

**KINDERGARTEN
SCIENCE ORDER OF INSTRUCTION**

1st Nine Weeks	2nd Nine Weeks	3rd Nine Weeks	4th Nine Weeks
<u>Body of Knowledge:</u> <u>Life Science</u> (2 benchmarks)	<u>Body of Knowledge:</u> <u>Earth and Space Science</u> (6 benchmarks)	<u>Body of Knowledge:</u> <u>Physical Science</u> (5 benchmarks)	<u>Body of Knowledge:</u> <u>Life Science</u> (1 benchmark)
Big Idea 14: Organization and Development of Living Organisms (SC.K.L.14.1, SC.K.L.14.2)	Big Idea 5: Earth in Space and Time	Big Idea 8: Properties of Matter Big Idea 9: Changes in Matter Big Idea 10: Forms of Energy Big Idea 12: Motion of Objects Big Idea 13: Forces and Changes in Motion	Big Idea 14: Organization and Development of Living Organisms (SC.K.L.14.3)

Big Idea 1: The Practice of Science

The Practice of Science benchmarks should be introduced during the first nine weeks and then embedded in all science lessons throughout the year as they blend easily with teaching inquiry and are the basis of an activity/lab-based science classroom. It is vital that kindergarten students be given multiple opportunities to collaborate with partners, make observations of the natural world using their five senses, keep records of investigations, observe and create visual representations, and recognize that learning comes from careful observation. Lab safety and the use of scientific tools should also be introduced at the beginning of the year and re-addressed throughout the year.

Rationale for Kindergarten Order of Instruction:

1st Nine Weeks

Life Science benchmarks 14.1 and 14.2 (Big Idea 14) are taught in the first grading period because brain-based research shows that kindergarteners are still developmentally “All about Me.” This leads to beginning the school year with the five senses.

2nd Nine Weeks

Earth and Space Science benchmarks are taught during the second grading period because the Sun sets earlier at this time of year which allows students the opportunity to make night time observations.

3rd Nine Weeks

Physical Science benchmarks are taught during the third grading period because force and motion concepts are abstract and students are better able to grasp these concepts later in the school year.

4th Nine Weeks



Life Science benchmark 14.3 (Big Idea 14) is taught during the fourth grading period because as the year progresses, the students' knowledge base expands from focusing on themselves (five senses) to include the rest of the world (plants and animals).

KINDERGARTEN
BODY OF KNOWLEDGE: LIFE SCIENCE
<p style="text-align: center;">BIG IDEA 14: ORGANIZATION AND DEVELOPMENT OF LIVING ORGANISMS</p> <p>A. All plants and animals, including humans, are alike in some ways and different in others.</p> <p>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.</p> <p>C. Humans can better understand the natural world through careful observation.</p>
ESSENTIAL QUESTIONS
<p>How do we use our senses to gather information?</p> <p>Why are plants and animals sometimes portrayed differently in books and movies than they are in real life?</p>
BENCHMARKS AND TASK ANALYSES
<p>SC.K.L.14.1 Recognize the five senses and related body parts. The student:</p> <ul style="list-style-type: none"> • explores each sense separately (e.g., using sight to observe things). • explores the body part that was used for each sense (e.g., using eyes for sight). <p>SC.K.L.14.2 Recognize that some books and other media portray animals and plants with characteristics and behaviors they do not have in real life. The student:</p> <ul style="list-style-type: none"> • observes plants and animals through non-fiction (videos, books, and other materials), displaying their true characteristics (e.g., plants growing in the ground) and behaviors (e.g., animals searching for food). • observes plants and animals through fiction (videos, books, other materials), displaying human characteristics (e.g., wearing clothes) and behaviors (e.g., talking) that they do not have in real life. • discusses observations made from non-fiction and fiction materials.
OCPS ESSENTIAL LABS www.science.ocps.net
<p>Introduction to the Five Senses</p> <p>Seeing</p> <p>Hearing</p> <p>Smelling</p> <p>Touching</p> <p>Tasting</p> <p>Plant Characteristics in Media</p> <p>Animal Characteristics in Media</p>
VOCABULARY
senses, seeing, hearing, touching, tasting, smelling
The textbook is NOT the curriculum. The Next Generation Sunshine State Standards for Science are the mandated curriculum.
SUPPORTING RESOURCES



Scott Foresman	SC.K.L.14.1 136-137 SC.K.L.14.2 5b, 71b
AIMS www.aimsedu.org	SC.K.L.14.1 <i>Sense-able Science: The Art of Tasting, Shape Search, Touch and Tell, Paper Picnic?, Canned Scents, Texture Rough-Texture Smooth</i> <i>Primarily Physics: Big Ears</i> <i>E-activities: Scratching the Surface, Holiday Sense</i>
Literature	<i>My Five Senses</i> , Margaret Miller <i>My Five Senses</i> , Alike <i>I See</i> , Helen Oxenbury <i>I Hear</i> , Helen Oxenbury <i>I Touch</i> , Helen Oxenbury <i>The 5 Senses</i> , Nuria Roca <i>The 5 Senses</i> , Maria Ruis (series) <i>Click Clack Moo</i> , Doreen Cronin
Web Links	http://kids.nationalgeographic.com/Stories/AnimalsNature/Meat-eating-plants venus fly traps
Field Experiences	
Other	<i>Science & Children</i> , Nov. 2006, Vol. 44, No. 3, Analyzing Anthropomorphisms



KINDERGARTEN
BODY OF KNOWLEDGE: EARTH 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.
ESSENTIAL QUESTIONS
How does gravity affect objects? How does the day-and-night pattern affect our lives? What things are seen in the day sky? What things are seen in the night sky? How do objects look as seen from the Earth?
BENCHMARKS AND TASK ANALYSES
SC.K.E.5.1 Explore the Law of Gravity by investigating how objects are pulled toward the ground unless something holds them up. The student: <ul style="list-style-type: none"> • drops a variety of objects. • predicts what will happen when different objects are dropped. • observes and discusses what happens to objects as they are dropped. • explores ways to keep objects from falling. SC.K.E.5.2 Recognize the repeating pattern of day and night. SC.K.E.5.3 Recognize that the Sun can only be seen in the daytime. SC.K.E.5.4 Observe that sometimes the moon can be seen at night and sometimes during the day. The student: <ul style="list-style-type: none"> • records observations of the sky during the day for at least one month using science notebooks or a class chart. • records observations of the sky during the night for at least one month using science notebooks or a class chart (teacher can print moon pictures from weather channel). • expresses through the use of pictures, diagrams, or orally: understanding of the pattern of day and night, that the Sun can only be seen in the daytime, and that the moon can be seen at night and sometimes during the day SC.K.E.5.5 Observe that things can be big and things can be small as seen from Earth. The student: <ul style="list-style-type: none"> • identifies that some things seen from Earth are big and some things seen from Earth are small (e.g., a building is big and a student is small). SC.K.E.5.6 Observe that some objects are far away and some are nearby as seen from Earth. The student: <ul style="list-style-type: none"> • identifies that some things seen from Earth are nearby and some things seen from Earth are far away (e.g., standing next to the board, it is close and standing across the room, the board is far away).
OCPS ESSENTIAL LABS www.science.ocps.net
Exploring Gravity Gravity and Parachutes Pattern of Day and Night The Sun Is Seen Only in the Daytime The Moon Is Sometimes Visible during the Day Big, Small, Near, and Far



VOCABULARY

gravity, day, night, Sun, moon, Earth, sky

The textbook is NOT the curriculum. The Next Generation Sunshine State Standards for Science are the mandated curriculum.

SUPPORTING RESOURCES

Formative Assessment Probes	<i>Uncovering Student Ideas in Science</i> , Page Keeley SC.K.E.5.3, SC.K.E.5.4 Vol. 2: Objects in the Sky
Scott Foresman	SC.K.E.5.2 212-213, 220-221, 251a, FCAT Test Prep: 72 SC.K.E.5.3 212-213, 216-217, 225c, FCAT Test Prep: 67, 71, 79, 94 SC.K.E.5.4 216-217, 218-219, 224-225, 225c, 225d; SC.K.E.5.5 208E, 218-219, FCAT Test Prep: 71, 72
AIMS www.aimsedu.org	SC.K.E.5.1 <i>E-activity: If It's Up, It Must Come Down; What Goes Up-Must Come Down</i> SC.K.E.5.2 <i>Primarily Weather: Calendar Connections</i> SC.K.E.5.3 <i>Primarily Weather: Calendar Connections</i> SC.K.E.5.4 <i>Primarily Weather: Calendar Connections</i>
Literature	<i>What Is Gravity?</i> Lisa Trumbauer <i>Seasons of the Year</i> , Margaret Hall <i>A Week of Weather</i> , DJ Cortland <i>Gravity</i> , Newbridge <i>Will It Come Down?</i> Newbridge <i>The Forces of Gravity</i> , Newbridge
Web Links	http://www.beaconlearningcenter.com/WebLessons/SunriseSunset/default.htm sky during day and night
Field Experiences	
Other	



KINDERGARTEN	
BODY OF KNOWLEDGE: PHYSICAL SCIENCE	
BIG IDEA 8: PROPERTIES OF MATTER	
<p>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.</p> <p>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.</p>	
ESSENTIAL QUESTIONS	
<p>In what ways can we describe objects? In what ways can we sort objects?</p>	
BENCHMARKS AND TASK ANALYSES	
<p>SC.K.P.8.1 Sort objects by observable properties, such as size, shape, color, temperature (hot or cold), weight (heavy or light), and texture. The student:</p> <ul style="list-style-type: none"> • explores a variety of objects that are different sizes, shapes, colors, temperatures (hot or cold), weights (heavy or light), and textures. • sorts objects by one property at a time (e.g., size). • sorts objects by two or more properties at a time (e.g., size and color). 	
OCPS ESSENTIAL LABS	
<p>www.science.ocps.net</p>	
<p>Sorting by Color Sorting by Shape Sorting by Color and Shape Sorting by Size Sorting by Temperature Sorting by Weight Sorting by Texture</p>	
VOCABULARY	
<p>sort, observe, hot, cold, heavy, light, texture</p>	
<p>The textbook is NOT the curriculum. The Next Generation Sunshine State Standards for Science are the mandated curriculum.</p>	
SUPPORTING RESOURCES	
Scott Foresman	SC.K.P.8.1 134E, 138-139, 140-141, 142-143, 144-145, 155c, 155d, 201, FCAT Test Prep: 43, 45, 46, 47, 48, 61, 62, 87
AIMS www.aimsedu.org	SC.K.P.8.1 <i>Under Construction</i> : All Sorts of Stuff, Made by <i>Fall Into Math and Science</i> : Apples A-Peel to Me <i>E activity</i> : Living or Nonliving, Cereal Numbers, Dirt Drawings <i>Sense-able Science</i> : Bag of Beads <i>Winter Wonders</i> : The Gingerbread Man
Literature	<i>What Shape Is It?</i> Bobbie Kalman <i>Which Weighs More?</i> Susan McCloskey <i>Is It Rough?</i> Tana Hoban <i>Is It Smooth?</i> Tana Hoban



	<i>Is It Shiny?</i> Tana Hoban <i>Beep Beep, Vroom Vroom!</i> , Stuart J. Murphy
Web Links	http://www.bbc.co.uk/schools/scienceclips/ages/5_6/sorting_using_mate.shtml sorting
Field Experiences	
Other	<i>Science & Children</i> , Mar. 2009, Vol. 46, No. 7, Classifying Classification <i>Science & Children</i> , Dec. 2006, Vol. 44, No. 4, Geosciences for Preschoolers



KINDERGARTEN	
BODY OF KNOWLEDGE: PHYSICAL SCIENCE	
BIG IDEA 9: CHANGES IN MATTER	
<p>A. Matter can undergo a variety of changes.</p> <p>B. Matter can be changed physically or chemically.</p>	
ESSENTIAL QUESTIONS	
How can we change the shape of materials?	
BENCHMARKS AND TASK ANALYSES	
<p>SC.K.P.9.1 Recognize that the shape of materials such as paper and clay can be changed by cutting, tearing, crumpling, smashing, or rolling.</p> <p>The student:</p> <ul style="list-style-type: none"> • changes the shape of paper by cutting, tearing, crumpling, smashing, or rolling. • changes the shape of clay by cutting, tearing, crumpling, smashing, or rolling. 	
OCPS ESSENTIAL LABS	
www.science.ocps.net	
Physical Changes with Paper	
Physical Changes with Clay	
VOCABULARY	
change	
The textbook is NOT the curriculum. The Next Generation Sunshine State Standards for Science are the mandated curriculum.	
SUPPORTING RESOURCES	
Scott Foresman	SC.K.P.9.1 52-15, FCAT Test Prep: 44, 45, 46, 61
AIMS www.aimsedu.org	
Literature	<i>Fold, Cut, Mix</i> , Newbridge <i>Using Rocks</i> , Sharon Katz Cooper
Web Links	
Field Experiences	
Other	



KINDERGARTEN	
BODY OF KNOWLEDGE: PHYSICAL SCIENCE	
BIG IDEA 10: FORMS OF ENERGY	
<p>A. Energy is involved in all physical processes and is a unifying concept in many areas of science.</p> <p>B. Energy exists in many forms and has the ability to do work or cause a change.</p>	
ESSENTIAL QUESTIONS	
How are sounds produced?	
BENCHMARKS AND TASK ANALYSES	
<p>SC.K.P.10.1 Observe that things that make sound vibrate. The student:</p> <ul style="list-style-type: none"> produces sound by creating vibrations (rapid back and forth movements) using a variety of objects (e.g., plucking rubber bands on Geoboards). 	
OCPS ESSENTIAL LABS	
www.science.ocps.net	
Vibrations Make Sound	
VOCABULARY	
sound, vibrate	
The textbook is NOT the curriculum. The Next Generation Sunshine State Standards for Science are the mandated curriculum.	
SUPPORTING RESOURCES	
Formative Assessment Probes	<i>Uncovering Student Ideas in Science</i> , Page Keeley SC.K.P.10.1 Vol.1: Making Sound (You must adapt this probe for kindergarten.)
Scott Foresman	SC.K.P.10.1 190-191, 205a, FCAT Test Prep: 56, 57, 58, 59, 66, 93
AIMS www.aimsedu.org	SC.K.P.10.1 <i>Primarily Physics</i> : Sound Is Vibration
Literature	<i>Sounds</i> , Newbridge <i>Quiet Sounds</i> , Julia Bellish <i>What Kind of Sound?</i> Vita Jimenez <i>Sounds All Around</i> , Wendy Pfeffer
Web Links	http://www.bbc.co.uk/schools/scienceclips/ages/5_6/sound_hearing.shtml sound http://www.bbc.co.uk/schools/ks2bitesize/science/activities/changing_sounds.s



	html sound (shows vibrations) http://www.bbc.co.uk/cbeebies/razzledazzle/bishbashbosh/soundscape/index.shtml html animal sounds
Field Experiences	Orlando Science Center (www.osc.org , 407-514-2000)
Other	



KINDERGARTEN	
BODY OF KNOWLEDGE: PHYSICAL SCIENCE	
BIG IDEA 12: MOTION OF OBJECTS	
<p>A. Motion is a key characteristic of all matter that can be observed, described, and measured.</p> <p>B. The motion of objects can be changed by forces.</p>	
ESSENTIAL QUESTIONS	
In what ways do objects move?	
BENCHMARKS AND TASK ANALYSES	
<p>SC.K.P.12.1 Investigate that things move in different ways, such as fast, slow, etc. The student:</p> <ul style="list-style-type: none"> • explores the movement of various objects. • discusses different types of movements that were observed during explorations (e.g., fast, slow). • demonstrates fast and slow movements of various objects. 	
OCPS ESSENTIAL LABS	
www.science.ocps.net	
<p>Investigating Fast and Slow Motions Fast and Slow Motions Using Different Sized Objects Fast and Slow Motions Using Ramps</p>	
VOCABULARY	
move	
The textbook is NOT the curriculum. The Next Generation Sunshine State Standards for Science are the mandated curriculum.	
SUPPORTING RESOURCES	
Scott Foresman	SC.K.P.12.1 174E, 178-179, 184-185, 186-187, 188-189, 195c, 244-245, 252-253, FCAT Test Prep: 55, 57, 58, 60, 65, 66
AIMS www.aimsedu.org	SC.K.P.12.1 <i>E-activity:</i> Lid Skid <i>Sensational Springtime:</i> Blow and Go
Literature	<i>The Book of Movement Exploration</i> , John M. Feierabend
Web Links	
Field Experiences	Orlando Science Center (www.osc.org , 407-514-2000)
Other	



KINDERGARTEN	
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.	
ESSENTIAL QUESTIONS	
How does a push or a pull change the way an object moves?	
BENCHMARKS AND TASK ANALYSES	
SC.K.P.13.1 Observe that a push or a pull can change the way an object is moving.	
The student:	
<ul style="list-style-type: none"> • identifies a push. • identifies a pull. • uses pushes and pulls to move various objects. 	
OCPS ESSENTIAL LABS	
www.science.ocps.net	
Push, Pull, and the Motion of Objects Pushing and Pulling Different Sizes of Objects Pushing and Pulling with Dominoes	
VOCABULARY	
push, pull	
The textbook is NOT the curriculum. The Next Generation Sunshine State Standards for Science are the mandated curriculum.	
SUPPORTING RESOURCES	
Scott Foresman	SC.K.P.13.1 174-175, 182-183, 192-193, 201a, 225D, 227, 230-231, 244-245, FCAT Test Prep: 55, 57, 58, 59, 60, 64, 65, 66, 73, 82, 92, 93, 93
AIMS www.aimsedu.org	SC.K.P.13.1 <i>E-activity:</i> Pushed Around <i>Sensational Springtime</i> or <i>Primarily Weather:</i> Wind Detectives <i>E-activity:</i> Push 'n' Pull Antics, Big Dog Charades <i>Sensational Springtime:</i> Flying Lion, Gliding Lamb
Literature	<i>Push or Pull</i> , Newbridge <i>Pull It, Push It</i> , Newbridge <i>Move It!</i> Adrienne Mason <i>Push and Pull</i> , Patricia Murphy <i>Forces Make Things Move</i> , Kimberly Brubaker Bradley
Web Links	http://www.bbc.co.uk/schools/digger/5_7entry/7.shtml push and pull
Field Experiences	Orlando Science Center (www.osc.org , 407-514-2000)
Other	



KINDERGARTEN	
BODY OF KNOWLEDGE: LIFE SCIENCE	
BIG IDEA 14: ORGANIZATION AND DEVELOPMENT OF LIVING ORGANISMS	
<p>A. All plants and animals, including humans, are alike in some ways and different in others.</p> <p>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.</p> <p>C. Humans can better understand the natural world through careful observation.</p>	
ESSENTIAL QUESTIONS	
How are plants and animals alike and different?	
BENCHMARKS AND TASK ANALYSES	
<p>SC.K.L.14.3 Observe plants and animals, describe how they are alike and how they are different in the way they look and in the things they do.</p> <p>The student:</p> <ul style="list-style-type: none"> • observes various plants and animals. • discusses how plants and animals are alike and different in the things they do (e.g., plants and animals both need food, but animals generally eat with their mouths and plants make their own food). • discusses how plants and animals are alike and different in the way they look (e.g., color, size). 	
OCPS ESSENTIAL LABS	
www.science.ocps.net	
Plant and Animal Comparisons Seed and Plant Comparisons Touching Earthworms Fair Tests with Earthworms Touching Pill Bugs Fair Tests with Pill Bugs Observing Ladybugs Paper Ladybug Model	
VOCABULARY	
plant, animal, alike, different	
The textbook is NOT the curriculum. The Next Generation Sunshine State Standards for Science are the mandated curriculum.	
SUPPORTING RESOURCES	
Scott Foresman	SC.K.L.14.3 14-15, 26E, 32-33, 36-37, 38-39, 45d, 54-55, 56-57, 58-59, 60-61, 65d, FCAT Test Prep: 10, 13, 14, 15, 16, 17, 18, 22, 23, 24, 86, 87
AIMS www.aimsedu.org	SC.K.L.14.3 <i>Sensational Springtime: Who's My Mom?</i> <i>E-activity: Marvelous Me!</i>
Literature	<i>Swing, Slither, or Swim</i> , Patricia M. Stockland <i>America's Seashores: Guide to Plants and Animals</i> , Marianne Wallace (series) <i>Animal Babies on the Move</i> , Susan Stockdale <i>What Is an Insect?</i> Robert Snedden <i>Diary of a Worm</i> , Doreen Cronin, series



	<p><i>An Earthworm's Life</i>, John Himmelman <i>A Ladybug's Life</i>, John Himmelman <i>A Pill Bug's Life</i>, John Himmelman <i>The Tiny Seed</i>, Eric Carle</p>
Web Links	<p>http://www.bbc.co.uk/cbeebies/comeoutside/fun/farm.shtml plants (above and below ground) http://animaldiversity.ummz.umich.edu/site/topics/frogCalls.html pictures of different frogs (to see that animals within the same type have similarities and differences) http://urbanext.illinois.edu/worms/ earthworms http://yucky.discovery.com/flash/worm/ earthworms http://www.pestworldforkids.org/pillbugs.html pill bugs http://www.geocities.com/sseagraves/schoolyardscience.htm ladybugs http://members.cox.net/tunias_travels/Ladybugs.htm ladybug observations</p>
Field Experiences	<p>Mayor Carl T. Langford Park (407-246-2150): Worms, City Critters, Snake Sense, Tree-mendous</p>
Other	<p><i>GEMS</i>: Ladybugs <i>Science & Children</i>, Sept. 2006, Vol. 44, No. 1, Unlocking the Power of Observation <i>Science & Children</i>, Oct. 2008, Vol. 46, No. 2, Worms Out of This World!</p>

