Earth Science
Science

Key Instructional Activities

The Sixth Grade Georgia Standards of Excellence for science are designed to give all students an overview of common strands in earth science including, but not limited to, meteorology, geology, astronomy, and oceanography.

Sixth grade students use records they keep and analyze the data they collect, plan and carry out investigations, describe observations, and show information in different forms. They are able to recognize relationships in simple charts and graphs and find more than one way to interpret their findings. They replicate investigations and compare results to find similarities and differences. Sixth graders study weather patterns and systems by observing and explaining how an aspect of weather can affect a weather system. They are able to construct explanations based on evidence of the role of water in Earth processes, recognize how the presence of land and water in combination with the energy from the sun affect the climate and weather of a region. They use different models to represent systems such as the solar system and the sun/moon/Earth system. They study uses and conservation of Earth's natural resources and use what they observe about the Earth's materials to infer the processes and timelines that formed them.

The Science Georgia Standards of Excellence drive instruction. Hands-on, student-centered, and inquiry-based approaches should be the emphasis of instruction. The standards are a required minimum set of expectations that show proficiency in science.

HOUSTON COUNTY BOARD OF EDUCATION
HIGH-ACHIEVING STUDENTS

What resources are available for students and parents?

- ✓ Online Science Textbook
- ✓ Parent Portal
- ✓ Overview of Units and Pacing

Earth Science Course Overview

Unit 1: Earth's Layers
Expected Dates: Beginning of School Year to Mid-August
Students ask questions to compare and contrast the Earth's crust, mantle, inner and outer core, including temperature, density, thickness, and composition.

Unit 2: Minerals
Expected Dates: Mid-August to End of August
Students will plan and carry out an investigation of the characteristics of minerals and how minerals contribute to rock composition.

Unit 3: Rocks
Expected Dates: Mid-August to End of August
Students will construct an explanation of how to classify rocks by their formation and how rocks change through geologic processes in the rock cycle.

Unit 4: Weathering, Erosion and Deposition
Expected Dates: Beginning of September to Mid-September
Students will ask questions to identify types of weathering, agents of erosion and transportation, and environments of deposition. Students will develop a model to demonstrate how natural processes (weathering, erosion, and deposition) and human activity change rocks and the surface of the Earth.

Unit 5: Components of Soil
Expected Dates: Mid-September to End of September
Students will plan and carry out an investigation to provide evidence that soil is composed of layers of weathered rocks and decomposed organic material.

Unit 6: Plate Tectonics
Expected Dates: End of September to Mid-October
Students will construct an explanation of how the movement of lithospheric plates, called plate tectonics, can cause major geologic events such as earthquakes and volcanic eruptions.

Unit 7: Evidence of Change
Expected Dates: Mid-October to End of October
Students will construct an argument using maps and data collected to support a claim of how fossils show evidence of the changing surface and climate of the Earth.

Unit 8: Earth's Water
Expected Dates: End of October to Mid-November
Students will ask questions to determine where water is located on Earth's surface (oceans, rivers, lakes, swamps, groundwater, aquifers, and ice) and communicate the relative proportion of water at each location.

Unit 9: The World's Oceans
Expected Dates: Mid-November to End of November
Students will ask questions to identify and communicate, using graphs and maps, the composition, location, and subsurface topography of the world's oceans.

Unit 10: Waves, Currents and Tides
Expected Dates: Beginning of December to Mid-December
Students will analyze and interpret data to create graphic representations of the causes and effects of waves, currents, and tides in Earth's systems.

Unit 11: Composition of Earth's Atmosphere
Expected Dates: Beginning of January to Mid-January
Students will analyze and interpret data to compare and contrast the composition of Earth's atmospheric layers (including the ozone layer) and greenhouse gases.

Unit 12: Role of the Sun's Energy in the Cycling of Water
Expected Dates: Mid-January to End of January
Students will plan and carry out an investigation to illustrate the role of the sun's energy in atmospheric conditions that lead to the cycling of water.

Unit 13: Heat Transfer: Air, Land and Water
Expected Dates: End of January to Beginning of February
Students will plan and carry out an investigation to demonstrate how energy from the sun transfers heat to air, land and water at different rates.

Unit 14: Causes of Local and Global Wind Systems
Expected Dates: Beginning of February to Mid-February
Students will develop a model demonstrating the interaction between unequal heating and the rotation of the Earth that causes local and global wind systems.

Unit 15: Air Pressure, Fronts, and Masses
Expected Dates: Beginning of February to Mid-February
Students will construct an explanation of the relationship between air pressure, weather fronts, and air masses and meteorological events such as tornados and thunderstorms.

Unit 16: Ocean Evaporation and Weather Patterns
Expected Dates: End of February to Beginning of March
Students will analyze and interpret weather data to explain the effects of moisture evaporating from the ocean on weather patterns and weather events such as hurricanes.

Unit 17: Phases of the Moon and Eclipses
Expected Dates: Beginning of March to Mid-March
Students will develop and use a model to demonstrate the phases of the moon by showing the relative positions of the sun, Earth, and moon. Students will construct an explanation of the cause of solar and lunar eclipses.

Unit 18: Distribution of Sunlight and Seasons
Expected Dates: Mid-March to Beginning of April
Students will analyze and interpret data to relate the tilt of the Earth to the distribution of sunlight throughout the year and its effect on seasons.

Unit 19: Models of the Solar System and the Big Bang Theory
Expected Dates: Mid-April to Beginning of April
Students will ask questions to determine changes in models of Earth's position in the solar system, and origins of the universe as evidence that scientific theories change with the addition of new information.

Unit 20: Position of the Solar System
Expected Dates: Mid-April to Beginning of April
Students will develop a model to represent the position of the solar system in the Milky Way galaxy and in the known universe.

Unit 21: Planets and Motion in the Solar System
Expected Dates: End of April to Beginning of May
Students will analyze and interpret data to compare and contrast the planets in our solar system in terms of: 1) size relative to Earth, 2) surface and atmospheric features, 3) relative distance from the sun, and 4) ability to support life. Students will develop and use a model to explain the interaction of gravity and inertia that governs the motion of objects in the solar system.

Unit 22: Comets, Asteroids and Meteoroids

Expected Dates: End of April to Beginning of May

Students will ask questions to compare and contrast the characteristics, composition, and location of comets, asteroids, and meteoroids.

Unit 23: Renewable and Nonrenewable Energy Resources

Expected Dates: Beginning of May to Mid-May

Students will ask questions to determine the differences between renewable/sustainable energy resources (examples: hydro, solar, wind, geothermal, tidal, biomass) and nonrenewable energy resources (examples: nuclear: uranium, fossil fuels: oil, coal, and natural gas), and how they are used in our everyday lives.

Unit 24: Sustaining Natural Resources

Expected Dates: Beginning of May to Mid-May

Students will design and evaluate solutions for sustaining the quality and supply of natural resources such as water, soil, and air.

Unit 25: Global Warming

Expected Dates: Beginning of May to Mid-May

Students will construct an argument evaluating contributions to the rise in global temperatures over the past century.

Helpful Tips for Parents and Guardians

Believe that every child can be successful in science.

Science has led to the discovery of everything from gravity to medicine. Science is a way of understanding the world, a perspective, and a pattern of thinking that begins in the very early years. That is why parent involvement is so important in a child's science education.

Tips to Help Children Learn Science

Explore, explore, explore. See science everywhere. Always encourage your child to question their surroundings, and then discuss. Parents can take opportunities to ask, "What would happen if …?" questions or present brainteasers to encourage children to be inquisitive and seek out answers.

Lead family discussions on science-related topics. Dinnertime might be an ideal time for your family to have discussions about news stories that are science based, like space shuttle missions, severe weather conditions, or new medical breakthroughs. Over time, children will develop a better understanding of science and how it affects many facets of our lives. Movies and TV shows with science-related storylines are also great topics for discussion.

Encourage girls and boys equally. Many fathers might be inclined to fix a problem for a daughter without challenging her to find the solution on her own. Many girls are left out of challenging activities simply because of their gender. Be aware that both girls and boys need to be encouraged and exposed to a variety of subjects at a very early age.

Do science together. Children, especially elementary-age children, learn better by investigating and experimenting. Simple investigations done together in the home can bolster what your child is learning in the classroom. Check with your child's teacher on what your child is currently learning in class and what activities you can explore at home. There are also many books on the market and numerous websites that present ideas for investigations.

In addition to exploring and communicating as a family, it is important to invest in your child's willingness to learn. There are many programs available that are fun and interactive, helping them build a solid foundation in science.

From life sciences to environmental science, physical science to earth science, when children express interests in these subjects, encourage them and learn with them.

How You Can Support Your Child's Success?

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.