

## **Third Grade Science Curriculum**

The Georgia Performance Standards are designed to provide students with the knowledge and skills for proficiency in science at the third grade level. The Project 2061's *Benchmarks for Science Literacy* is used as the core of the curriculum to determine appropriate content and process skills for students. The GPS is also aligned to the National Research Council's *National Science Education Standards*. Technology is infused into the curriculum. The relationship between science, our environment, and our everyday world is crucial to each student's success and should be emphasized.

The performance standards should drive instruction. Hands-on, student-centered, and inquiry-based approaches should be the emphases of instruction. This curriculum is intended as a required curriculum that would show proficiency in science, and instruction should extend beyond the curriculum to meet the student needs. Safety of the student should always be foremost in science instruction.

Science consists of a way of thinking and investigating, as well a growing body of knowledge about the natural world. To become literate in science, therefore, students need to acquire an understanding of both the **Characteristics of Science** and its **Content**. The Georgia Performance Standards for Science require that instruction be organized so that these are treated together. Therefore, **A CONTENT STANDARD IS NOT MET UNLESS APPLICABLE CHARACTERISTICS OF SCIENCE ARE ALSO ADDRESSED AT THE SAME TIME**. For this reason they are presented as co-requisites.

The Performance Standards include four major components. They are

**The Standards for Georgia Science Courses.** The Characteristics of Science co-requisite standards are listed first, followed by the Content co-requisite standards. Each Standard is followed by elements that indicate the specific learning goals associated with it.

**Tasks that students should be able to perform during or by the end of the course.** These are keyed to the relevant Standards. Some of these can serve as activities that will help students achieve the learning goals of the Standard. Some can be used to assess student learning, and many can serve both purposes.

**Samples of student work.** As a way of indicating what it takes to meet a Standard, examples of successful student work are provided. Many of these illustrate how student work can bridge the Content and Characteristics of Science Standards. The Georgia DOE Standards web site will continue to add samples as they are identified and teachers are encouraged to submit examples from their own classroom experiences.

**Teacher Commentary.** Teacher commentary is meant to open the pathways of communication between students and the classroom teacher. Showing students why they did or did not meet a standard enables them to take ownership of their own learning.

Georgia Performance Science Standards-- Explanation of Coding

Characteristics of Science Standards

**SKCS1**

**Science Kindergarten Characteristics of Science Standard #**1****

**S8CS2**

**Science Grade **8** Characteristics of Science Standard #**2****

**SCSh8**

**Science Characteristics of Science **h**igh school Standard #**8****

Content Standards

**S5P3**

**Science Grade **5** Physical Science Standard #**3****

**S4E2**

**Science Grade **4** Earth Science Standard #**2****

**S7L4**

**Science Grade **7** Life Science Standard #**4****

**SC1**

**Science Chemistry Standard #**1****

**SB4**

**Science Biology Standard #**4****

**SPS6**

**Science Physical Science Standard #**6****

**SP3**

**Science Physics Standard #**3****

**Third grade** students keep records of observations without making alterations. They add and subtract whole numbers mentally, on paper, and with a calculator. They observe, construct, and measure objects using ordinary hand tools. Third graders 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. They explain how the representations do not match their real world counterparts. Third graders know that safety is a fundamental concern in all experimental science. They adhere to safety rules and guidelines.

### **Form and Function**

Third grade students observe and compare objects and use the information they obtain to answer their own questions. Their communication skills allow them to record findings and analyze data. They understand that the form or shape of an object is frequently related to use, operation or function. They will use this information to explain rock cycles, features of plants and animals, heat energy, and magnetic force.

<b>Major Concepts/Skills</b>	<b>Concepts/Skills to Maintain</b>
Earth Science	Habits of Mind:
Rocks and minerals of Georgia	Records investigations
Soils	Analyzes whole number data
Weathering	Measures
Fossils	Makes sketches
Physical Science	Compares and describes
Heat energy	numerically
Magnets	Researches
Life Science	Uses tools
Habitats	Answers their own questions
Features of organisms of Georgia	Communicates findings
Pollution and <u>conservation</u>	Understands safety concerns

## **Co-Requisite - Characteristics of Science**

### **Habits of Mind**

**S3CS1. Students will be aware of the importance of curiosity, honesty, openness, and skepticism in science and will exhibit these traits in their own efforts to understand how the world works.**

- a. Keep records of investigations and observations and do not alter the records later.
- b. Offer reasons for findings and consider reasons suggested by others.
- c. Take responsibility for understanding the importance of being safety conscious.

**S3CS2. Students will have the computation and estimation skills necessary for analyzing data and following scientific explanations.**

- a. Add, subtract, multiply, and divide whole numbers mentally, on paper, and with a calculator.

- b. Use commonly encountered fractions – halves, thirds, and fourths (but not sixths, sevenths, and so on) – in scientific calculations.
- c. Judge whether measurements and computations of quantities, such as length, weight, or time, are reasonable answers to scientific problems by comparing them to typical values.

**S3CS3. Students will use tools and instruments for observing, measuring, and manipulating objects in scientific activities utilizing safe laboratory procedures.**

- a. Choose appropriate common materials for making simple mechanical constructions and repairing things.
- b. Use computers, cameras and recording devices for capturing information.
- c. Identify and practice accepted safety procedures in manipulating science materials and equipment.

**S3CS4. Students will use ideas of system, model, change, and scale in exploring scientific and technological matters.**

- a. Observe and describe how parts influence one another in things with many parts.
- b. Use geometric figures, number sequences, graphs, diagrams, sketches, number lines, maps, and stories to represent corresponding features of objects, events, and processes in the real world.
- c. Identify ways in which the representations do not match their original counterparts.

**S3CS5. Students will communicate scientific ideas and activities clearly.**

- a. Write instructions that others can follow in carrying out a scientific procedure.
- b. Make sketches to aid in explaining scientific procedures or ideas.
- c. Use numerical data in describing and comparing objects and events.
- d. Locate scientific information in reference books, back issues of newspapers and magazines, CD-ROMs, and computer databases.

**S3CS6. Students will question scientific claims and arguments effectively.**

- a. Support statements with facts found in books, articles, and databases, and identify the sources used.

**The Nature of Science**

**S3CS7. Students will be familiar with the character of scientific knowledge and how it is achieved.**

Students will recognize that:

- a. Similar scientific investigations seldom produce exactly the same results, which may differ due to unexpected differences in whatever is being investigated, unrecognized differences in the methods or circumstances of the investigation, or observational uncertainties.
- b. Some scientific knowledge is very old and yet is still applicable today.

**S3CS8. Students will understand important features of the process of scientific inquiry.**

Students will apply the following to inquiry learning practices:

- a. Scientific investigations may take many different forms, including observing what things are like or what is happening somewhere, collecting specimens for analysis, and doing experiments.
- b. Clear and active communication is an essential part of doing science. It enables scientists to inform others about their work, expose their ideas to criticism by other scientists, and stay informed about scientific discoveries around the world.
- c. Scientists use technology to increase their power to observe things and to measure and compare things accurately.
- d. Science involves many different kinds of work and engages men and women of all ages and backgrounds.

## **Co-Requisite - Content**

### **Earth Science**

**S3E1. Students will investigate the physical attributes of rocks and soils.**

- a. Explain the difference between a rock and a mineral.
- b. Recognize the physical attributes of rocks and minerals using observation (shape, color, texture), measurement, and simple tests (hardness).
- c. Use observation to compare the similarities and differences of texture, particle size, and color in top soils (such as clay, loam or potting soil, and sand).
- d. Determine how water and wind can change rocks and soil over time using observation and research..

**S3E2. Students will investigate fossils as evidence of organisms that lived long ago.**

- a. Investigate fossils by observing authentic fossils or models of fossils or view information resources about fossils as evidence of organisms that lived long ago.
- b. Describe how a fossil is formed.

### **Physical Science**

**S3P1. Students will investigate how heat is produced and the effects of heating and cooling, and will understand a change in temperature indicates a change in heat.**

- a. Categorize ways to produce heat energy such as burning, rubbing (friction), and mixing one thing with another.
- b. Investigate how insulation affects heating and cooling.
- c. Investigate the transfer of heat energy from the sun to various materials.
- d. Use thermometers to measure the changes in temperatures of water samples (hot, warm, cold) over time.

**S3P2. Students will investigate magnets and how they affect other magnets and common objects.**

- a. Investigate to find common objects that are attracted to magnets.
- b. Investigate how magnets attract and repel each other.

## **Life Science**

### **S3L1. Students will investigate the habitats of different organisms and the dependence of organisms on their habitat.**

- a. Differentiate between habitats of Georgia (mountains, marsh/swamp, coast, Piedmont, Atlantic Ocean) and the organisms that live there.
- b. Identify features of green plants that allow them to live and thrive in different regions of Georgia.
- c. Identify features of animals that allow them to live and thrive in different regions of Georgia.
- d. Explain what will happen to an organism if the habitat is changed.

### **S3L2. Students will recognize the effects of pollution and humans on the environment.**

- a. Explain the effects of pollution (such as littering) to the habitats of plants and animals.
- b. Identify ways to protect the environment.
  - Conservation of resources
  - Recycling of materials