

3rd Grade Science

Key Instructional Activities

The Third Grade Georgia Standards of Excellence for science engage students in making observations and using information they obtained to answer questions. Their communication skills allow them to record findings, analyze data, and recognize the importance of keeping records of observations without making alterations. Third graders add and subtract whole numbers mentally, on paper, and with a calculator. They observe, construct, and measure objects using ordinary hand tools. They observe things with many parts and describe the ways in which the parts influence or interact with one another. They represent objects in the real world with geometric figures, number sequences, graphs, diagrams, maps, and stories. The students will use this information to explain physical attributes of rocks and soils, understand how fossils provide evidence of organisms that lived long ago, describe ways in which heat energy is transferred and measured, identify features of plants and animals within the geographical regions of Georgia, and recognize the effects of pollution on the environment.



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.



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 3–5, your child will begin to form deeper connections between concepts and skills previously learned in grades K–2, such as evaluating methods for collecting data, revising models based on evidence, and analyzing data to make sense of phenomena.

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.

3rd Grade Science System Pacing Overview



This guide provides an overview of what your student will learn in his or her third 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 - October

Unit 1: Ecosystems

Students will obtain, evaluate, and communicate information about the similarities and differences between plants, animals, and habitats found within geographic regions (Blue Ridge Mountains, Piedmont, Coastal Plains, Valley and Ridge, and Appalachian Plateau) of Georgia. Students will ask questions to differentiate between plants, animals, and habitats found within Georgia's geographic regions. Students will construct an explanation of how external features and adaptations (camouflage, hibernation, migration, mimicry) of animals allow them to survive in their habitat. Students will use evidence to construct an explanation of why some organisms can thrive in one habitat and not in another.

October - December

Unit 2: Environmental Impact

Building on earth science standards from second grade, students will obtain, evaluate, and communicate information about the effects of pollution (air, land, and water) and humans on the environment. Students will ask questions to collect information and create records of sources and effects of pollution on the plants and animals. Students will explore, research, and communicate solutions, such as conservation of resources and recycling of materials, to protect plants and animals.

December - January

Unit 3: Earth Materials

Building on earth science standards from kindergarten, students will obtain, evaluate, and communicate information about the physical attributes of rocks and soils. Students will ask questions and analyze data to classify rocks by their physical attributes (color, texture, luster, and hardness) using simple tests. (Clarification statement: Mohs scale should be studied at this level. Cleavage, streak and the classification of rocks as sedimentary, igneous, and metamorphic are studied in sixth grade.) Students will plan and carry out investigations to describe properties (color, texture, capacity to retain water, and ability to support growth of plants) of soils and soil types (sand, clay, loam). Students will make observations of the local environment to construct an explanation of how water and/or wind have made changes to soil and/or rocks over time. (Clarification statement: Examples could include ripples in dirt on a playground and a hole formed under gutters.)

February - March

Unit 4: History of Earth – Fossils

Building on earth science standards from kindergarten, students will obtain, evaluate, and communicate information on how fossils provide evidence of past organisms. Students will construct an argument from observations of fossils (authentic or reproductions) to communicate how they serve as evidence of past organisms and the environments in which they lived. Students will develop a model to describe the sequence and conditions required for an organism to become fossilized. (Clarification statement: Types of fossils (cast, mold, trace, and true) are not addressed in this standard.)

March - May

Unit 5: Heat

Building on physical science standards from second grade, students will obtain, evaluate, and communicate information about the ways heat energy is transferred and measured. Students will ask questions to identify sources of heat energy. (Clarification statement: Examples could include sunlight, friction, and burning.) Students will plan and carry out an investigation to gather data using thermometers to produce tables and charts that illustrate the effect of sunlight on various objects. (Clarification statement: The use of both Fahrenheit and Celsius temperature scales is expected.) Students will use tools and every day materials to design and construct a device/structure that will increase/decrease the warming effects of sunlight on various materials. (Clarification statement: Conduction, convection, and radiation are taught in upper grades.)

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

WHOA! WHY DOES MY HAIR
STAND UP WHEN I TOUCH
THE MACHINE?



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

DESIGNING SOLUTIONS USING
ENGINEERING AND TECHNOLOGY

DARN! IT BROKE.
I NEED A STRONGER DESIGN.



WOO HOO. SUCCESS!



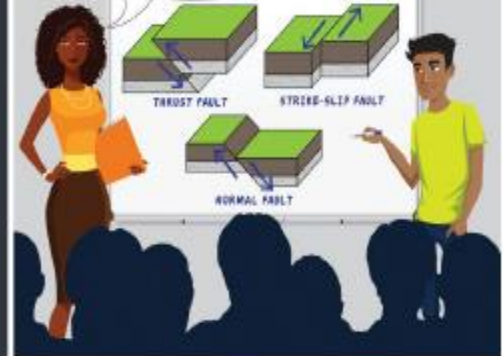
AFTER MANY DESIGNS, DEJA BUILT THE
STRONGEST BRIDGE IN THE CLASS.

How today's students learn SCIENCE



DEVELOPING MODELS TO EXPLAIN
A REAL-WORLD OBJECT OR EVENT

ANY QUESTIONS FOR CARLOS?



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

PLANNING AND CARRYING OUT
INVESTIGATIONS AND ANALYZING DATA

HOW MANY SAMPLES
DO YOU NEED?

OK, I'LL RECORD
THE DATA.

I'LL TAKE 3 FROM BOTH
SIDES OF THE POND.



STUDENTS INVESTIGATE THE QUALITY OF WATER
IN A NEARBY POND.

DISCUSSING, EXPLAINING, AND USING EVIDENCE FOR IDEAS

THE RED BALL
STARTS OUT
WITH ENERGY...

...BUT THEN POW...

...IT GETS
TRANSFERRED
TO THE BLUE ONE.



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