Wakulla County Schools

ELEMENTARY SCIENCE CURRICULUM

First Grade

Without Access Points

Revised June, 2011

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First Grade Science Curriculum

This curriculum is based upon the Next Generation Sunshine State Standards for Science. First grade science instruction should fully instruct students on the benchmarks contained in this document. A minimum of 100 minutes per week should be spent in science instruction, with an additional 50 minutes per week spent on the Comprehensive Health Curriculum. Where possible, Health standards have been aligned with Science standards in this document.

Documentation:
Teachers should document when instruction is provided on the benchmarks. The date noted should correspond to a specific lesson or unit of instruction as noted in the teacher's lesson plans or to when an assessment was given to determine student mastery of the benchmark.

Major Tool of Instruction:
The major tool of instruction provided to all teachers is the National Geographic Science, 2010 K-5 series. It is critical that teachers require that students access the text in order to build content-area reading skills. Other resources may be incorporated to insure that all students achieve mastery of the required benchmarks.
Process Skills stressed at first grade are *observe, explore and investigate.*

Key to Acronyms and Markings:
BEB – Become an Expert Books, National Geographic Science
EOYO – Explore on Your Own Books, National Geographic Science
Bold Print – Vocabulary to be taught to mastery
Marked with * - FCAT Vocabulary
CPALMS – www.floridastandards.org

SCIENCE CURRICULUM – First Grade

Body of Knowledge: Nature of Science

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 of 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.

The *Nature of Science* Body of Knowledge is an underlying foundation for all other Bodies of Knowledge. Instruction in *The Nature of Science* should be incorporated into ALL science instruction as students are involved in investigation and inquiry.

BENCHMARK CODE	BENCHMARK	RESOURCES/ACTIVITIES/TEXT CORRELATION	DATE					
			11/12	12/13	13/14	14/15	15/16	16/17
SC.1.N.1.1	Raise questions about the natural world, investigate them in teams through free exploration, and generate appropriate explanations based on those explorations. Complexity: High	**Activity:** Incorporated throughout text in activities associated with concepts.						
SC.1.N.1.2	Using the five senses as tools, make careful observations, describe objects in terms of number, shape, texture, size, weight, color and motion and compare their observations with others. Complexity: Moderate	**Resource:** BrainPop Jr. – video on *Making Observations* – refers to using senses. **Text:** TE pages 4-17						
SC.1.N.1.3	Keep records as appropriate – such as pictorial and written records – of investigations conducted. Complexity: Moderate	**Activity:** Can be done through science inquiry projects and science notebooks						
SC.1.N.1.4	Ask "how do you know?" in appropriate situations. Complexity: Moderate	Should accompany all activities						
Required Activity	Keep an observation log using pictures and/or written descriptions of a growing, living object. Examples: 1) Plant Growth – plant a seed and monitor grow for several weeks. 2) Tree Seasons – monitor a tree throughout the year. 3) Animal Growth – Monitor the changes in a caterpillar or a tadpole.							
Associated Vocabulary	Exploration, appropriate explanations, sense, observation, investigate, record, shape, texture , predict, fair test, **data***, describe							
Assessment/ Connections Information	**Writing** – Use the *Five Senses* Chart from Six Traits to describe an object or place. **Social Studies** – SS.1.A.2.1 – Use Johnny Appleseed as one historical figure. Explore the growth of an apple tree/apple as part of activities related to Johnny Appleseed. SS.1.A.3.2 – Create a timeline showing the development of a plant or animal.							

Body of Knowledge: Earth/Space Science

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	RESOURCES/ACTIVITIES/TEXT CORRELATION	DATE					
			11/12	12/13	13/14	14/15	15/16	16/17
SC.1.E.5.1	Observe and discuss that there are more stars in the sky than anyone can easily count and that they are not scattered evenly in the sky. Complexity: Moderate	**Text:** Sun and Stars – TE pages 10-11						
SC.1.E.5.2	Explore the Law of Gravity by demonstrating that Earth's gravity pulls any object on or near Earth toward it even though nothing is touching the object. Complexity: Moderate	**Text:** Pushes and Pulls – TE page 22						
SC.1.E.5.3	Investigate how magnifiers make things appear bigger and help people see things they could not see without them. Complexity: Moderate	**Text:** Sun and Stars – TE pages 19c-f						
SC.1.E.5.4	Identify the beneficial and harmful properties of the Sun. Complexity: Moderate	**Activity:** Sunwise - a Program that Radiates Good Ideas (K-2 PowerPoint that includes benefits/harm due to the sun). http://www.epa.gov/sunwise/educator-resources.html (on www.floridastandards.org) **Text:** Sun and Stars – TE pages 8-9, 12-19						
Required Activity	Experiment with magnifying glasses, binoculars, etc. Have students record what they can see with and without the tools.							
Associated Vocabulary	Space, **star***, **solar system***, galaxy, law, gravity, Earth, moon, weight, investigate, magnify, telescope, sun, beneficial, harmful							
Assessment/ Connections Information	**Writing Connection:** Use the writing activity "Near Eyes/Far Eyes" to help students add details to drawing/writing. Have students pretend to have binoculars to look for details. **Health Connection: HE.1.C.1.1** identify healthy behaviors (wearing sunscreen); **HE.1.P.2.1** encourage others to make positive health choices (use sunscreen)							

Body of Knowledge: Earth/Space Science

Big Idea 6: Earth Structures

Humans continue to explore the composition and structure of the surface of the Earth. External sources of energy have continuously altered the features of the Earth by means of both constructive and destructive forces. All life, including human civilization, is dependent on Earth's water and natural resources.

BENCHMARK CODE	BENCHMARK	RESOURCES/ACTIVITIES/TEXT CORRELATION	DATE					
			11/12	12/13	13/14	14/15	15/16	16/17
SC.1.E.6.1	Recognize that water, rocks, soil, and living organisms are found on Earth's surface. Complexity: Low	**Activity:** See *Square of Life* activity on SC.1.L.14.1. **Text:** Land and Water – TE pages 4-12, pages 16-23						
SC.1.E.6.2	Describe the need for water and how to be safe around water. Complexity: Moderate	**Activity:** http://static.water.org/pdfs/WPElemCurric4_0.pdf - Water Has Many Uses – includes questionnaire to track family water usage; how water use varies by season. **Connection:** SC.1.L.14.3 living/non-living; SC.1.L.17.1 basic needs of living things **Resource:** How to Be Safe Around Water – Coast Guard **Text:** Land and Water – TE pages 16-23						
SC.1.E.6.3	Recognize that some things in the world around us happen fast and some happen slowly. Complexity: High	**Activity:** List a variety of things that happen in the world, and work with students to put them in time order from fastest to slowest. Examples: filling a glass from a dripping faucet; melting a cube of ice; evaporation of a small amount of water in the sun; a wet garment drying on a line; a leaf turning brown when it is removed from a plant, etc. **Text:** Land and Water – TE pages 28-37						
Required Activity	**Option 1:** Place rocks and sand in a tray. Tilt the tray slightly. Use a narrow-necked bottle to drip water from the high side of the tray. What happens to the water, the sand and the rocks as you continue to drip? What would happen if we poured a lot at once? Compare this to a river or a flood. **Option 2:** Directed Inquiry – Investigate How Water Moves – Land and Water TE pages 15c-f							
Associated Vocabulary	**Organism***, necessity							

Assessment/ Connections Information	**Art Connection:** Collage of ways people use water or things that need water to live. **Social Studies:** SS.1.G.1.4 – Locate a variety of physical features on a map or globe (mountains, oceans, rivers, etc.) **Health Connection: HE.1.C.1.4** - identify ways to prevent childhood injuries, i.e., water safety

Body of Knowledge: Physical Science

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 and 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	RESOURCES/ACTIVITIES/TEXT CORRELATION	DATE					
			11/12	12/13	13/14	14/15	15/16	16/17
SC.1.P.8.1	Sort objects by observable properties, such as size, shape, color, temperature (hot or cold), weight (heavy or light), texture and whether objects sink or float. Complexity: Moderate	**Resource:** BrainPop Jr. Video – *Sink or Float* **Text:** Properties – TE pages 4-17, pages 18-27						
Required Activity	Set up a variety of water receptacles to use for a sink/float exploration. Need: dishpan or large bowls with approximately 3-4 students per pan. Each group has items to sort as something that will sink or float. Predict as a group. Then allow students to experiment to confirm if predictions were correct.							
Associated Vocabulary	Observe, properties, temperature, weight, sort, texture, sink, float							
Assessment/ Connections Information	**Writing Connection:** Interactive Writing – Choose an object and write (with the teacher) about it floating down a river.							

Body of Knowledge: Physical Science

Big Idea 12: Motion of Objects

A. Motion is a key characteristic of all matter that can be observed, described and measured.

B. The motion of objects can be changed by forces.

BENCHMARK CODE	BENCHMARK	RESOURCES/ACTIVITIES/TEXT CORRELATION	DATE					
			11/12	12/13	13/14	14/15	15/16	16/17
SC.1.P.12.1	Demonstrate and describe the various ways that objects can move, such as in a straight line, zigzag, back-and-forth, round-and-round, fast and slow. Complexity: Moderate	**Text:** Pushes and Pulls – TE pages 18-27						
Required Activity	Play a game like Simon Says and have students use a variety of motions and speeds to move. This may be done outside or with small objects (a block) on student desks.							
Associated Vocabulary	Demonstrate, motion, describe							
Assessment/ Connections Information	**Writing Connection:** Make a class list of objects and how they move.							

Body of Knowledge: Physical Science

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	RESOURCES/ACTIVITIES/TEXT CORRELATION	DATE					
			11/12	12/13	13/14	14/15	15/16	16/17
SC.1.1.P.13.1	Demonstrate that the way to change the motion of an object is by applying a push or a pull. Complexity: Moderate	**Resource:** BrainPop Jr. – *Pushes and Pulls* **Text:** Pushes and Pulls – TE pages 6-7						
Required Activity	**Pushes and Pulls TE pages 17a-d:** Directed Inquiry – Investigate Motion							
Associated Vocabulary	Demonstrate, motion, push, pull							
Assessment/ Connections Information	Look at examples of "Pushes and Pulls" on playground equipment.							

Body of Knowledge: Life Science

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	RESOURCES/ACTIVITIES/TEXT CORRELATION	DATE					
			11/12	12/13	13/14	14/15	15/16	16/17
SC.1.L.14.1	Make observations of living things and their environment using the five senses. Complexity: Low	**Text:** Living Things – TE pages 4-5, pages 15e-h						
SC.1.L.14.2	Identify the major parts of plants, including stem, roots, leaves, and flowers. Complexity: Low	**Resource:** BrainPop, Jr. *Parts of a Plant.* **Activity:** Build a plant – Have construction paper shapes. Students create and plant from the shapes and label the different parts. **Text:** Plants and Animals – TE pages 8-13						
SC.1.L.14.3	Differentiate between living and non living things. Complexity: High	**Text:** Living Things – TE pages 6-15						
Required Activity	**Square of Life:** Mark off one square foot or yard of ground for each child or pair of children. Students must document both living and non-living objects found in their square. Documentation may include pictures, written description, samples, lists, etc. Make sure to include different types of areas (grassy, sandy, etc.). They can then compare their findings with another person or group. As a class, the information can be tallied and graphed. Predictions can be made as to what we could expect to find in another square in the same area. "What data leads to that prediction?"							
Associated Vocabulary	Living, senses, observation, **environment***, stem, roots, leaves, flowers, **soil***, dirt, differentiate, non-living							
Assessment/ Connections Information	**Reading:** Harcourt StoryTown – *Plants Can't Jump* story **Writing:** *Give Me Five* strategy. Students describe objects based on how it feels, smells, tastes, looks, sounds. Teacher then works with students in interactive writing to use sentence to create a description.							

Body of Knowledge: Life Science

Big Idea 16: Heredity and Reproduction **A. Offspring of plants and animals are similar to, but not exactly like, their parents or each other.** **B. Life cycles vary among organisms, but reproduction is a major stage in the life cycle of all organisms.**									
BENCHMARK CODE	**BENCHMARK**	**RESOURCES/ACTIVITIES/TEXT CORRELATION**	**DATE**						
			11/12	**12/13**	**13/14**	**14/15**	**15/16**	**16/17**
SC.1.L.16.1	Make observations that plants and animals closely resemble their parents, but variations exist among individuals within a population. Complexity: Low	**Text:** Plants and Animals – TE pages 14-17, pages 20-27						
Required Activity	Work with students to create and sort collections of plants and animals using pictures.							
Associated Vocabulary	Observation variation, similarities, **population***, offspring							
Assessment/ Connections Information	**Reading:** Use compare and contrast strategies. Use a Venn Diagram.							

Body of Knowledge: Life Science

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	RESOURCES/ACTIVITIES/TEXT CORRELATION	DATE					
			11/12	12/13	13/14	14/15	15/16	16/17
SC.1.L.17.1	Through observation, recognize that all plants and animals, including humans, need the basic necessities of air, water, food and space. Complexity: Low	**Text:** Living Things – TE pages 17-23, 24-33						
Required Activity	Using magazine pictures or student drawings, make a collage of things people need to survive.							
Associated Vocabulary	Observation, living things, necessity							
Assessment/ Connections Information	HE.1.B.2.1: Identify healthy ways to express needs, wants, and feelings. SS.K.E.1.4: Identify the difference between basic needs and wants. (This is kindergarten standard.)							

Appendix A
Vocabulary

Appropriate Explanations
Beneficial
Compare
Data*
Demonstrate
Describe
Differentiate
Dirt
Earth
Environment*
Erosion*
Exploration
Fair test
Float
Flowers
Force*
Galaxy
Gravity
Harmful
Investigate
Law
Leaves
Living
Magnify
Moon
Motion
Necessity
Non-living
Observation
Observe
Off spring
Organism*
Population*
Predict
Properties
Pull
Push
Record
Roots
Sense
Similarities
Sink
Soil
Solar system*
Sort
Space
Star*
Stem
Sun
Telescope
Temperature
Texture
Variation
Weathering*
Weight

Appendix B

4-H Materials

The Wakulla County 4-H Program in conjunction with the University of Florida endorses uses and shares resource materials that can be found at the following websites: http://www.4-h.org/resource-library/curriculum/

To utilize the resources available from the 4-H Agent, Sherri Kraeft, please contact her at (850) 926-3931 or sjkraeft@ufl.edu .

Bold indicates curriculum that focuses on Science, Mathematics and Technology skills.

	Project Book Title	Resource
A	**Aerospace**	http://www.aces.edu/dept/4Haero/
	Agriculture	http://projects.4-hcurriculum.org/curriculum/afterschoolag/
	ATV Safety	http://svia.4-h.org/atvsafety/
B	**Beef**	http://www.4-h.org/resource-library/curriculum/4-h-beef/
	Bicycle	
	Butterfly	http://www.flmnh.ufl.edu/wings/
C	Cat	
	Child Development	
	Citizenship	
	Communication	
	Computer	
	Consumer Savvy	
D	**Dairy Cattle**	
	Dairy Goat	
	Dog	
	Down-To-Earth	
E	**Electric**	
	Entomology	http://new.4-hcurriculum.org/projects/entomology/
	Entrepreneurship	
	Exploring 4-H	
	Exploring Your Environment	http://online.4-hcurriculum.org/curriculum/environment/
F	**Financial**	
	Fishing	http://4hfishing.org/
	Food, Culture & Reading	http://projects.4-hcurriculum.org/curriculum/fcr/

	Foods	http://www.four-h.purdue.edu/foods/
	Forestry	http://new.4-hcurriculum.org/projects/forestry/
G	**Gardening**	
	Geospatial	
H	**Health and Fitness**	http://new.4-hcurriculum.org/projects/health/HealthCurriculum.htm
	Health Rocks!	
	Horse	http://www.4-hcurriculum.org/projects/leadership/
L	Latino Cultural Arts	
	Leadership	http://new.4-hcurriculum.org/projects/leadership
M	**Meat Goat**	
	Microwave	
O	**Outdoor Adventures**	http://www.4-h.org/resource-library/curriculum/4-h-outdoor-adventures/project-
P	Pets	
	Photography	http://new.4-hcurriculum.org/projects/photography/
	Poultry	
Q	**Quilting (Nebraska)**	
R	**Rabbit**	http://www.4-h.org/resource-library/curriculum/4-h-rabbit/
	Reading/Financial Literacy	http://online.4-hcurriculum.org/curriculum/reading/
	Robotics	http://www.4-h.org/resource-library/curriculum/4-h-robotics/
S	**Science Discovery**	http://discoverscience.rutgers.edu/curriculum/about.html
	Service Learning	
	Sewing	http://new.4-hcurriculum.org/projects/sewing/
	Sheep	
	Small Engines	http://new.4-hcurriculum.org/projects/smallengines/
	Swine	http://www.4-h.org/resource-library/curriculum/4-h-swine/
T	Theater Arts	
	There's No New Water	http://tnnw.4-hcurriculum.org/curriculum/water/
V	**Veterinary Science**	http://www.4-h.org/resource-library/curriculum/4-h-veterinary-science/
	Visual Arts	http://new.4-hcurriculum.org/projects/visualarts/
W	**The Power of the Wind**	http://online.4-hcurriculum.org/curriculum/wind/
	Woodworking	
	Workforce Readiness	