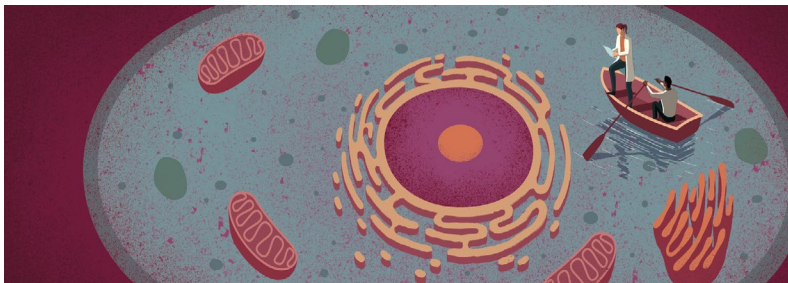


Life Science Science

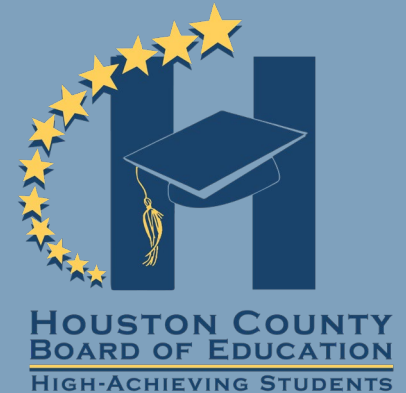
Key Instructional Activities

The Seventh Grade Georgia Standards of Excellence for science are designed to give all students the necessary skills for a smooth transition from elementary life science standards to high school biology standards. The purpose is to give all students an overview of common strands in life science including, but not limited to, diversity of living organisms, structure and function of cells, heredity, ecosystems, and biological evolution.

Seventh grade students keep records of their observations, use those records to analyze the data they collect, recognize patterns in the data, use simple charts and graphs to represent the relationships they see, and find more than one way to interpret their findings. They make and use observations to explain the diversity of living organisms and how the organisms are classified, how they reproduce and how genetic information is passed from parents to their offspring. They use different models to represent systems such as cells, tissues, and organs. They use what they know about ecosystems to explain how matter cycles and energy flows through the ecosystem. They use the concepts of natural selection and fossil evidence to construct explanations about the diversity of life that they see. Seventh graders plan and carry out investigations, describe observations, and show information in graphical form. The students replicate investigations and compare results to find similarities and differences.



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.



What resources are available for students and parents?

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

Life Science Course Overview

Unit 1: The Cell as a System

Expected Dates: Beginning of School Year to End of August

Students will develop a model and construct an explanation of how cell structures (specifically the nucleus, cytoplasm, cell membrane, cell wall, chloroplasts, lysosome, and mitochondria) contribute to the function of the cell as a system in obtaining nutrients in order to grow, reproduce, make needed materials, and process waste.

Unit 2: System Organization

Expected Dates: Beginning of September to Mid-September

Students will develop and use a conceptual model of how cells are organized into tissues, tissues into organs, organs into systems, and systems into organisms.

Unit 3: Systems of the Body

Expected Dates: Mid-September to Beginning of October

Students will construct an argument that systems of the body (Cardiovascular, Excretory, Digestive, Respiratory, Muscular, Nervous, and Immune) interact with one another to carry out life processes.

Unit 4: Role of Genes and Chromosomes

Expected Dates: Beginning of October to Mid-October

Students will construct an explanation supported with scientific evidence of the role of genes and chromosomes in the process of inheriting a specific trait.

Unit 5: Sexual and Asexual Reproduction

Expected Dates: Mid-October to Mid-November

Students will develop and use a model to describe how asexual reproduction can result in offspring with identical genetic information while sexual reproduction results in genetic variation.

Unit 6: Human Influence on the Inheritance of Traits

Expected Dates: Beginning of December to Mid-December

Students will ask questions to gather and synthesize information about the ways humans influence the inheritance of desired traits in organisms through selective breeding.

Unit 7: Natural Selection and Changes in Populations

Expected Dates: Beginning of January to Mid-January

Students will use mathematical representations to evaluate explanations of how natural selection leads to changes in specific traits of populations over successive generations.

Unit 8: Influence of Genetic Variation and Environmental Factors on Survival and Reproduction

Expected Dates: Mid-January to End of January

Students will construct an explanation based on evidence that describes how genetic variation and environmental factors influence the probability of survival and reproduction of a species.

Unit 9: Patterns in the Fossil Record

Expected Dates: Beginning of February to Mid-February

Students will analyze and interpret data for patterns in the fossil record that document the existence, diversity, and extinction of organisms and their relationships to modern organisms.

Unit 10: Diversity and Classification of Organisms

Expected Dates: End of February to Mid-March

Students will develop and defend a model that categorizes organisms based on common characteristics. Students will evaluate historical models of how organisms were classified based on physical characteristics and how that led to the six kingdom system (currently archaea, bacteria, protists, fungi, plants, and animals).

Unit 11: Interactions Between Organisms and Matter and Energy

Expected Dates: Mid-March to Mid-April

Students will construct an explanation for the patterns of interactions observed in different ecosystems in terms of the relationships among and between organisms and abiotic components of the ecosystem. Students will develop a model to describe the cycling of matter and the flow of energy among biotic and abiotic components of an ecosystem.

Unit 12: Organisms and Their Environments

Expected Dates: Mid-April to Mid-May

Students will analyze and interpret data to provide evidence for how resource availability, disease, climate, and human activity affect individual organisms, populations, communities, and ecosystems. Students will ask questions to gather and synthesize information from multiple sources to differentiate between Earth's major terrestrial biomes (i.e., tropical rain forest, savanna, temperate forest, desert, grassland, taiga, and tundra) and aquatic ecosystems (i.e., freshwater, estuaries, and marine).

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.