Wakulla County Schools

ELEMENTARY SCIENCE CURRICULUM

Second Grade

Without Access Points

Revised June, 2011

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Second Grade Science Curriculum

This curriculum is based upon the Next Generation Sunshine State Standards for Science. Second 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 second grade are *observe* and *infer.*

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 – Second 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 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 its questions and explanations.**

BENCHMARK CODE	BENCHMARK	RESOURCES/ACTIVITIES/TEXT CORRELATION	DATE					
			11/12	12/13	13/14	14/15	15/16	16/17
SC.2.N.1.1	Raise questions about the natural world, investigate them in teams through free exploration and systematic observations, and generate appropriate explanations based on those explorations. Complexity: High	These benchmarks are addressed through the experiments and investigations that occur during each lesson. Such activities are referenced before and after each lesson in the text.						
SC.2.N.1.2	Compare the observations made by different groups using the same tools. Complexity: Moderate							
SC.2.N.1.3	Ask "how do you know?" in appropriate situations and attempt reasonable answers when asked the same question by others. Complexity: High							
SC.2.N.1.4	Explain how particular scientific investigations should yield similar conclusions when repeated. Complexity: High							
SC.2.N.1.5	Distinguish between empirical observation (what you see, hear, feel, smell and taste) and ideas or inferences (what you think). Complexity: Moderate							
SC.2.N.1.6	Explain how scientists alone or in groups are always investigating new ways to solve problems. Complexity: Moderate							

Required Activity	**Square of Life Project:** 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?" (This is a repeat of a first grade activity, so the level of accomplishment and questioning should be higher when the students perform this investigation in second grade.)						
Associated Vocabulary	**Investigation***, **observation***, explain, compare, reasonable answer, similar, **conclusion***, distinguish, **inference***						
Assessment/ Connections Information							

Body of Knowledge: Earth/Space Science

Big Idea 6: Earth Structures **Humans continue to explore the composition and structure of the surface of Earth. External sources of energy have continuously altered the features of 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.2.E.6.1	Recognize that Earth is made up of rocks. Rocks come in many sizes and shapes. Complexity: Moderate	**Text:** Rocks and Soil – Chapter 1						
SC.2.E.6.2	Describe how small pieces of rock and dead plants and animal parts can be the basis of soil and explain the process by which soil is formed. Complexity: High	**Text:** Rocks and Soil – Chapter 2						
SC.2.E.6.3	Classify soil types based on color, texture (size of particles), ability to retain water, and the ability to support the growth of plants. Complexity: High	**Text:** Rocks and Soil – Chapter 3						
Required Activity	Investigate the Properties of Rocks (Learning Master 8) Rock Hunters (CPALMS)							
Associated Vocabulary	Natural resource, retain, **classify***, **texture***, particle, **soil***							
Assessment/ Connections Information	**Social Studies:** SS.K.G.3.1: Identify basic landforms. – Kindergarten Benchmark.							

Body of Knowledge: Earth/Space Science

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**	**RESOURCES/ACTIVITIES/TEXT CORRELATION**	**DATE**						
			11/12	**12/13**	**13/14**	**14/15**	**15/16**	**16/17**
SC.2.E.7.1	Compare and describe changing patterns in nature that repeat themselves, such as weather conditions including temperature and precipitation, day to day and season to season. Complexity: Moderate	**Text:** Weather – Chapter 2 EOYO – *Sometimes It's …*						
SC.2.E.7.2	Investigate by observing and measuring, that the Sun's energy directly and indirectly warms the water, land and air. Complexity: High	**Text:** Weather – Chapter 1 **Activity:** Warmth of the Sun (CPALMS) BEB – *A Warm Place*						
SC.2.E.7.3	Investigate, observe and describe how water left in an open container disappears (evaporates), but water in a closed container does not disappear (evaporate). Complexity: High	**Text:** Weather – Chapter 1 **BEB =** *A Windy Place*						
SC.2.E.7.4	Investigate that air is all around us and that moving air is wind. Complexity: High	**Text:** Weather – Chapter 1						
SC.2.E.7.5	State the importance of preparing for severe weather, lightning and other weather related events. Complexity: Low	**Text:** Weather – Chapter 3						
Required Activity	**Investigate Water –** Weather Chapter 1							
Associated Vocabulary	**Water cycle***, temperature, **water vapor***, patterns, **condensation***, **precipitation***, season, **weather***, measure, direct, indirect, energy, evaporates, wind, severe weather, **physical change***							
Assessment/ Connections Information	**Social Studies:** SS.K.G.3.3: Describe and give examples of seasons, weather changes, and illustrate how weather affects people and the environment. (Kindergarten Benchmark) SS.1.G.1.6: Describe how location, weather and physical environment affect the way people live in our community. (First Grade Benchmark) **Math:** MA.2.A.2.4: Solve addition and subtraction problems that involve measurement and geometry. (Measuring Temperature) MA.2.A.4.3: Generalize numeric and non-numeric patterns using words and tables.							

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 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	RESOURCES/ACTIVITIES/TEXT CORRELATION	DATE					
			11/12	12/13	13/14	14/15	15/16	16/17
SC.2.P.8.1	Observe and measure objects in terms of their properties, including size, shape, color, temperature, weight, texture, sinking or floating in water, and attraction and repulsion of magnets. Complexity: Low	**Text:** Solids, Liquids and Gases – Chapter 2 BEB - *Beach*						
SC.2.P.8.2	Identify objects and materials as solid, liquid or gas. Complexity: Low	**Text:** Solids, Liquids and Gases – Chapter 1 **Activity:** Air Is Matter (CPALMS)						
SC.2.P.8.3	Recognize that solids have a definite shape and that liquids and gases take the shape of their container. Complexity: Low							
SC.2.P.8.4	Observe and describe water in its solid, liquid and gaseous states. Complexity: Low	**Activity:** Water Phases (CPALMS) **Text:** Solids, Liquids and Gases – Chapter 3						
SC.2.P.8.5	Measure and compare temperatures taken every day at the same time. Complexity: Moderate	**Text:** Solids, Liquids and Gases – Chapter 2						
SC.2.P.8.6	Measure and compare the volume of liquids using containers of various shapes and sizes. Complexity: Moderate	**Text:** Solids, Liquids and Gases – Chapter 2						
Required Activity	*Investigate solids, liquids and gases* – Chapter 1/Explore Activity							
Associated Vocabulary	Properties, **physical change***, repulsion, gravity, **texture***, **attraction***, **weight***, **water vapor***, **solid***, **water cycle***, liquid, gas, objects, **matter***, state, gaseous, temperature, measure, compare, **volume***, various							
Assessment/ Connections Information	**Math:** Measurement							

Body of Knowledge: Physical Science

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	RESOURCES/ACTIVITIES/TEXT CORRELATION	DATE					
			11/12	12/13	13/14	14/15	15/16	16/17
SC.2.P.9.1	Investigate that materials can be altered to change some of their properties, but not all materials respond the same way to any one alteration. Complexity: High	**Text:** Solids, Liquids and Gases – Chapter 3 BEB – *Campsites; Cities*						
Required Activity	Different Materials Respond Differently - Virtual Manipulative – (CPALMS) Air Is Matter (CPALSM)							
Associated Vocabulary	**Investigate***, materials, properties, alteration							
Assessment/ Connection Information								

Body of Knowledge: Physical Science

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**	**RESOURCES/ACTIVITIES/TEXT CORRELATION**	**DATE**					
			11/12	**12/13**	**13/14**	**14/15**	**15/16**	**16/17**
SC.2.P.10.1	Discuss that people use electricity or other forms of energy to cook their food, cool or warm their homes and power their cars. Complexity: High	**Activity:** Sun and ME (CPALMS) – This is a complete unit. *Not specifically covered in the text – requires supplementation.* Check Mag Lab Resources						
Required Activity	**Activity:** Sun and ME (CPALMS)							
Associated Vocabulary	Heat, electricity, energy, power							
Assessment Information								

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.2.P.13.1	Investigate the effect of applying various pushes and pulls on different objects. Complexity: High	**Text:** Forces and Motion – Chapter 1						
SC.2.P.13.2	Demonstrate that magnets can be used to make some things move without touching them. Complexity: Low	**Text:** Forces and Motion – Chapter 3						
SC.2.P.13.3	Recognize that objects are pulled toward the ground unless something holds them up. Complexity: Low	**Text:** Forces and Motion – Chapter 2						
SC.2.P.13.4	Demonstrate that the greater the force (push or pull) applied to an object, the greater the change in motion of the object. Complexity: Moderate	**Text:** Forces and Motion – Chapter 1						
Required Activity	Pushes and Pulls (CPALMS)							
Associated Vocabulary	Motion, push/pull, **attraction***, repulsion, magnet, gravity, **force***							
Assessment/ Connections Information								

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 grown 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.2.L.14.1	Distinguish human body parts (brain, heart, lungs, stomach, muscles and skeleton) and their basic functions. Complexity: Moderate	**Resource:** http://www.hvrsd.org/tollgate/home/classes/human/human2.html **Text:** Life Cycles – Chapter 2						
Required Activity								
Associated Vocabulary	Distinguish, basic function, brain, heart, lungs, stomach, muscles, skeleton, internal/external, **nutrient***, **organism***							
Assessment/ Connection Information	**Health:** HE.2.C.1.6: Recognize the locations and functions of major human organs.							

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.2.L.16.1	Observe and describe major stages in the life cycles of plants and animals, including beans and butterflies. Complexity: Moderate	**Text:** Life Cycles – Chapters 1, 2						
Required Activity	Plant Life Cycles (CPALMS) Life Cycles of Frogs, Dragonflies & Butterflies(CPALMS) Exploring Plants(CPALMS)							
Associated Vocabulary	Major stages, **life cycle***, habitat, **pupa***, **reproduction***, **larva***, **species***, **organism***, **complete metamorphosis***							
Assessment/ Connections Information								

Body of Knowledge: Life Science

Big Idea 17: Interdependence

- **C. Plants and animals, including humans, interact with and depend upon each other and their environment to satisfy their basic needs.**
- **D. Both human activities and natural events can have major impacts on the environment.**
- **E. Energy flows from the sun through producers to consumers.**

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			11/12	12/13	13/14	14/15	15/16	16/17
SC.2.L.17.1	Compare and contrast the basic needs that all living things, including humans, have for survival. Complexity: Moderate	**Text:** Habitats – Chapters 2, 3						
SC.2.L.17.2	Recognize and explain that living things are found all over Earth, but each is only able to live in habitats that meet its basic needs. Complexity: Moderate	**Text:** Chapter 1						
Required Activity	Square of Life Project							
Associated Vocabulary	Survival, **adaptation***, basic needs, **community***, **ecosystem***, **environment***, **food chair***, **herbivore***, **carnivore***, **omnivore***, **reproduction***, **species***, **predator***, **prey***, habitat							
Assessment/ Connection Information	**Health:** HE.2.B.2.1: Demonstrate healthy ways to express needs, wants, and feelings.							

Appendix A

Vocabulary

Adaptation*
alteration
attraction*
basic function
basic needs
brain
carnivore*
classify*
community*
compare
complete metamorphosis*
conclusion*
condensation*
direct
distinguish
ecosystem*
electricity
energy
environment*
evaporates
explain
external
food chain*
force*
gas
gaseous
gravity
habitat
heart
heat
herbivore*
indirect
inference*
internal
investigate*
larva*
life cycle*
liquid
lungs
magnet
major stages
materials
matter*
measure
motion
muscles
nutrient*
objects
observation*
omnivore*
organism*
particle
patterns
physical change*
power
precipitation*
predator*
prey*
properties
pupa*
push
pull
reasonable answer
reproduction*
repulsion
retain
season
severe weather
similar
skeleton
soil*
solid
species*
state
stomach
survival
temperature
texture*
various
volume*
water cycle*
water vapor*
weather*
weight*
wind

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-overview.html
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	

Appendix C

Tools/Resources Needed

Scales
Measuring cups/cylinders
Thermometers
Hot plate
Pot/pan
Mirrors
Magnets
Flashlights
Hand lens
Binoculars
3 categories of rocks
Minerals
Stop watches
Solar system model
Barometer
Human body – organs/skeleton
Soil – sandy, clay