture, material matter is made of, and physical state (solid and liquid) • Analyze data to identify patterns to classify matter by measurable physical properties: Relative temperature (using the height of the red line on a thermometer as a point of reference), Size (measuring length and width using non-standard units of measurements), Weight (non-standard units of measurements)

	• Analyze data to identify patterns to classify matter by testable physical properties: Flexibility (flexible or not flexible)
Concept #3: Changes in Matter 2.6B	• Construct an explanation about the cause-and-effect relationship of how different processes can change the physical properties of matter, including: Cutting, folding, sanding, melting, and freezing.
Concept #4: Combining Objects 2.6D	• Construct an argument from evidence in order to explain how materials chosen for the object help it to function in a different manner.

Unit 2: Force and Motion

Estimated Date Range: 9/23/24 – 10/9/24
Estimated Time Frame: 11 Days

Unit Overview:
The unit focuses on how forces can cause change in motion and position in everyday life. Students will expand their understanding about pushes by explaining how objects can push on each other and may change shape as the result of a touch or collision. Students will then apply this understanding as they plan and conduct a descriptive investigation to demonstrate and explain how the strength of a push and pull changes an object's position and motion. Students will build on these concepts in 3rd grade as they deepen their understanding of how forces have patterns in their interactions with objects. In 3rd grade, students will also begin to learn how objects forces can act on an object by contact or at a distance. This unit continues in grading period 2.

At home connections:

- Provide your child with objects and ask them to make them collide. Discuss how the collision affects the motion of the objects.
- Use different strength of forces to push objects. Discuss with your child how the strength of a force changes the motion of the objects.

Concepts within Unit #2 Link to TEKS	**Success Criteria for this Concept** *Students can…*
Concept #1: Collisions 2.7A	• Construct an argument from evidence in order to explain the cause-and-effect relationship of how the strength may affect the shape of objects as they collide.
Concept #2: Changes in Motion 2.7B	• Plan and conduct an investigation using models to demonstrate the cause-and-effect relationship of how the strength of a push and pull changes an object's motion.

Grading Period 2

Unit 2: Force and Motion (Continued)

Estimated Date Range: 10/16/24 – 10/23/24
Estimated Time Frame: 6 Days

Unit Overview:
In this portion of Unit 2, students will continue to apply this understanding as they plan and conduct a descriptive investigation to demonstrate and explain how the strength of a push and pull changes an object's position and motion.

At home connections:

- Provide your child with objects and ask them to make them collide. Discuss how the collision affects the motion of the objects.
- Use different strength of forces to push objects. Discuss with your child how the strength of a force changes the motion of the objects.

Concepts within Unit #2 Link to TEKS	**Success Criteria for this Concept** *Students can…*
Concept #2: Changes in Motion (Continued) 2.7B	• Plan and conduct an investigation using models to demonstrate the cause-and-effect relationship of how the strength of a push and pull changes an object's motion.

Unit 3: Energy

Estimated Date Range: 10/24/24 – 11/15/24
Estimated Time Frame: 15 Days

Unit Overview:
The unit focuses on how sound affects objects and can be used to communicate. We hear sounds when matter vibrates. Students will then use this information to explain how different levels of sound are present in our everyday life. The more quickly matter vibrates, the louder the sound. As matter vibrates more slowly, we hear a softer sound. Lastly, students will then apply their understanding of sound energy and vibrations to design and build a device that communicates over distances.

At home connections:

- Find objects around the house that produce sound and have your child discuss how they sound after increasing and decreasing the energy (e.g., turning the volume of a television up and down

Concepts within Unit #3 Link to TEKS	**Success Criteria for this Concept** *Students can…*
Concept #1: Sound 2.8A, 28B	• Construct an explanation to explain the cause-and-effect relationship of how sound energy can make matter vibrate, and vibrating matter can make sound. • Construct an explanation to explain how sound energy is used in everyday life.
Concept #2: Communicating with Sound 2.8C	• Use tools and materials and the cause-and-effect relationship of sound and vibrations to design and build a device that uses sound to communicate over a distance.

Unit 4: Patterns in the Natural World

Estimated Date Range: 11/18/24 – 12/06/24
Estimated Time Frame: 10 Days

Unit Overview:
The unit focuses on the recognizable patterns in the natural world and among objects in the sky. Students will observe objects in the sky, including the Sun and the Moon. The Sun is a star that provides light and heat, and the Moon reflects the light of the Sun. Additionally, objects in the sky are more visible and can appear different with a telescope than with the unaided eye.

At home connections:

- Go outside with your child and observe the Moon at night. Discuss what causes the Moon to be illuminated.

Concepts within Unit #4 Link to TEKS	Success Criteria for this Concept *Students can…*
Concept #1: Objects in the Sky 2.9A, 29B	• Use evidence to describe the Sun as a star that provides light and heat on Earth. • Use evidence to explain the cause-and-effect relationship of how the Moon reflects the Sun's light. • Use observations to identify and use patterns to compare how objects in the sky can appear different with a tool than with an unaided eye.

Unit 5: Earth Materials and Systems

Estimated Date Range: 12/9/24 – 12/20/24

Estimated Time Frame: 10 Days

Unit Overview:

In this unit, student will study that the natural world includes earth materials that can be observed in systems and processes. The student is expected to investigate how wind and water move soil and rocks from one place to another. This unit continues in grading period 4.

At home connections:

- Take your child outside. Pour water on soil and rocks and observe what happens to the rocks and soil. Ask your child to create a model explaining how water or wind move soil and rocks.

Concepts within Unit #5 Link to TEKS	Success Criteria for this Concept *Students can…*
Concept #1: Changes on Earth's Surface 2.10A	• 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 or a river carrying rocks as it flows.

Grading Period 3

Unit 5: Earth Materials and Systems (Continued)

Estimated Date Range: 1/9/25 – 1/31/25
Estimated Time Frame: 16 Days

Unit Overview:
In this portion of Unit 5, students will continue to build on the ideas about weather learned in first grade. In second grade, students will measure and graph different weather components, including temperature and precipitation. As students continue to study weather, they will investigate different severe weather events and explain in which regions they are more likely to occur.

At home connections:

- Go outside with your child and gather information about weather including temperature and amount of precipitation. Ask your child to create a graph with the data collected.

Concepts within Unit #5 **Link to TEKS**	**Success Criteria for this concept** *Students can…*
Concept #2: Weather 3.10B	• Measure, record, and graph weather information, including temperature and precipitation.
Concept #3: Severe Weather Events 3.10C	• Describe different types of severe weather events. • Explain why some severe weather events are more likely than others to occur in a given region.

Unit 6: Natural Resources and their Management

Estimated Date Range: 2/3/25 – 2/21/25
Estimated Time Frame: 13 Days

Unit Overview:
In this unit, students will study that earth materials and products made from these materials are important to everyday life. The student is expected to distinguish between manmade and natural resources. In addition, students will study conservation and human impact on the planet can be limited by using the 3Rs (reuse, reduce, and recycle).

At home connections:

- Read with your child about ways to reduce human impact on the environment by engaging in reducing, reducing, and recycling materials.

Concepts within Unit #6 **Link to TEKS**	**Success Criteria for this concept** *Students can…*
Concept #1: Earth's Resources 2.11A	• Distinguish between natural and manmade resources.
Concept #2: Management of Earth's Resources 2.11B	• Describe how human impact can be limited by making choices to conserve and properly dispose of materials such as reducing use of, reusing, or recycling.

Unit 7: Interactions within Environments

Estimated Date Range: 2/24/25 – 3/7/25
Estimated Time Frame: 9 Days

Unit Overview:
The student knows that living organisms have basic needs that must be met through interactions within their environment. The student is expected to describe physical characteristics of various environments and how they support animals and plants that live there. This unit continues in grading period 4.

At home connections:

- Read books about different types of environments such as desert, rain forest, deciduous forest, savannah, tundra, etc. Ask your child to gather data from the reading. Discuss.

Concepts within Unit #7 **Link to TEKS**	**Success Criteria for this Concept** *Students can…*
Concept #1: Environments 2.12A	• Describe how the physical characteristics of environments support plants and animals within an ecosystem.

Grading Period 4

Unit 7: Interactions within Environments (Continued)

Estimated Date Range: 3/17/25 – 4/07/25
Estimated Time Frame: 15 Days

Unit Overview:
In this portion of Unit 7, as students study the interactions between organisms and their environment, students will be expected to create food chains to demonstrate how animals depend on other living things. Lastly, students will explain how some plants depend on other living things, wind, and water to reproduce. This unit continues in grading period 4.

At home connections:

- Read book about animals with your child. Make a list on how animals depend on each other and the environment to survive.
- With the data from the reading, ask your child to create a food chain for the animal in the book.

Concepts within Unit #7 Link to TEKS	**Success Criteria for this Concept** *Students can…*
Concept #2: Animals Depend on Living Things 2.12B	• Create and describe food chains identifying producers and consumers to demonstrate how animals depend on other living things.
Concept #3: Plants Depend on Animals, Wind, and Water 2.12C	• Explain how some plants depend on other living things, wind, or water for pollination and to move their seeds around.

Unit 8: Structures and Growth of Organisms

Estimated Date Range: 4/8/25 – 5/16/25
Estimated Time Frame: 27 Days

Unit Overview:
In this unit, students will observe, record, and compare how the physical characteristics and behaviors of animals and the physical characteristics of plants help them meet their basic needs. Student will also investigate and record some of the unique stages that insects undergo during their life cycle by observing the life cycle of the Painted Lady Butterfly in their classrooms. In 2nd grade students focus on how the physical characteristics of animals help them meet their basic needs for survival. Students will learn about insect life cycles for the first time and establish that insects undergo unique stages during their life cycles.

At home connections:

- Go outside and have your child find an animal and discuss how its physical characteristics and behaviors help it survive (e.g., a frog has a long tongue that helps it catch food)
- Go outside and have your child find a plant and discuss how its physical characteristics help it survive (e.g., a tree has roots that allow it to collect rainwater that soaks into the soil)

Concepts within Unit #8 Link to TEKS	**Success Criteria for this Concept** *Students can…*
Concept #1: Structures and Behaviors of Animals 2.13B, 2.13C	• Record and compare how the structures and behaviors of animals help them find and take in food, water, and air. • Record and compare how being part of a group helps animals obtain food, defend themselves, and cope with changes.
Concept #2: Structures of Plants 2.13A	• Identify the roots, stems, leaves, flowers, fruits, and seeds of plants and compare how those structures help different plants meet their basic needs for survival.
Concept #3: Unique Life Cycles of Animals 2.13D	• Describe some of the unique life cycles of animals where young animals do not resemble their parents, including butterflies and frogs.

Unit 9: Making Connections

Estimated Date Range: 5/19/25 – 5/29/25
Estimated Time Frame: 8 Days

Unit Overview:
In this unit, students will explore the STEM process, specifically focusing on using the engineering process to solve real-world problems. Students will have opportunities to follow the engineering design cycle to analyze a problem, brainstorm solutions, design a product, test, and re-design a product to find the best solution.

At home connections:

- Have your child find an object around the house and brainstorm ideas on how they think it could be improved.

Concepts within Unit #9 **Link to TEKS**	**Success Criteria for this Concept** *Students can…*
Concept #1: Student Projects 2.1A, 2.1B, 2.1C, 2.1D, 2.1E, 2.1F, 2.1G, 2.2A, 2.2B, 2.2C, 2.2D, 2.3A, 2.3B, 2.3C, 2.4A, 2.4B	• Use critical thinking and scientific problem solving to make informed decisions. • Analyze, evaluate, and critique scientific explanations by using evidence, logical reasoning, and experimental and observational testing.

Glossary of Curriculum Components

Overview– The content in this document provides an overview of the pacing and concepts covered in a subject for the year.
TEKS – Texas Essential Knowledge and Skills (TEKS) are the state standards for what students should know and be able to do.
Unit Overview – The unit overview provides a brief description of the concepts covered in each unit.
Concept – A subtopic of the main topic of the unit.
Success Criteria—a description of what it looks like to be successful in this concept.
Competency—Standards-Based Grading communicates students' understanding of the Texas Essentials Knowledge and Skills (TEKS). Using the TEKS, teachers developed grade-level competencies to communicate student progress in the Standards-Based gradebook. The competencies are the same for each grade-level content area (i.e., 1st grade math) across the district. Teachers report students' progress on the competencies using learning progressions.

Parent Resources

The following resources provide parents with ideas to support students' understanding. For sites that are password protected, your child will receive log-in information through their campus.

Resource	How it supports parents and students
EduSmart	This resource provides hand-on and vocabulary activities that are great to review the concepts learned in the classroom. Students sign in through their school account in Clever.
Pebble Go	This resource provides access to books for reading and learning more about concepts in the science content.
Britannica School	This is an information resource for elementary students. It has encyclopedia articles, multimedia, primary sources, games, and other learning resources that support student learning.
Ebsco Host	This online reference system serves all content areas.
World Book	World Book contains thousands of informational articles with stunning illustrations, videos, interactive maps, and activities.
National Geographic Kids	This resource is a fact-filled, fast-paced magazine created especially for ages 6 and up. It has an award-winning combination of photos, facts, and fun.

Instructional Model

An instructional model is the structure in which students engage in a particular content that ensures understanding of that content. In science, the instructional model is the 5E Instructional Model.

The 5E Model is an inquiry-based approach to teaching and learning science concepts over time. It is research-based and emphasizes that children build conceptual understanding and make meaning through experiences. Each "E" represents a stage in a learning cycle.

- Engage: Students interact with a phenomenon that sparks curiosity and assesses prerequisite knowledge or misconceptions.
- Explore: Students begin to interact with the content through hands-on investigations.
- Explain: Students connect the hands-on experience to the instruction of the concept using grade level appropriate academic vocabulary.
- Elaborate: Students apply the concept learned to a new context through problem solving or an additional hands-on experience.
- Evaluate: Evaluation of student understanding and progress occurs throughout the learning cycle.

As students learn each concept in the curriculum, they will have the opportunity to develop conceptual understanding as the teacher navigate the content as telling a story. The graphic below summarizes each component that occurs within each of the 5E stages.