1st Grade Science

Key Instructional Activities

The First Grade Georgia Standards of Excellence for science engage students in raising questions about the world around them and seeking answers by making observations. First graders use whole numbers to analyze scientific data. They identify how magnets pull on all things made of iron and either attract or repel other magnets. First graders create drawings that correctly depict something being described. The students are asked to plan and carry out simple investigations to understand patterns (shadows, sound, weather, and daily needs of plants and animals) observed in the world around them and make predictions based on these investigations. They follow safety rules.

These science standards complement our English/Language Arts and mathematics standards, enabling classroom instruction to reflect a clearer picture of the real world, where solving problems often requires skills and knowledge from multiple disciplines. Further, these standards are designed to provide an equitable, high-quality science education to all of our students.

HOUSTON COUNTY BOARD OF EDUCATION
HIGH-ACHIEVING STUDENTS

As the current science standards are implemented in schools, they will enable students to:

- *Develop a deeper understanding of science beyond memorizing facts, and*
- *Experience similar scientific and engineering practices as those used by professionals in the field.*

HOW WILL STUDENTS LEARN SCIENCE IN THE CLASSROOM?

Each year, students in Georgia should be able to demonstrate greater capacity for connecting knowledge across, and between, the physical sciences, life sciences, earth and space sciences, and engineering design.

During grades K–2, your child will begin to form connections between concepts and skills such as understanding relationships between objects, planning and carrying out investigations, and constructing explanations.

Classroom activities in Elementary School will look less like this:	And look more like this:
Students have infrequent exposure to science instruction or related activities.	Students engage with science concepts as a core part of instruction and are encouraged to connect lessons to their own personal experiences.
Students memorize the general structure and properties of matter.	Students use water and butter to investigate how some changes caused by heating or cooling can be reversed while others cannot.
Students learn that matter is made of particles.	Students collect data through activities, such as compressing air in a syringe, in order to create cognitive models of matter.
Students draw food webs for particular environments.	Students construct scientific arguments about how matter and energy move through ecosystems in different ways.
Students examine insects or bugs on the playground or during special events such as science fairs.	Students observe the life cycles of beetles, butterflies, and pea plants to identify patterns that are common to all living things.
Students draw static pictures of the sun to demonstrate where it is at different times of the day.	Students support claims about the movement of the sun by identifying an outdoor object that receives direct sunlight, then tracing an outline of its shadow at three different times during the day.
Students review the characteristics of various rocks and minerals.	Students gather evidence from rock formations to help determine the order in which rock layers were formed.
Students have infrequent exposure to discussions or activities related to engineering design.	Students consider or apply engineering design principles throughout each grade level.
Student discussions and activities are disconnected from mathematics or English/Language Arts instruction.	Student discussions and activities are thoughtfully integrated with mathematics and English/Language Arts instruction.

HOW CAN YOU SUPPORT YOUR CHILD'S SUCCESS?

With the adoption of more rigorous standards and changes in the way that science is being taught in the classroom, you will notice a change in how you will support your students at home.

Science instruction will occur as the students engage in the lessons and activities. In the past, you may have helped your child study using a textbook. Students will no longer be assigned a textbook but should come home with notes or worksheets from the lessons, which can be used to review concepts and start conversations about how they are applying these concepts.

Although Georgia's approach to teaching and learning K–12 science is different than the past, you can still actively support your child's success in the classroom!

1. Speak to your child's teacher(s) about how these important changes affect your school.
2. Ask your child's teacher thoughtful questions based on the information provided in this brochure.
3. Learn how you can help the teacher(s) reinforce classroom instruction at home.
4. Visit www.georgiastandards.org for more information.

1st Grade Science
System Pacing Overview

This guide provides an overview of what your student will learn in his or her first grade science course. It focuses on the key skills your student will learn, which will build a strong foundation for success in science studied throughout elementary, middle, and high school. This guide is based on the state-adopted Georgia Standards of Excellence.

August

Unit 1: Introduction to Weather Tools

Students will obtain, evaluate, and communicate weather data to identify weather patterns. Students will represent data in tables and/or graphs to identify and describe different types of weather and the characteristics of each type. Students will plan and carry out investigations on current weather conditions by observing, measuring with simple weather instruments (thermometer, wind vane, rain gauge), and recording weather data (temperature, precipitation, sky conditions, and weather events) in a periodic journal, on a calendar, and graphically.

August - November

Unit 2: Light and Sound

Students will obtain, evaluate, and communicate information to investigate light and sound. Students will use observations to construct an explanation of how light is required to make objects visible. Students will ask questions to identify and compare sources of light. Students will plan and carry out an investigation of shadows by placing objects at various points from a source of light. Students will construct an explanation supported by evidence that vibrating materials can make sound and that sound can make materials vibrate. Building on what they have learned in the unit, students will design a signal that can serve as an emergency alert using light and/or sound to communicate over a distance.

November - December

Unit 3: Magnets

Students will obtain, evaluate, and communicate information to demonstrate the effects of magnets on other magnets and other objects. Students will construct an explanation of how magnets are used in everyday life. (*Clarification statement:* Everyday life uses could include refrigerator magnets, toys, magnetic latches, and name tags.) Students will plan and carry out an investigation to demonstrate how magnets attract and repel each other and the effect of magnets on common objects.

January - March

Unit 4: Weather

Students will obtain, evaluate, and communicate weather data to identify weather patterns. Students will represent data collected during the year in tables and/or graphs to identify and describe different types of weather and the characteristics of each type. Students will ask questions to identify forms of precipitation such as rain, snow, sleet, and hailstones as either solid (ice) or liquid (water). Students will plan and carry out investigations on current weather conditions by observing, measuring with simple weather instruments (thermometer, wind vane, rain gauge), and recording weather data (temperature, precipitation, sky conditions, and weather events) in a periodic journal, on a calendar, and graphically. Students will analyze data to identify seasonal patterns of change. (*Clarification statement:* Examples could include temperature, rainfall/snowfall, and changes to the environment.)

March - May

Unit 5: Organisms

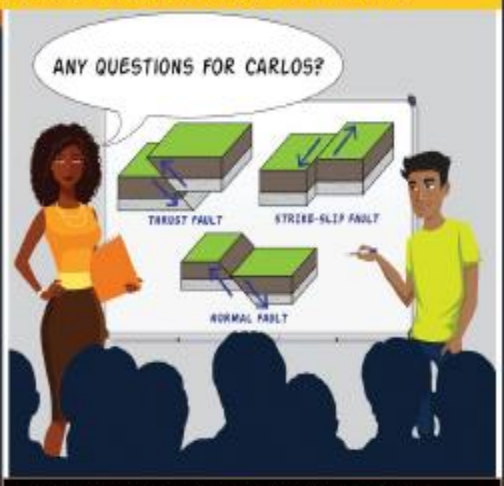
Building on life science standards from kindergarten, students will obtain, evaluate, and communicate information about the basic needs of plants and animals. Students will develop models to identify the parts of a plant—root, stem, leaf, and flower. Students will ask questions to compare and contrast the basic needs of plants (air, water, light, and nutrients) and animals (air, water, food, and shelter). Building on what they have learned in the unit, students will design a solution to ensure that a plant or animal has all of its needs met.

How today's students learn SCIENCE

OBSERVING, POSING QUESTIONS MAKING SENSE OF REAL-WORLD OBJECTS AND EVENTS (PHENOMENA)

IN PHYSICS CLASS, JENNY DISCOVERS WHY STATIC ELECTRICITY MAKES HER HAIR STAND UP.

DEVELOPING MODELS TO EXPLAIN A REAL-WORLD OBJECT OR EVENT



MEANWHILE, IN MS. STURGEON'S EARTH SCIENCE CLASS, CARLOS EXPLAINS WHY CALIFORNIA HAS SO MANY EARTHQUAKES.

PLANNING AND CARRYING OUT INVESTIGATIONS AND ANALYZING DATA

STUDENTS INVESTIGATE THE QUALITY OF WATER IN A NEARBY POND.

DESIGNING SOLUTIONS USING ENGINEERING AND TECHNOLOGY

AFTER MANY DESIGNS, DEJA BUILT THE STRONGEST BRIDGE IN THE CLASS.

DISCUSSING, EXPLAINING, AND USING EVIDENCE FOR IDEAS

IN THE GYM, BOBBY DEMONSTRATES AND EXPLAINS HIS IDEAS ABOUT ENERGY TRANSFER

Adapted from NGSS@NSTA