FLORIDA SCIENCE STANDARDS

K-8 GRADE-LEVEL STANDARDS

Big Ideas

The revised science standards include big ideas that flow throughout all grade levels and build in rigor as students move to higher grade levels. The eighteen big ideas used throughout this document are organized as follows:

Body of Knowledge: The Nature of Science

Big Idea 1: The Practice of Science

Big Idea 2: The Characteristics of Scientific Knowledge

Big Idea 3: The Role of Theories, Laws, Hypotheses, and Models

Big Idea 4: Science and Society

Body of Knowledge: Earth and Space Science

Big Idea 5: Earth in Space in Time

Big Idea 6: Earth Structures

Big Idea 7: Earth Systems and Patterns

Body of Knowledge: Physical Science

Big Idea 8: Properties of Matter

Big Idea 9: Changes in Matter

Big Idea 10: Forms of Energy

Big Idea 11: Energy Transfer and Transformations

Big Idea 12: Motion of Objects

Big Idea 13: Forces and Changes in Motion

Body of Knowledge: Life Science

Big Idea 14: Organization and Development of Living Organisms

Big Idea 15: Diversity and Evolution of Living Organisms

Big Idea 16: Heredity and Reproduction

Big Idea 17: Interdependence

Big Idea 18: Matter and Energy Transformations

The numbering for the big ideas is consistent throughout the document. Not all big ideas are addressed at each grade level, so the numbering scheme is not consecutive for each grade level.

Benchmark Coding Scheme

SC.	5.	N.	1.	1
Subject	Grade Level	Body of Knowledge	Big Idea	Benchmark

Body of Knowledge Key:

N ~ Nature of Science

E ~ Earth and Space Science

P ~ Physical Science

L ~ Life Science

Access Points Coding Scheme

SC.	5.	P.	1.	In.a
Subject	Grade Level	Body of Knowledge	Big Idea	Access Point

Access Points Key:

In ~ Independent

Su ~ Supported

Pa ~ Participatory

GRADE 5

BIG IDEA 1: The Practice of Science

A: Scientific inquiry is a multifaceted activity; The processes of science include the formulation of scientifically investigable questions, construction of investigations into those questions, the collection of appropriate data, the evaluation of the meaning of those data, and the communication of this evaluation.

B: The processes of science frequently do not correspond to the traditional portrayal of "the scientific method."

C: Scientific argumentation is a necessary part of scientific inquiry and plays an important role in the generation and validation of scientific knowledge.

D: Scientific knowledge is based on observation and inference; it is important to recognize that these are very different things. Not only does science require creativity in its methods and processes, but also in its questions and explanations.

BENCHMARK CODE	BENCHMARK
SC.5.N.1.1	Define a problem, use appropriate reference materials to support scientific understanding, plan and carry out scientific investigations of various types such as: systematic observations, experiments requiring the identification of variables, collecting and organizing data, interpreting data in charts, tables, and graphics, analyze information, make predictions, and defend conclusions.
SC.5.N.1.2	Explain the difference between an experiment and other types of scientific investigation.
SC.5.N.1.3	Recognize and explain the need for repeated experimental trials.
SC.5.N.1.4	Identify a control group and explain its importance in an experiment.
SC.5.N.1.5	Recognize and explain that authentic scientific investigation frequently does not parallel the steps of "the scientific method."
SC.5.N.1.6	Recognize and explain the difference between personal opinion/interpretation and verified observation.

Access Points for Students with Significant Cognitive Disabilities

Independent:	*Supported:*	*Participatory:*
SC.5.N.1.In.a Ask a question about the natural world, use selected reference materials to find information, work with others to carry out a simple experiment, and share results. SC.5.N.1.In.b Identify the basic purpose of an experiment. SC.5.N.1.In.c Recognize that experiments may include activities that are repeated. SC.5.N.1.In.d Recognize that scientists use various methods to perform investigations, such as reviewing work of other scientists, making observations, and conducting experiments. SC.5.N.1.In.e Determine whether descriptions of observations are based on fact or personal belief.	SC.5.N.1.Su.a Ask questions about the natural world, use selected materials to find information, observe, and identify answers to the question. SC.5.N.1.Su.b Identify the result of a simple experiment. SC.5.N.1.Su.c Recognize that experiments can be repeated with other groups. SC.5.N.1.Su.d Recognize ways that scientific evidence can be collected, such as by observing or measuring. SC.5.N.1.Su.e Recognize facts about a scientific observation.	SC.5.N.1.Pa.a Explore, observe, and select an object or picture to respond to a question about the natural world. SC.5.N.1.Pa.b Recognize that people use observation and actions to get answers to questions about the natural world.

GRADE 5

BIG IDEA 2: The Characteristics of Scientific Knowledge

A: Scientific knowledge is based on empirical evidence, and is appropriate for understanding the natural world, but it provides only a limited understanding of the supernatural, aesthetic, or other ways of knowing, such as art, philosophy, or religion.

B: Scientific knowledge is durable and robust, but open to change.

C: Because science is based on empirical evidence it strives for objectivity, but as it is a human endeavor the processes, methods, and knowledge of science include subjectivity, as well as creativity and discovery.

BENCHMARK CODE	BENCHMARK
SC.5.N.2.1	Recognize and explain that science is grounded in empirical observations that are testable; explanation must always be linked with evidence.
SC.5.N.2.2	Recognize and explain that when scientific investigations are carried out, the evidence produced by those investigations should be replicable by others.

Access Points for Students with Significant Cognitive Disabilities

Independent:	*Supported:*	*Participatory:*
SC.5.N.2.In.a Identify that science knowledge is based on observations and evidence. SC.5.N.2.In.b Recognize that experiments involve procedures that can be repeated the same way by others.	SC.5.N.2.Su.a Recognize that science knowledge is based on careful observations. SC.5.N.2.Su.b Recognize the importance of following correct procedures when carrying out science experiments.	SC.5.N.2.Pa.a Recognize the importance of making careful observations. SC.5.N.2.Pa.b Recognize that a common activity can be repeated.

BIG IDEA 5: Earth in Space and Time

Humans continue to explore Earth's place in space. Gravity and energy influence the formation of galaxies, including our own Milky Way Galaxy, stars, the Solar System, and Earth. Humankind's need to explore continues to lead to the development of knowledge and understanding of our Solar System.

BENCHMARK CODE	BENCHMARK
SC.5.E.5.1	Recognize that a galaxy consists of gas, dust, and many stars, including any objects orbiting the stars. Identify our home galaxy as the Milky Way.
SC.5.E.5.2	Recognize the major common characteristics of all planets and compare/contrast the properties of inner and outer planets.
SC.5.E.5.3	Distinguish among the following objects of the Solar System -- Sun, planets, moons, asteroids, comets -- and identify Earth's position in it.

Access Points for Students with Significant Cognitive Disabilities

Independent:	*Supported:*	*Participatory:*
SC.5.E.5.In.a Identify that a galaxy is made of a very large number of stars and the planets that orbit them. SC.5.E.5.In.b Recognize major differences in the characteristics of the planets in the Solar System. SC.5.E.5.In.c Identify that the Solar System includes the Sun, Earth, Moon, and other planets and their moons.	SC.5.E.5.Su.a Recognize that a galaxy is a group of stars. SC.5.E.5.Su.b Recognize that surface of planet Earth is covered by water and land. SC.5.E.5.Su.c Identify that the Sun, Earth, and Moon are part of the Solar System.	SC.5.E.5.Pa.a Recognize that stars are very far away from Earth. SC.5.E.5.Pa.b Recognize Earth as the planet where we live.

GRADE 5

BIG IDEA 7: Earth Systems and Patterns
Humans continue to explore the interactions among water, air, and land. Air and water are in constant motion that results in changing conditions that can be observed over time.

BENCHMARK CODE	BENCHMARK
SC.5.E.7.1	Create a model to explain the parts of the water cycle. Water can be a gas, a liquid, or a solid and can go back and forth from one state to another.
SC.5.E.7.2	Recognize that the ocean is an integral part of the water cycle and is connected to all of Earth's water reservoirs via evaporation and precipitation processes.
SC.5.E.7.3	Recognize how air temperature, barometric pressure, humidity, wind speed and direction, and precipitation determine the weather in a particular place and time.
SC.5.E.7.4	Distinguish among the various forms of precipitation (rain, snow, sleet, and hail), making connections to the weather in a particular place and time.
SC.5.E.7.5	Recognize that some of the weather-related differences, such as temperature and humidity, are found among different environments, such as swamps, deserts, and mountains.
SC.5.E.7.6	Describe characteristics (temperature and precipitation) of different climate zones as they relate to latitude, elevation, and proximity to bodies of water.
SC.5.E.7.7	Design a family preparedness plan for natural disasters and identify the reasons for having such a plan.

Access Points for Students with Significant Cognitive Disabilities

Independent:	***Supported:***	***Participatory:***
SC.5.E.7.In.a Label the state of water in each stage of the water cycle. SC.5.E.7.In.b Recognize that water evaporates from the ocean, falls as precipitation, and then goes back into the ocean. SC.5.E.7.In.c Identify elements that make up weather, including temperature, precipitation, and wind speed and direction. SC.5.E.7.In.d Describe types of precipitation, including rain, snow, and hail. SC.5.E.7.In.e Recognize weather-related differences in environments, such as swamps and deserts. SC.5.E.7.In.f Identify features of weather in different climate zones, such as tropical and polar. SC.5.E.7.In.g Identify emergency plans and procedures for severe weather.	SC.5.E.7.Su.a Match different states of water (liquid and solid) to changes in temperature. SC.5.E.7.Su.b Observe and recognize that water evaporates over time. SC.5.E.7.Su.c Recognize elements of weather, including temperature, precipitation, and wind. SC.5.E.7.Su.d Identify different types of precipitation, including rain and snow. SC.5.E.7.Su.e Match specific weather conditions with different locations. SC.5.E.7.Su.f Identify what to do in severe weather.	SC.5.E.7.Pa.a Distinguish between water as a liquid and ice as a solid. SC.5.E.7.Pa.b Recognize that wet things will dry when they are left in the air. SC.5.E.7.Pa.c Recognize the weather conditions including hot/cold and raining/not raining during the day. SC.5.E.7.Pa.d Recognize examples of severe weather conditions.

GRADE 5

BIG IDEA 8: Properties of Matter

A. All objects and substances in the world are made of matter. Matter has two fundamental properties: matter takes up space and matter has mass.

B. Objects and substances can be classified by their physical and chemical properties.

Mass is the amount of matter (or "stuff") in an object. Weight, on the other hand, is the measure of force of attraction (gravitational force) between an object and Earth.

The concepts of mass and weight are complicated and potentially confusing to elementary students. Hence, the more familiar term of "weight" is recommended for use to stand for both mass and weight in grades K-5. By grades 6-8, students are expected to understand the distinction between mass and weight, and use them appropriately.

BENCHMARK CODE	BENCHMARK
SC.5.P.8.1	Compare and contrast the basic properties of solids, liquids, and gases, such as mass, volume, color, texture, and temperature.
SC.5.P.8.2	Investigate and identify materials that will dissolve in water and those that will not and identify the conditions that will speed up or slow down the dissolving process.
SC.5.P.8.3	Demonstrate and explain that mixtures of solids can be separated based on observable properties of their parts such as particle size, shape, color, and magnetic attraction.
SC.5.P.8.4	Explore the scientific theory of atoms (also called atomic theory) by recognizing that all matter is composed of parts that are too small to be seen without magnification.

Access Points for Students with Significant Cognitive Disabilities

Independent:	*Supported:*	*Participatory:*
SC.5.P.8.In.a Identify basic properties of solids, liquids, and gases, such as color, texture, and temperature. SC.5.P.8.In.b Identify examples of materials that will dissolve in water and those that will not. SC.5.P.8.In.c Identify the observable properties of the parts of a mixture, such as the particle size, shape, and color. SC.5.P.8.In.d Recognize that materials are made of very small parts that cannot be seen without a magnifying glass or a microscope.	SC.5.P.8.Su.a Identify the basic properties of solids and liquids, such as color, texture, and temperature. SC.5.P.8.Su.b Recognize examples of materials that will dissolve in water. SC.5.P.8.Su.c Identify the separate parts of a mixture by color or shape. SC.5.P.8.Su.d Use a magnifying tool to see small parts of an object.	SC.5.P.8.Pa.a Distinguish between water as a solid or liquid. SC.5.P.8.Pa.b Recognize a common substance that dissolves in water. SC.5.P.8.Pa.c Separate a group of objects into its parts.

BIG IDEA 9: Changes in Matter

A. Matter can undergo a variety of changes.

B. Matter can be changed physically or chemically.

BENCHMARK CODE	BENCHMARK
SC.5.P.9.1	Investigate and describe that many physical and chemical changes are affected by temperature.

Access Points for Students with Significant Cognitive Disabilities

Independent:	*Supported:*	*Participatory:*
SC.5.P.9.In.a Observe and identify that heating and cooling can change the properties of materials.	SC.5.P.9.Su.a Recognize changes in properties of materials caused by heating or cooling.	SC.5.P.9.Pa.a Recognize that freezing changes water to ice.

GRADE 5

BIG IDEA 10: Forms of Energy

A. Energy is involved in all physical processes and is a unifying concept in many areas of science.

B. Energy exists in many forms and has the ability to do work or cause a change.

BENCHMARK CODE	BENCHMARK
SC.5.P.10.1	Investigate and describe some basic forms of energy, including light, heat, sound, electrical, chemical, and mechanical.
SC.5.P.10.2	Investigate and explain that energy has the ability to cause motion or create change.
SC.5.P.10.3	Investigate and explain that an electrically-charged object can attract an uncharged object and can either attract or repel another charged object without any contact between the objects.
SC.5.P.10.4	Investigate and explain that electrical energy can be transformed into heat, light, and sound energy, as well as the energy of motion.

Access Points for Students with Significant Cognitive Disabilities

Independent:	*Supported:*	*Participatory:*
SC.5.P.10.In.a Identify forms of energy, including heat, light, sound, electrical, and mechanical. SC.5.P.10.In.b Identify ways energy can cause things to move or create changes. SC.5.P.10.In.c Identify that electrically charged materials will pull (attract) other materials. SC.5.P.10.In.d Demonstrate that electricity can produce heat, light, and sound.	SC.5.P.10.Su.a Recognize uses of electrical energy (popcorn popper, vacuum cleaner), heat energy (grill, heater), light energy (sunlight, flashlight), and mechanical energy (bicycle). SC.5.P.10.Su.b Recognize that energy is required to cause motion. SC.5.P.10.Su.c Recognize that electrically charged materials will pull (attract) other materials. SC.5.P.10.Su.d Recognize examples of electricity as a producer of heat, light, and sound.	SC.5.P.10.Pa.a Recognize a source of light energy (Sun, light bulb). SC.5.P.10.Pa.b Initiate a change in the motion of an object. SC.5.P.10.Pa.c Demonstrate pushing away (repulsion) and pulling (attraction). SC.5.P.10.Pa.d Identify one source of sound, heat, or light that uses electricity.

BIG IDEA 11: Energy Transfer and Transformations

A. Waves involve a transfer of energy without a transfer of matter.

B. Water and sound waves transfer energy through a material.

C. Light waves can travel through a vacuum and through matter.

BENCHMARK CODE	BENCHMARK
SC.5.P.11.1	Investigate and illustrate the fact that the flow of electricity requires a closed circuit (a complete loop).
SC.5.P.11.2	Identify and classify materials that conduct electricity and materials that do not.

Access Points for Students with Significant Cognitive Disabilities

Independent:	*Supported:*	*Participatory:*
SC.5.P.11.In.a Identify the power source and wires (conductors) in an electrical circuit. SC.5.P.11.In.b Identify materials that conduct electricity.	SC.5.P.11.Su.a Recognize the power source in an electrical circuit. SC.5.P.11.Su.b Recognize a material that conducts electricity.	SC.5.P.11.Pa.a Recognize that electrical systems must be turned on (closed) in order to work.

GRADE 5

BIG IDEA 13: Forces and Changes in Motion
A. It takes energy to change the motion of objects.
B. Energy change is understood in terms of forces--pushes or pulls.
C. Some forces act through physical contact, while others act at a distance.

BENCHMARK CODE	BENCHMARK
SC.5.P.13.1	Identify familiar forces that cause objects to move, such as pushes or pulls, including gravity acting on falling objects.
SC.5.P.13.2	Investigate and describe that the greater the force applied to it, the greater the change in motion of a given object.
SC.5.P.13.3	Investigate and describe that the more mass an object has, the less effect a given force will have on the object's motion.
SC.5.P.13.4	Investigate and explain that when a force is applied to an object but it does not move, it is because another opposing force is being applied by something in the environment so that the forces are balanced.

Access Points for Students with Significant Cognitive Disabilities

Independent:	*Supported:*	*Participatory:*
SC.5.P.13.In.a Distinguish between movement of an object caused by gravity and movement caused by pushes and pulls. SC.5.P.13.In.b Identify that heavier objects take more force to move than lighter ones. SC.5.P.13.In.c Identify that an opposing force (push or pull) is needed to prevent an object from moving.	SC.5.P.13.Su.a Recognize that gravity causes an object to move. SC.5.P.13.Su.b Recognize that a heavier object is harder to move than a light one. SC.5.P.13.Su.c Recognize the source of a force (push or pull) used to stop an object from moving.	SC.5.P.13.Pa.a Recognize that pushing or pulling makes an object move. SC.5.P.13.Pa.b Recognize a way to stop an object from moving.

BIG IDEA 14: Organization and Development of Living Organisms
A. All plants and animals, including humans, are alike in some ways and different in others.
B. All plants and animals, including humans, have internal parts and external structures that function to keep them alive and help them grow and reproduce.
C. Humans can better understand the natural world through careful observation.

BENCHMARK CODE	BENCHMARK
SC.5.L.14.1	Identify the organs in the human body and describe their functions, including the skin, brain, heart, lungs, stomach, liver, intestines, pancreas, muscles and skeleton, reproductive organs, kidneys, bladder, and sensory organs.
SC.5.L.14.2	Compare and contrast the function of organs and other physical structures of plants and animals, including humans, for example: some animals have skeletons for support -- some with internal skeletons others with exoskeletons -- while some plants have stems for support.

Access Points for Students with Significant Cognitive Disabilities

Independent:	*Supported:*	*Participatory:*
SC.5.L.14.In.a Distinguish major external and internal body parts, including skin, brain, heart, lungs, stomach, muscles and skeleton, reproductive organs, and sensory organs. SC.5.L.14.In.b Identify functions of plant and animal structures; for example, plant stem transports food to leaves, and heart pumps blood to parts of the body.	SC.5.L.14.Su.a Identify major external and internal body parts, including skin, brain, heart, lungs, stomach, and sensory organs. SC.5.L.14.Su.b Recognize the functions of the major parts of plants and animals.	SC.5.L.14.Pa.a Recognize body parts related to movement and the five senses. SC.5.L.14.Pa.b Observe plants and animals and recognize how they are alike in the way they look.

GRADE 5

BIG IDEA 15: Diversity and Evolution of Living Organisms

A. Earth is home to a great diversity of living things, but changes in the environment can affect their survival.

B. Individuals of the same kind often differ in their characteristics and sometimes the differences give individuals an advantage in surviving and reproducing.

BENCHMARK CODE	BENCHMARK
SC.5.L.15.1	Describe how, when the environment changes, differences between individuals allow some plants and animals to survive and reproduce while others die or move to new locations.

Access Points for Students with Significant Cognitive Disabilities

Independent:	*Supported:*	*Participatory:*
SC.5.L.15.In.a Identify ways that plants and animals can be affected by changes in their habitats, such as lack of food or water, disease, or reduced space.	SC.5.L.15.Su.a Recognize ways that plants and animals can be affected by changes in their habitats, such as lack of food or water.	SC.5.L.15.Pa.a Recognize what happens when plants don't get water.

BIG IDEA 17: Interdependence

A. Plants and animals, including humans, interact with and depend upon each other and their environment to satisfy their basic needs.

B. Both human activities and natural events can have major impacts on the environment.

C. Energy flows from the sun through producers to consumers.

BENCHMARK CODE	BENCHMARK
SC.5.L.17.1	Compare and contrast adaptations displayed by animals and plants that enable them to survive in different environments such as life cycles variations, animal behaviors and physical characteristics.

Access Points for Students with Significant Cognitive Disabilities

Independent:	*Supported:*	*Participatory:*
SC.5.L.17.In.a Identify features of common plants and animals that enable them to survive in different habitats (environments).	SC.5.L.17.Su.a Recognize that many different kinds of living things are found in different habitats.	SC.5.L.17.Pa.a Match common living things with their habitats.