

Fair Lawn Public Schools

Fair Lawn, NJ

**Grade 3
Science**

August

2015

**Revised August 2015
Updated June 2009**

The elementary school science program focuses on inquiry-based, hands-on science instruction. The current program is aligned to the 2009 NJCCCS and a transition plan is in place to move toward the NGSS which includes pilot programs and teacher training.

**Science
Department**

Fair Lawn School District

Committee Credits

Written By

Paul Schreiner, Science Supervisor

2004

Updated to Reflect New Requirements By

Ronald M. Durso, District Science Supervisor

Grade 3 Science

I. Course Synopsis

Science should be taught with a focus on hands-on student-inquires as well as content driven instruction for three units of study. Students are expected to take part in at least two investigations for each chapter in the textbook with an optional unit summary investigation. Teachers are encouraged to include additional investigations, research, and cross curricular opportunities, especially including literacy and mathematics.

II. Philosophy & Rationale

Through the study of science, students will learn to apply scientific knowledge and problem solving skills to “real-word” situations. Utilizing the scientific method, students will recognize the importance of variables and constants to answer questions and test hypothesis. They will learn to predict the results of investigations, record and construct methods to display data (including bar and line graphs), interpret and then draw conclusions from that data. Through the study of science, students will also learn strategies to determine the meaning of key vocabulary words. The study of science provides an excellent opportunity for students to enhance reading and mathematical skills as they complete student-centered investigations.

Our elementary school science program is undergoing a transition toward the NGSS.

All NGSS aligned courses in the Fair Lawn Schools demonstrate a commitment preparing students to become [college and career ready](#) as well as the other guiding assumptions of the [Frameworks for Science Education](#) (NRC, 2011) and the [NGSS](#) including

- Students are born investigators;
- Science instruction should focus on core ideas and practices;
- An understanding of science develops over time;
- Science and engineering require both knowledge and practice;
- Science education must connect to students’ interests and experiences; and
- Promoting equity for all students must be a focus of science education.

Additionally, all NGSS aligned courses in the Fair Law Schools integrate the three dimensions discussed in the [Frameworks for Science Education](#) and the NGSS, including

- [Science & Engineering Practices](#) which describe behaviors that scientists engage in as they investigate and build models and theories about the natural world and the key set of engineering practices that engineers use as they design and build models and systems; ([NGSS PDF](#))
- [Cross Cutting Concepts](#) which link all domains of science and provide an organizational schema for interrelating knowledge from various science fields into a coherent and scientifically-based view of the world; ([NGSS PDF](#)) and
- [Disciplinary Core Ideas](#) which focus and unite K-12 science, have a broad importance across multiple sciences or engineering disciplines or are a key organizing concept within a single discipline; provide a key tool for understanding or investigating more complex ideas and solving problems; relate to the interests and life experiences of students; are connected to societal or personal concerns that require scientific or technological knowledge; and are teachable and learnable over multiple grades at increasing depth and sophistication. ([NGSS PDF](#))

Once the elementary school program is fully aligned to the NGSS, the above noted concepts will be further and more fully defined within the curriculum.

Since coherence is a main dimension of the NGSS, consider reviewing the “story line” for the middle school [physical science](#), [life science](#), [earth and space science](#), and [engineering, technology and applications of science](#), as well as the high school [physical science](#), [life science](#), [earth and space science](#), and [engineering, technology and application of science](#) for a full picture of the NGSS philosophy. For a full picture of how these programs are implemented in the Fair Lawn Schools, visit the [district curriculum website](#).

Differentiated instruction for students at different levels of achievement and specific learning needs (e.g. special education, English Language Learners (ELL), at-risk, and Gifted & Talented) is embedded in targeted scaffolding based on knowledge of each student’s interests, needs, and assessment data, including, but not limited to, in class formative and summative assessments.

When deemed appropriate, department teachers will engage students in purposeful paired discussions to share information more effectively, such as the “turn and talk” (Harvey & Daniels, 2009). “Text annotation” could be used, for example to optimize reading comprehension (Daniels & Steineke, 2010).

III. Scope & Sequence

During the 2013-2014 school year, the district implemented a three-four week cycle of science and social studies.

Rather than being asked to teach, and students to learn, science and social studies every week for a short period of time (1-2) periods, the 2013-2014 will provide teachers and students will a more concentrated amount of time to focus on social studies or science for about 4 weeks. Teachers will be able to connect literacy, technology, and other content areas with this thematic focus on our current social studies and science units.

Unit 1: Composition & Changing Earth

Unit 2: Living World

Unit 3: Plant & Animal Habitat

Elementary School Marking Period Schedule

	MP 1	MP 2	MP 3
K	Matter: Liquids Solids Plants & Animals	Five Senses How & Why Things Move	Caring for Earth Weather
1	Earth & Space*	Weather	Living Things
2	Matter, Weather, Water Cycle	Life Long Ago	Solar System Light & Shadows*
3	Composition & Changing Earth	Living World	Plant & Animal Habitat
4	Electricity, Magnetism, Light, Color Sound	Simple Machines	Human Body
5	Weather & Our Environment	Our Solar System & Beyond*	How & Why Things Work

IV. Unit Descriptions

Throughout each of the following units, students and teachers should focus on the development of [science practices \(5.1\)](#).

Third Grade Science Units – 2004			
Living World			
Unit/Concept/Objective	Standards	Terminology	Possible Resources
What is a living thing? The student will understand what living things are and how they differ from non-living things. (LW1)	5.3.4.A.1-2 5.3.4.B.1 5.3.4.D.1	biotic, abiotic, organic, inorganic, reproduce	Holt Science (Grade 3) Scholastic Science (Big Book) *Magazines
What are living things made of? The students will understand a plant and animal cell and their parts. (LW2)		Nucleus, cytoplasm, cell membrane, cell wall, chloroplast, cell division, mass, multicellular, protist, organism	Holt Science
How do living things grow? Where do cells come from? Students will understand how living things grow and be able to describe cells and cell division. (LW 3)		Embryo, pouch, division	Holt Science
How do cells divide? Students will be able to explain how animals and plants develop from fertilized eggs. (LW 4)			Holt Science From Seed to Plant – Gail Gibbons

Third Grade Science Units – 2004			
Living World			
Unit/Concept/Objective	Standards	Terminology	Possible Resources

<p>What are single living things or one celled organisms? Students will recognize some of the smallest living things and explain how they carry on all life processes. (LW 5)</p>	<p>5.3.4.A.1-2 5.3.4.B.1</p>	<p>Euglena, amoeba, hydra, paramecium, chloroplast, cell membrane, cell wall, cytoplasm,</p>	<p>Holt Science</p>
<p>What are molds? Students will describe plant like organisms that cause food to spoil. (LW 6)</p>		<p>Mold, fungus, fungi</p>	<p>Holt Science Scholastic, Classifying Living Things</p>
<p>How and why do you classify living things? Students will understand how to classify living things based on structure and function., (LW 7)</p> <p>* Great Horned Owl Lesson is supplemental practice</p>		<p>Vertebrate, invertebrate, specie, kingdom, arthropod, exoskeleton, arachnid, crustacean, chilopod, mammal, bird, warm blooded, amphibians, embryo, coldblooded,</p>	<p>Scholastic, Classifying Living Things The Pet Store Predicament (Video) Tiger With Wings</p>

Third Grade Science Units – 2004			
Living World			
Unit/Concept/Objective	Standards	Terminology	Possible Resources
What are the similar characteristics of living things? Students will recognize grouping by similar characteristics. (LW 8) * Supplemental Lessons: Classifying life within phylums and classes. See Lesson information LW8	5.3.4.A.1-2 5.3.4.B.1	taxonomist protist structure characteristic	Scholastic, Classifying Living Things
What are seedlings? Students will identify differences among plants? (LW 9)		Petal, stamen, pistil, sepal, stem, cell wall, chloroplast, chlorophyll	Scholastic, Classifying Living Things
How do plants and animals compare? Students will generalize how plants and animal differ. (LW 10)			Scholastic, Classifying Living Things

Third Grade Science Units – 2004			
The Earth: Composition and Change: Rocks (12 weeks)			
What are rocks? Students will identify rocks and minerals according to their properties? (ECC 1)	5.4.4.B.1 5.4.4.C.1-2 5.4.4.E.1 5.4.4.C.3-4	Sedimentary Igneous Metamorphic	Holt Science Rocks and Minerals (Eye Witness Video)

How are rocks used? Students will be able to identify uses of rocks and their groupings by hardness. (ECC 2)			Holt Science
What is weathering and erosion? Students will understand various land forms and how they might be altered. (ECC 3)		Gorge, canyons, plateau, glacier, delta, deposit delta, flood plain, wetland, arch, cave	Using Land (Scholastic) Holt Science
What is the composition of soil? Students will recognize different soils and their properties. (ECC 4)		Sediment, sand, topsoil, subsoil, bedrock, loam, humus	Using Land – Scholastic Holt Science

Third Grade Science Units – 2004			
Changing Earth			
What are the layers of the earth? The students will describe the structure of the earth and its layers. (ECC 5)	5.4.4.B.1 5.4.4.C.1-2 5.4.4.E.1 5.4.4.C.3-4	Outer core, mantle, core, crust	The Restless Earth, The Magic School Bus
What are earthquakes and volcanoes? Students will recognize the causes of earthquakes and volcanic eruptions. (ECC 6 & 7)		Magma, continental plate, molten, vent, sulphur, lava, Ring of Fire, tsunami	The Restless Earth The Magic School Bus Inside the Earth Magic School Bus – Inside the Volcano Eye Witness videos -Why the Volcano Blows Its Top

<p>* Supplemental Lesson: What is the Pangaea? Students will understand how the supercontinent changed the look of the earth's land. (ECC 8)</p>		<p>Migrate, community, shelter, habitat, adaptation</p>	
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Third Grade Science Units – 2004			
Plant and Animal Habitats: (12 weeks)			
<p>What makes up a forest - habitat? Students will describe plants and animals, location and climate in a forest habitat. (PAH 2)</p>	<p>5.3.4.A.1-2 5.3.4.B.1</p>	<p>Temperate, deer, chipmunk, chickadee, burrow, deciduous, coniferous</p>	<p>One Small Square Holt Science <u>A Day in the Forest</u> (Jean Craighead George)</p>
<p>What makes up a grassland? Students will describe plants and animals, location and climate in a grassland habitat. (PAH 3)</p>		<p>Prairie, savannah, bison, den, camouflage</p>	<p>Grasslands Holt Science <u>A Day in the Prairie</u> (Jean Craighead George)</p>
<p>What makes up a desert? Students will describe plants and animals location and climate in a desert habitat. (PAH 4)</p>		<p>Mesquite, cactus</p>	<p><u>A Day in the Desert</u> (Jean Craighead George) Holt Science <u>One Small Square Desert</u> (Eye Witness Video)</p>
<p>What makes up a tundra? Students will describe plants and animals, location and climate in a tundra habitat. (PAH 5)</p>		<p>Arctic poppy, caribou, lemmings, lichens</p>	<p><u>A Day in the Tundra</u> (Jean Craighead George)</p>

Third Grade Science Units – 2004			
Plant and Animal Habitats: (12 weeks)			
Unit/Concept/Objective	Standards	Terminology	Possible Resources
What makes up an ocean habitat? Students will explain what an ocean is, understand how water moves (waves, currents and tides), and be able to identify locations, animals and plants in the ocean. (PAH 7)		Kelp, baleen, plankton, zooplankton, sunlit zone, twilight zone, abyss, krill,	<u>Our Wet World</u> , <u>The Mighty Ocean</u> Salt Water Habitats Ducky
What makes up a shore habitat? Students will understand the differences between a rocky shore and sandy shore and be able to identify plants and animals that live there. (PAH 6)		Tide, wave, ebb, flow, holdfasts, tentacles, estuary, tributary, mouth	<u>One Small Square of Shore</u> , <u>Our Wet World</u> , <u>A Walk by the Seashore</u>
What makes up a pond habitat? Students will describe a pond and the organisms within. (PAH 8)			<u>One Small Square of Pond</u>
What is a rain forest habitat? Students will describe the layers, vegetation, inhabitants, location and climate of a rain forest. (PAH 9)		Equator, tropical, canopy, understory, Tropic of Cancer, Tropic of Capricorn, Amazon	<u>One Day in the Tropical Rain Forest</u> , <u>Life in the Rain Forest</u> (Scholastic) <u>Journey of the Red Eyed Frog</u> (Tanis Jordan) <u>The Great Kapok Tree</u> (Lynn Cherry)

Suggested Activities & Suggested Modifications for Special Education Students, ELL Students, Students at Risk, and Gifted Students:

1. Students with special needs and ELL learners may be provided with key vocabulary terms prior to the unit beginning. In particular, the amount of key vocabulary terms should be reduced for ELL students.

2. Opportunities should be given to students to form connections between math and literacy skills and concepts.
3. ELL students may be provided with additional visual aids. For additional modifications, refer to Classroom Instruction that Works for ELL Learners or the SIOP protocol.
4. Gifted students may be challenged by asking them to form additional connections between life, earth and physical science concepts and to engage in additional critical thinking or research studies.

V. Course Materials

Harcourt McGraw Hill Science

VI. Assessment

Student content knowledge and understanding will be assessed through tests, quizzes, lab reports, performance assessments, and classroom activities. (Rubrics are available in the activity book and on-line.) Students will participate in an analysis of a piece of modern technology during the “How & Why Things Work” unit which will involve an oral and written presentation.

VII. Cross Curricular Aspects

The study of science provides an excellent opportunity for students to enhance reading and mathematical skills as they complete student-centered investigations. Teachers are urged to integrate literacy through the use of the leveled readers and through instruction of how to read non-fiction text, note taking, etc. The analysis of data through the construction and interpretation of graphs leads to mathematical literacy.

Cross Curricular Aspects

CCCS Literacy: Students will be expected to apply [anchor standards for reading and writing](#) in non-fiction situations.

CCCS Math: Students will be expected to [perform number operations, measurement, analyze data, and apply geometry](#). They may be asked to apply the concepts of fractions to scientific principles.

Interdisciplinary Connections and Alignment to Technology standards

Science classes in the Fair Lawn Public schools promote career-readiness skills related to Personal Financial Literacy (9.1) and Career Awareness, Exploration, and Presentation (9.2). Some course concepts from the Career and Technical Education Standards (9.3), but these are not directly correlated since our district is not a CTE program.

Name _____ Date _____



Science Inquiry Guide



What is the question you are answering? Page # _____

How do you think the materials can be used to answer this question?

What is your prediction/hypotheses as to what will happen?

What are some of the possible variables?

In what way was your prediction proven or disproven?

Summer Science Committee 2009

Oral Presentation Rubric

Title: _____

Score: _____

Name: _____

Date: _____

CATEGORY	4 Advanced	3 Proficient	2 Developing	1 Needs Improvement
Content	Shows a full understanding of the topic.	Shows a good understanding of the topic.	Shows a good understanding of parts of the topic.	Does not seem to understand the topic very well.
Focus	Stays on topic all of the time.	Stays on topic most of the time.	Stays on topic some of the time.	It was hard to tell what the topic was.
Fluency	Always speaks in complete sentences. Transitions between ideas.	Usually speaks in complete sentences. Some transitions between ideas.	Sometimes speaks in complete sentences. Few transitions between ideas.	Rarely speaks in complete sentences. No transitions between ideas.
Word Choice	Uses vocabulary appropriate for the audience. Extends audience vocabulary by defining words that might be new to most of the audience.	Uses vocabulary appropriate for the audience. Includes 1-2 words that might be new to most of the audience, but does not define them.	Uses vocabulary appropriate for the audience. Does not include any vocabulary that might be new to the audience.	Uses several (5 or more) words or phrases that are not understood by the audience.
Vocalization	Speaks clearly and distinctly all the time, and mispronounces no words. Uses vocal variety. Well paced.	Speaks clearly and distinctly all the time. Mispronounces few words. Uses some vocal variety. Appropriate pace.	Speaks clearly and distinctly most of the time. Mispronounces some words. Little vocal variety. Inconsistent pace.	Often mumbles or cannot be understood OR mispronounces many words. Monotone. Too fast/ too slow.
Body Language and Eye Contact	Stands up straight, looks relaxed and confident. Gestures enhance performance. Establishes eye contact with everyone in the room.	Stands up straight and uses some gestures. Establishes eye contact with everyone in the room most of the time.	Sometimes stands up straight. Uses few gestures. Little eye contact evidenced.	Slouches and/or does not look at audience during the presentation. No gestures.