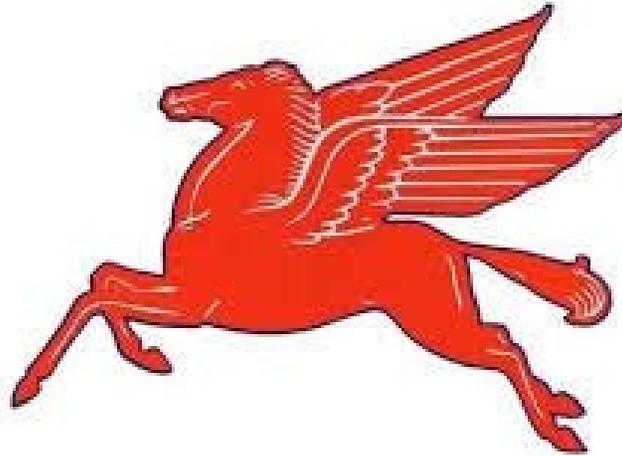


Curriculum Management System

PAULSBORO PUBLIC SCHOOLS



Science Curriculum- First Grade

UPDATED JUNE 2016

For adoption by all regular education programs as specified and for adoption or adaptation by all Special Education Programs in accordance with Board of Education Policy.

Board Approved: September 2016

Table of Contents

Paulsboro Public Schools Administration and Board of Education

Paulsboro Public Schools Mission Statement

National and State Standards

Scope and Sequence

Goals/Essential Questions/Objectives/Instructional Tools/Activities

Benchmark Assessments

Paulsboro Public Schools

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Paulsboro Public Schools

Mission Statement

The mission of the Paulsboro School District is to provide each student the educational opportunities to assist in attaining their full potential in a democratic society. Our instructional programs will take place in a responsive, community based school system that fosters respect among all people. Our expectation is that all students will achieve the New Jersey Core Curriculum Content Standards (NJCCCS) at every grade level.

New Jersey State Department of Education 21st Century College and Career Readiness Standards

The 12 Career Ready Practices

These practices outline the skills that all individuals need to have to truly be adaptable, reflective, and proactive in life and careers. These are researched practices that are essential to career readiness.

CRP1. Act as a responsible and contributing citizen and employee.

CRP2. Apply appropriate academic and technical skills.

CRP3. Attend to personal health and financial well-being.

CRP4. Communicate clearly and effectively and with reason.

CRP5. Consider the environmental, social and economic impacts of decisions.

CRP6. Demonstrate creativity and innovation.

CRP7. Employ valid and reliable research strategies.

CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.

CRP9. Model integrity, ethical leadership and effective management.

CRP10. Plan education and career paths aligned to personal goals.

CRP11. Use technology to enhance productivity.

CRP12. Work productively in teams while using cultural global competence.

MODIFICATIONS

Special Education:

Students Hands on activity, cooperative learning, peer tutoring, extended time, reteach in utilizing various methods. Utilize remediation resources which include assessment and intervention, in planning and instruction.

English Language Learners:

Provide hands-on activities and explanations. Use reduced text, so that print is not so dense. Assess comprehension through demonstration or other alternative means (gestures, drawings). Give instructions/directions in writing and orally. Use of translation dictionaries to locate words in the native language.

Use English Learners resources such as study guides, assessments and a visual glossary.

At-Risk Students:

Hands on activities cooperative learning, reteach using various methods. Make use of remediation lessons and quizzes when appropriate.

Gifted and Talented Students:

Utilize Pre-AP Resources such as the pacing, assignment and best practices guide.

Reading Unit	Reading Standards	Writing Unit	Writing Standards	Speaking & Listening Standards	Language Standards	Foundational Skills Standards
Readers Build Good Habits	RL.1.1, RL.1.7	Launching Writing Workshop	W.1.3, W.1.8	SL.1.1, SL.1.3	L.1.1a, e, f	RF.1.1a RF.1.2a, b, c
Tackling Trouble/ Literature	RL.1.3, RI 1.7	Narrative: Small Moments	W.1.3, W.1.8	SL.1.4, SL.1.5	L1.1a ,e, f, L.1.2a, b, d, e	RF.1.3b,d,g RF.1.4
Meet the Characters	RL.1.1, RL.1.2, RL.1.3, RL.1.7, RL.1.9, RL.1.10	Narrative: Small Moments	W.1.3, W.1.5, W.1.6, W.1.8	SL.1.1, SL.1.3, SL.1.4, SL.1.5, SL.1.6	L.1.1, L.1.2, L.1.5	RF.1.1, RF.1.2a, b, c, RF.1.3a, d, g
Non Fiction	RI.1.2, RI.1.5, RI.1.6, RI.1.7,RL.1.5	Non Fiction Chapter Books	W.1.2, W.1.6	SL.1.1, SL.1.3, SL.1.4, SL.1.5, SL.1.6	L.1.1, L.1.2, L.1.4, L.1.6	RF.1.1, RF.1.2a, b, c, RF.1.3a, d, e, f, g
Be Our Own Teachers/ Non Fiction	RI.1.1, RI.1.2, RI.1.3, RI.1.4, RI.1.5, RI.1.6, RI.1.7, RI.1.8, RI.1.9, RI.1.10	How To Writing	W.1.2, W.1.5, W.1.6, W.1.7, W.1.8	SL.1.1, SL.1.2, SL.1.3, SL.1.6	L.1.1a, b, c, L.1.2, L.1.4, L.1.5	RF.1.2, RF.1.3e, f, RF.1.4
Reading Across Genres	RI.1.3, RI.1.5, RI.1.6, RI.1.8, RI.1.9, RI.1.10 RL1.1, RL.1.2, RL.1.3, RL.1.6 RL.1.9	Writing Reviews	W.1.1, W.1.5, W.1.6, W.1.7, W.1.8	SL.1.1, SL.1.2, SL.1.4, SL.1.5, SL.1.6	L.1.1d, g, h, i, j, L.1.2, L.1.4, L.1.5, L.1.6	RF.1.2, RF.1.3, RF.1.4
Poetry	RL.1.4, RL.1.10	Poetry	W.1.3	SL.1.1, SL.1.2, SL.1.4, SL.1.5, SL.1.6	L.1.1d, g, h, i, j, L.1.2, L.1.4, L.1.5, L.1.6	RF.1.2, RF.1.3, RF.1.4
Reading Clubs	RL.1.2, RL.1.3, RL.1.4, RL.1.6, RL.1.10	Realistic Fiction	W.1.3, W.1.5, W.1.6, W.1.8	SL.1.1, SL.1.4, SL.1.5, SL.1.6	L.1.1, L.1.2, L.1.4, L.1.5, L.1.6	RF.1.2, RF.1.3, RF.1.4
Fantasy Books	RL.1.3, RL.7, RL.9	Fantasy Writing	W.1.3, W.1.5, W.1.6, W.1.8	SL.1.1, SL.1.4, SL.1.5, SL.1.6	L.1.1, L.1.2, L.1.4, L.1.5, L.1.6	RF.1.2, RF.1.3, RF.1.4

Scope and Sequence

Quarter 1 - Grade _1_

Patterns of Change in the Sky

Big Idea: Students observe, describe, and predict some patterns in the movement of objects in the sky. The crosscutting concept of patterns is called out as an organizing concept for the disciplinary core ideas. Students are expected to demonstrate grade-appropriate proficiency in planning and carrying out investigations and analyzing and interpreting data. Students are also expected to use these practices to demonstrate understanding of the core ideas.

Big Idea: Use observations of the sun, moon, and stars to describe patterns that can be predicted. (DOE Unit 1) INTERACTIVE SCIENCE:

Students use observations and prior knowledge to understand patterns of the sun and moon in Chapter 5, Lesson 6, “What causes day and night?” on SE/TE pages 189-193. On TE page 190, 21st Century Learning, students collaborate to create night sky drawings and discuss similarities. In question 5 in the Lesson Check for Lesson 6, TE page 193b, students describe patterns of night and day.

Big Idea: Make observations at different times of year to relate the amount of daylight to the time of year. (DOE Unit 1) INTERACTIVE SCIENCE:

Students learn about the seasons in Chapter 6, Lesson 4, “What are the four seasons?” on SE/TE pages 220-223. In the Science to Social Studies activity on TE page 222, students discuss seasonal differences such as growing seasons, and create a classroom chart. In the Performance-Based Assessment, Make a Concept Map, SE/TPG page 234, students provide information about the seasons.

Scope and Sequence

Quarter 2 - Grade _1_

Characteristics of Living Things

Big Idea: Students develop an understanding of how plants and animals use their external parts to help them survive, grow, and meet their needs, as well as how the behaviors of parents and offspring help offspring survive. The understanding that young plants and animals are like, but not exactly the same as, their parents is developed. The crosscutting concept of patterns is called out as an organizing concept for the disciplinary core ideas. Students are expected to demonstrate grade-appropriate proficiency in obtaining, evaluating and obtaining, evaluating, and communicating information and constructing explanations. Students are also expected to use these practices to demonstrate understanding of the core ideas.

Big Idea: Analyze and interpret data to provide evidence that plants and animals have traits inherited from parents and that variation of these traits exists in a group of similar organisms. (DOE Unit 2) INTERACTIVE

SCIENCE: Students gain knowledge about the design process in Chapter 2, Lesson 3, “What is the design process?”

SE/TE pages 51-55. Students learn about parts of plant that help them live and grow in Chapter 4, Lesson 2, SE/TE pages 122-125. They gain knowledge about parts of animals in Chapter 4, Lesson 1, “What are some groups of living things?” on SE/TE page 120-121, and on SE/TE page 143. In STEM Building a Bug Box, Enrichment, “How Do Insects Get Food?” SE/TE page 20B, students learn about the mouth parts of different insects.

Big Idea: Read texts and use media to determine patterns in behavior of parents and offspring that help offspring survive. (DOE Unit 2)

INTERACTIVE SCIENCE: Students read text about animal parents and offspring in Chapter 4, Lesson 4, “How do some animals grow?” on SE/TE page 131-135 and Lesson 5, “How are living things like their parents?” on SE/TE pages 136-139.

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Scope and Sequence

Quarter 3 - Grade 1

Mimicking Organisms to Solve Problems

Big Idea: Students develop an understanding of how plants and animals use their parts to help them survive, grow, and meet their needs. Students also need opportunities to develop possible solutions. As students develop possible solutions, one challenge will be to keep them from immediately implementing the first solution they think of and to instead think through the problem carefully before acting. Having students sketch their ideas or make a physical model is a good way to engage them in shaping their ideas to meet the requirements of the problem. The crosscutting concept of structure and function is called out as an organizing concept for the disciplinary core ideas. Students are expected to demonstrate grade-appropriate proficiency in constructing explanations, designing solutions, and in developing and using models. Students are expected to use these practices to demonstrate understanding of the core ideas.

Big Idea: Use materials to design a solution to a human problem by mimicking how plants and/or animals use their external parts to help them survive, grow, and meet their needs. (DOE Unit 3) INTERACTIVE SCIENCE: Students gain knowledge about the design process in Chapter 2, Lesson 3, “What is the design process?” SE/TE pages 51-55. Students learn about parts of plant that help them live and grow in Chapter 4, Lesson 2, SE/TE pages 122-125. They gain knowledge about parts of animals in Chapter 4, Lesson 1, “What are some groups of living things?” on SE/TE page 120-121, and on SE/TE page 143. In STEM Building a Bug Box, Enrichment, “How Do Insects Get Food?” SE/TE page 20B, students learn about the mouth parts of different insects.

- **Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.**

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Scope and Sequence

Quarter 4 - Grade _1_

Light and Sound Students develop an understanding of the relationship between sound and vibrating materials as well as between the availability of light and the ability to see objects. The idea that light travels from place to place can be understood by students at this level by placing objects made with different materials in the path of a beam of light and determining the effect of the different materials. Students apply their knowledge of light and sound to engage in engineering design to solve a simple problem involving communication with light and sound. The crosscutting concepts of cause and effect, structure and function, and function and influence of engineering, technology and science on society and the natural is called out as an organizing concept for the disciplinary core ideas. Students are expected to demonstrate grade-appropriate proficiency in planning and carrying out investigations, constructing explanation, and designing solutions developing and using models. Students are also expected to use these practices to demonstrate understanding of the core ideas.

Big Idea: Make observations to construct an evidence-based account that objects in darkness can be seen only when illuminated. (DOE Unit 4) INTERACTIVE SCIENCE: In Writing, TE page 268D, students write about the importance of light in their world. In Try It!, students investigate light on SE/TE pages 270. Students conclude light's effect on objects in My Planet Diary on SE/TE page 280. They learn about qualities of light on SE/TE 281-283.

Big Idea: Plan and conduct investigations to determine the effect of placing objects made with different materials in the path of a beam of light. (DOE Unit 4) INTERACTIVE SCIENCE: Students investigate the effect of shining light on different types of objects on SE/TE page 270/TE only 283a. Students learn about the qualities of light on SE/TE pages 281-283. They conduct an investigation of light's effect on a mirror in Lightning Lab on SE/TE page 283.

Big Idea: Plan and conduct investigations to provide evidence that vibrating materials can make sound and that sound can make materials vibrate. (DOE Unit 4) INTERACTIVE SCIENCE: Students conduct investigations making sounds with vibrating strings on page SE/TE page 284. They investigate making sounds with vibrating air on SE/TE pages 288-289. On TE only pages 289a-289d, students conduct directed, guided, and open scaffolded inquiries of sounds and vibrating materials.

Big Idea: Use tools and materials to design and build a device that uses light or sound to solve the problem of communicating over a distance. (DOE Unit 5) INTERACTIVE SCIENCE: Students learn the Hubble Space Telescope communicates information in Big World, My World, SE/TE page 30 and 21st Century Learning, TE page 283. Students build a device to transmit information over a distance using sound in Grade 3, Chapter 2, Lesson 3, "What is the design process?" on SE/TE page 60.

- **Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.**
- **Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.**

QUARTER 1 - 12 days

Big Idea: Use observation of the sun, moon, and stars to describe patterns that can be predicted.

Topic: Patterns of Change in the Sky

<p>Standards:</p> <p>1-ESS1-1. Use observations of the sun, moon, and stars to describe patterns that can be predicted. [Clarification Statement: Examples of patterns could include that the sun and moon appear to rise in one part of the sky, move across the sky, and set; and stars other than our sun are visible at night but not during the day.] [Assessment Boundary: Assessment of star patterns is limited to stars being seen at night and not during the day.]</p> <p>1-ESS1-2. Make observations at different times of year to relate the amount of daylight to the time of year. [Clarification Statement: Emphasis is on relative comparisons of the amount of daylight in the winter to the amount in the spring or fall.] [Assessment Boundary: Assessment is limited to relative amounts of daylight, not quantifying the hours or time of daylight.]</p> <p>Common Core Standards Connections:</p> <p>ELA/Literacy - Participate in shared research and writing projects (e.g., explore a number of “how-to” books on a given topic and use them to write a sequence of instructions). (1-ESS1-1),(1-ESS1-2) W.1.7 With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question. (1-ESS1-1),(1-ESS1-2) W.1.8</p> <p>Mathematics - Reason abstractly and quantitatively. (1-ESS1-2) MP.2 Model with mathematics. (1-ESS1-2) MP.4 Use appropriate tools strategically. (1-ESS1-2) MP.5 Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using objects, drawings, and equations to represent the problem. (1-ESS1-2) 1.OA.A.1 Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another. (1-ESS1-2) 1.MD.C.4</p> <p>Career Ready Practices</p> <p>CRP4. Communicate clearly and effectively and with reason.</p> <p>CRP5. Consider the environmental, social and economic impacts of decisions.</p> <p>CRP6. Demonstrate creativity and innovation.</p> <p>CRP7. Employ valid and reliable research strategies.</p> <p>CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.</p> <p>CRP11. Use technology to enhance productivity.</p> <p>CRP12. Work productively in teams while using cultural global competence.</p>	GOAL	
	<p>Students will observe and use patterns in the natural world as evidence and to describe Phenomena, use observations (firsthand or from media) to describe patterns in the natural world in order to answer scientific questions and use observations of the sun, moon, and stars to describe patterns that can be predicted.</p>	
	Essential Questions	Assessments
	<p>1. What patterns of change can be predicted when observing the sun, moon, and stars?</p>	<p>Formative: participation in team activities, research, verbal response, observations, experiments, interactive notebooks</p> <p>Summative/Topic Assessment: Interactive Science assessments, formal lab sheets, experiments</p>
Enduring Understanding		Resources
<p>1. Science assumes that natural events happen today as they happened in the past.</p> <p>2. Many events are repeated.</p> <p>3. Patterns in the natural world can be observed, used to describe phenomena, and used as evidence.</p> <p>4. Patterns in the motion of the sun, moon, and stars in the sky can be observed, described, and predicted.</p>		<p>Interactive Science Series</p> <p>Trade Books/Classroom Library</p> <p>Assorted Manipulatives</p> <p>NJ DOE Model Curriculum</p> <p>NGSS www.nextgenerationscience.org/</p> <p>NSTA www.nsta.org</p>

QUARTER 1 - 10 days

Big Idea: Make observations at different times of year to relate the amount of daylight to the time of year.

Topic: Patterns of Change in the Sky

Standards:	GOAL		
<p>1-ESS1-1. Use observations of the sun, moon, and stars to describe patterns that can be predicted. [Clarification Statement: Examples of patterns could include that the sun and moon appear to rise in one part of the sky, move across the sky, and set; and stars other than our sun are visible at night but not during the day.] [Assessment Boundary: Assessment of star patterns is limited to stars being seen at night and not during the day.]</p> <p>1-ESS1-2. Make observations at different times of year to relate the amount of daylight to the time of year. [Clarification Statement: Emphasis is on relative comparisons of the amount of daylight in the winter to the amount in the spring or fall.] [Assessment Boundary: Assessment is limited to relative amounts of daylight, not quantifying the hours or time of daylight.]</p> <p>Common Core Standards Connections:</p> <p>ELA/Literacy - Participate in shared research and writing projects (e.g., explore a number of “how-to” books on a given topic and use them to write a sequence of instructions). (1-ESS1-1),(1-ESS1-2) W.1.7 With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question. (1-ESS1-1),(1-ESS1-2) W.1.8</p> <p>Mathematics - Reason abstractly and quantitatively. (1-ESS1-2) MP.2 Model with mathematics. (1-ESS1-2) MP.4 Use appropriate tools strategically. (1-ESS1-2) MP.5 Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using objects, drawings, and equations to represent the problem. (1-ESS1-2) 1.OA.A.1 Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another. (1-ESS1-2) 1.MD.C.4</p> <p>Career Ready Practices</p> <p>CRP4. Communicate clearly and effectively and with reason.</p> <p>CRP5. Consider the environmental, social and economic impacts of decisions.</p> <p>CRP6. Demonstrate creativity and innovation.</p> <p>CRP7. Employ valid and reliable research strategies.</p> <p>CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.</p> <p>CRP11. Use technology to enhance productivity.</p> <p>CRP12. Work productively in teams while using cultural global competence.</p>	Students will observe and use patterns in the natural world as evidence and to describe Phenomena, make observations (firsthand or from media) to collect data that can be used to make comparisons, and make observations at different times of the year to relate the amount of daylight to the time of year.		
	Essential Questions		Assessments
	1. What is the relationship between the amount of daylight and the time of year?		<p>Formative: participation in team activities, research, verbal response, observations, experiments, interactive notebooks</p> <p>Summative/Topic Assessment: Interactive Science assessments, formal lab sheets, experiments</p>
	Enduring Understanding		Resources
1. Patterns in the natural world can be observed, used to describe phenomena, and used as evidence. 2. Seasonal patterns of sunrise and sunset can be observed, described, and predicted.		Interactive Science Series Trade Books/Classroom Library Assorted Manipulatives NJ DOE Model Curriculum NGSS www.nextgenerationscience.org/ NSTA www.nsta.org	

QUARTER 2 - 12 days

Big Idea: Analyze and interpret data to provide evidence that plants and animals have traits inherited from parents and that variation of these traits exists in a group of similar organisms.

Topic: Characteristics of Living Things

<p>Standards: 1-LS3-1. Make observations to construct an evidence-based account that young plants and animals are like, but not exactly like, their parents. [Clarification Statement: Examples of patterns could include features plants or animals share. Examples of observations could include leaves from the same kind of plant are the same shape but can differ in size; and, a particular breed of dog looks like its parents but is not exactly the same.] [Assessment Boundary: Assessment does not include inheritance or animals that undergo metamorphosis or hybrids.]</p> <p>1-LS1-2. Read texts and use media to determine patterns in behavior of parents and offspring that help offspring survive. [Clarification Statement: Examples of patterns of behaviors could include the signals that offspring make (such as crying, cheeping, and other vocalizations) and the responses of the parents (such as feeding, comforting, and protecting the offspring).]</p> <p>Common Core Standards Connections: ELA/Literacy - Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers. (3-LS3-1) RI.3.1 Determine the main idea of a text; recount the key details and explain how they support the main idea. (3-LS3-1) RI.3.2 Describe the relationship between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text, using language that pertains to time, sequence, and cause/effect. (3-LS3-1) RI.3.3 Participate in shared research and writing projects (e.g., explore a number of “how-to” books on a given topic and use them to write a sequence of instructions). (1-LS1-1) W.1.7 Write informative/explanatory texts to examine a topic and convey ideas and information clearly. (3-LS3-1) SL.3.4 Report on a topic or text, tell a story, or recount an experience with appropriate facts and relevant, descriptive details, speaking clearly at an understandable pace. (3-LS3-1) W.3.2 Mathematics Reason abstractly and quantitatively. (3-LS3-1) MP.2 Model with mathematics. (3-LS3-1) MP.4 Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units—whole numbers, halves, or quarters. (3-LS3-1) 3.MD.B.4</p> <p>Career Ready Practices CRP4. Communicate clearly and effectively and with reason. CRP5. Consider the environmental, social and economic impacts of decisions. CRP6. Demonstrate creativity and innovation. CRP7. Employ valid and reliable research strategies. CRP8. Utilize critical thinking to make sense of problems and persevere in solving them. CRP11. Use technology to enhance productivity. CRP12. Work productively in teams while using cultural global competence.</p>	GOAL	
	Students will observe and use patterns in the natural world as evidence and to describe phenomena, make observations (firsthand or from media) to construct an evidence-based account for natural phenomena, make observations to construct an evidence-based account that young plants and animals are like, but not exactly like, their parents.	
	Essential Questions	Assessments
	<ol style="list-style-type: none"> 1. Why do we use patterns in the natural world? 2. How are young plants and animals alike and different from their parents? 	<p>Formative: participation in team activities, research, verbal response, observations, experiments, interactive notebooks</p> <p>Summative/Topic Assessment: Interactive Science assessments, formal lab sheets, experiments</p>
Enduring Understanding		Resources
<ol style="list-style-type: none"> 1. Patterns in the natural world can be observed, used to describe phenomena, and used as evidence. 2. Individuals of the same kind of plant or animal are recognizable as similar but can also vary in many ways. Young animals are very much, but not exactly, like their parents. Plants also are very much, but not exactly, like their parents. 	Interactive Science Series Trade Books/Classroom Library Assorted Manipulatives NJ DOE Model Curriculum NGSS www.nextgenerationscience.org/ NSTA www.nsta.org	

QUARTER 2 – 10 days

Big Idea: Read texts and use media to determine patterns in behavior of parents and offspring that help offspring survive.

Topic: Characteristics of Living Things

<p>Standards: 1-LS3-1. Make observations to construct an evidence-based account that young plants and animals are like, but not exactly like, their parents. [Clarification Statement: Examples of patterns could include features plants or animals share. Examples of observations could include leaves from the same kind of plant are the same shape but can differ in size; and, a particular breed of dog looks like its parents but is not exactly the same.] [Assessment Boundary: Assessment does not include inheritance or animals that undergo metamorphosis or hybrids.]</p> <p>1-LS1-2. Read texts and use media to determine patterns in behavior of parents and offspring that help offspring survive. [Clarification Statement: Examples of patterns of behaviors could include the signals that offspring make (such as crying, cheeping, and other vocalizations) and the responses of the parents (such as feeding, comforting, and protecting the offspring).]</p> <p>Common Core Standards Connections: ELA/Literacy - Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers. (3-LS3-1) RI.3.1 Determine the main idea of a text; recount the key details and explain how they support the main idea. (3-LS3-1) RI.3.2 Describe the relationship between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text, using language that pertains to time, sequence, and cause/effect. (3-LS3-1) RI.3.3 Participate in shared research and writing projects (e.g., explore a number of “how-to” books on a given topic and use them to write a sequence of instructions). (1-LS1-1) W.1.7 Write informative/explanatory texts to examine a topic and convey ideas and information clearly. (3-LS3-1) SL.3.4 Report on a topic or text, tell a story, or recount an experience with appropriate facts and relevant, descriptive details, speaking clearly at an understandable pace. (3-LS3-1) W.3.2 Mathematics Reason abstractly and quantitatively. (3-LS3-1) MP.2 Model with mathematics. (3-LS3-1) MP.4 Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units—whole numbers, halves, or quarters. (3-LS3-1) 3.MD.B.4</p> <p>Career Ready Practices CRP4. Communicate clearly and effectively and with reason. CRP5. Consider the environmental, social and economic impacts of decisions. CRP6. Demonstrate creativity and innovation. CRP7. Employ valid and reliable research strategies. CRP8. Utilize critical thinking to make sense of problems and persevere in solving them. CRP11. Use technology to enhance productivity. CRP12. Work productively in teams while using cultural global competence.</p>	GOAL	
	Students will observe and use patterns in the natural world as evidence and to describe Phenomena, read grade-appropriate texts and use media to obtain scientific information to determine patterns in the natural world and to determine patterns in behavior of parents and offspring that help offspring survive.	
	Essential Questions	Assessments
	<ol style="list-style-type: none"> 1. Why do scientists look for patterns? 2. What types (patterns) of behavior can be observed among parents that help offspring survive? 	<p>Formative: participation in team activities, research, verbal response, observations, experiments, interactive notebooks</p> <p>Summative/Topic Assessment: Interactive Science assessments, formal lab sheets, experiments</p>
Enduring Understanding	Resources	
<ol style="list-style-type: none"> 1. Scientists look for patterns and order when making observations about the world. Patterns in the natural world can be observed, used to describe phenomena, and used as evidence. 2. Adult plants and animals can have young. In many kinds of animals, parents and the offspring themselves engage in behaviors that help the offspring survive. 	<p>Interactive Science Series Trade Books/Classroom Library Assorted Manipulatives NJ DOE Model Curriculum NGSS www.nextgenerationscience.org/ NSTA www.nsta.org</p>	

QUARTER 3- 22 days

Big Idea: Use materials to design a solution to a human problem by mimicking how plants and/or animals use their external parts to help them survive, grow, and meet their needs.

Topic: Mimicking Organisms to Solve Problems

<p>Standards:</p> <p>1-LS1-1. Use materials to design a solution to a human problem by mimicking how plants and/or animals use their external parts to help them survive, grow, and meet their needs.* [Clarification Statement: Examples of human problems that can be solved by mimicking plant or animal solutions could include designing clothing or equipment to protect bicyclists by mimicking turtle shells, acorn shells, and animal scales; stabilizing structures by mimicking animal tails and roots on plants; keeping out intruders by mimicking thorns on branches and animal quills; and, detecting intruders by mimicking eyes and ears.]</p> <p>K-2- ETS1-2. Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.</p> <p>Common Core Standards Connections:</p> <p>ELA/Literacy - Participate in shared research and writing projects (e.g., explore a number of “how-to” books on a given topic and use them to write a sequence of instructions). (1-LS1-1) Create audio recordings of stories or poems; add drawings or other visual displays to stories or recounts of experiences when appropriate to clarify ideas, thoughts, and feelings. (K-2-ETS1-2) SL.2.5</p> <p>Career Ready Practices</p> <p>CRP4. Communicate clearly and effectively and with reason.</p> <p>CRP5. Consider the environmental, social and economic impacts of decisions.</p> <p>CRP6. Demonstrate creativity and innovation.</p> <p>CRP7. Employ valid and reliable research strategies.</p> <p>CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.</p> <p>CRP11. Use technology to enhance productivity.</p> <p>CRP12. Work productively in teams while using cultural global competence.</p>	GOAL	
	<p>Students will observe and describe how the shape and stability of structures of natural and designed objects are related to their functions, use materials to design a device and/or solution to a human problem that mimics how plants and/or animals use their external parts to help them survive, grow, and meet their needs. Develop a simple model based on evidence to represent a proposed object or tool and develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.</p>	
	Essential Questions	Assessments
	<ol style="list-style-type: none"> 1. How can every human made product be designed? 2. How can humans mimic how plants and animals use their external parts to help them survive and grow? 3. How can designs help us communicate ideas? 	<p>Formative: participation in team activities, research, verbal response, observations, experiments, interactive notebooks</p> <p>Summative/Topic Assessment: Interactive Science assessments, formal lab sheets, experiments</p>
Enduring Understanding	Resources	
<ol style="list-style-type: none"> 1. Every human-made product is designed by applying some knowledge of the natural world and is built using materials derived from the natural world. The shape and stability of structures of natural and designed objects are related to their function(s). 2. All organisms have external parts. Different animals use their body parts in different ways to see, hear, grasp objects, protect themselves, move from place to place, and seek, find, and take in food, water, and air. Plants also have different parts (roots, stems, leaves, flowers, fruits) that help them survive and grow. Animals have body parts that capture and convey different kinds of information needed for growth and survival. Animals respond to these inputs with behaviors that help them survive. Plants also respond to some external inputs. 3. Designs can be conveyed through sketches, drawings, or physical models. These representations are useful in communicating ideas for a problem’s solutions to other people. 	<p>Interactive Science Series</p> <p>Trade Books/Classroom Library</p> <p>Assorted Manipulatives</p> <p>NJ DOE Model Curriculum</p> <p>NGSS www.nextgenerationscience.org/</p> <p>NSTA www.nsta.org</p>	

QUARTER 4 - 4 days

Big Idea: Make observations to construct an evidence-based account that objects in darkness can be seen only when illuminated.

Topic: Light and Sound

<p>Standards: 1-PS4-1. Plan and conduct investigations to provide evidence that vibrating materials can make sound and that sound can make materials vibrate. 1-PS4-2. Make observations to construct an evidence-based account that objects can be seen only when illuminated. 1-PS4-3. Plan and conduct an investigation to determine the effect of placing objects made with different materials in the path of a beam of light. 1-PS4-4. Use tools and materials to design and build a device that uses light or sound to solve the problem of communicating over a distance.</p> <p>Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool. (K-2-ETS1-1) Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem. (K-2-ETS1-2)</p> <p>Common Core Standards Connections: ELA/Literacy - Write informative/explanatory texts in which they name a topic, supply some facts about the topic, and provide some sense of closure. (1-PS4-2) W.1.2 Participate in shared research and writing projects (e.g., explore a number of “how-to” books on a given topic and use them to write a sequence of instructions). (1-PS4-1),(1-PS4-2),(1-PS4-3) W.1.7 With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question. (1-PS4-1),(1-PS4-2),(1-PS4-3) W.1.8 Participate in collaborative conversations with diverse partners about grade 1 topics and texts with peers and adults in small and larger groups. (1-PS4-1),(1-PS4-2),(1-PS4-3) SL.1.1 Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text. (K-2-ETS1-1) RI.2.1 With guidance and support from adults, use a variety of digital tools to produce and publish writing, including in collaboration with peers. (K-2-ETS1-1) W.2.6 Recall information from experiences or gather information from provided sources to answer a question. (K-2-ETS1-1) W.2.8 Create audio recordings of stories or poems; add drawings or other visual displays to stories or recounts of experiences when appropriate to clarify ideas, thoughts, and feelings. (K-2-ETS1-2) SL.2.5 Mathematics - Reason abstractly and quantitatively. (K-2-ETS1-1) MP.2 Model with mathematics. (K-2-ETS1-1) MP.4 Use appropriate tools strategically. (1-PS4-4),(K-2-ETS1-1) MP.5 Order three objects by length; compare the lengths of two objects indirectly by using a third object. (1-PS4-4) 1.MD.A.1 Express the length of an object as a whole number of length units, by layering multiple copies of a shorter object (the length unit) end to end; understand that the length measurement of an object is the number of same-size length units that span it with no gaps or overlaps. Limit to contexts where the object being measured is spanned by a whole number of length units with no gaps or overlaps. (1-PS4-4) 1.MD.A.2 Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems using information presented in a bar graph. (K-2-ETS1-1) 2.MD.D.10</p> <p>Career Ready Practices CRP4. Communicate clearly and effectively and with reason. CRP5. Consider the environmental, social and economic impacts of decisions. CRP6. Demonstrate creativity and innovation. CRP7. Employ valid and reliable research strategies. CRP8. Utilize critical thinking to make sense of problems and persevere in solving them. CRP11. Use technology to enhance productivity. CRP12. Work productively in teams while using cultural global competence.</p>	GOAL	
	<p>Students will design simple tests to gather evidence to support or refute ideas about cause and effect relationships, make observations (firsthand or from media) to construct an evidence-based account for natural phenomena and make observations to construct an evidence based account that objects can be seen only when illuminated.</p>	
	Essential Questions	Assessments
	<p>1. How can you prove that you can only see something when someone shines a light on it or if the object gives off its own light?</p>	<p>Formative: participation in team activities, research, verbal response, observations, experiments, interactive notebooks</p> <p>Summative/Topic Assessment: Interactive Science assessments, formal lab sheets, experiments</p>
Enduring Understanding		Resources
<p>1. Simple tests can be designed to gather evidence to support or refute student ideas about causes. Objects can be seen if light is available to illuminate them or if they give off their own light.</p>		<p>Interactive Science Series Trade Books/Classroom Library Assorted Manipulatives NJ DOE Model Curriculum NGSS www.nextgenerationscience.org/ NSTA www.nsta.org</p>

QUARTER 4 – 8 days

Big Idea: Plan and conduct investigations to determine the effect of placing objects made with different materials in the path of a beam of light.

Topic: Light and Sound

Standards:	GOAL	
<p>1-PS4-1. Plan and conduct investigations to provide evidence that vibrating materials can make sound and that sound can make materials vibrate. 1-PS4-2. Make observations to construct an evidence-based account that objects can be seen only when illuminated. 1-PS4-3. Plan and conduct an investigation to determine the effect of placing objects made with different materials in the path of a beam of light. 1-PS4-4. Use tools and materials to design and build a device that uses light or sound to solve the problem of communicating over a distance.</p> <p>Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool. (K-2-ETS1-1) Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem. (K-2-ETS1-2)</p> <p>Common Core Standards Connections:</p> <p>ELA/Literacy - Write informative/explanatory texts in which they name a topic, supply some facts about the topic, and provide some sense of closure. (1-PS4-2) W.1.2 Participate in shared research and writing projects (e.g., explore a number of “how-to” books on a given topic and use them to write a sequence of instructions). (1-PS4-1),(1-PS4-2),(1-PS4-3) W.1.7 With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question. (1-PS4-1),(1-PS4-2),(1-PS4-3) W.1.8 Participate in collaborative conversations with diverse partners about grade 1 topics and texts with peers and adults in small and larger groups. (1-PS4-1),(1-PS4-2),(1-PS4-3) SL.1.1 Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text. (K-2-ETS1-1) RI.2.1 With guidance and support from adults, use a variety of digital tools to produce and publish writing, including in collaboration with peers. (K-2-ETS1-1) W.2.6 Recall information from experiences or gather information from provided sources to answer a question. (K-2-ETS1-1) W.2.8 Create audio recordings of stories or poems; add drawings or other visual displays to stories or recounts of experiences when appropriate to clarify ideas, thoughts, and feelings. (K-2-ETS1-2) SL.2.5 Mathematics - Reason abstractly and quantitatively. (K-2-ETS1-1) MP.2 Model with mathematics. (K-2-ETS1-1) MP.4 Use appropriate tools strategically. (1-PS4-4),(K-2-ETS1-1) MP.5 Order three objects by length; compare the lengths of two objects indirectly by using a third object. (1-PS4-4) 1.MD.A.1 Express the length of an object as a whole number of length units, by layering multiple copies of a shorter object (the length unit) end to end; understand that the length measurement of an object is the number of same-size length units that span it with no gaps or overlaps. Limit to contexts where the object being measured is spanned by a whole number of length units with no gaps or overlaps. (1-PS4-4) 1.MD.A.2 Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems using information presented in a bar graph. (K-2-ETS1-1) 2.MD.D.10</p> <p>Career Ready Practices CRP4. Communicate clearly and effectively and with reason. CRP5. Consider the environmental, social and economic impacts of decisions. CRP6. Demonstrate creativity and innovation. CRP7. Employ valid and reliable research strategies. CRP8. Utilize critical thinking to make sense of problems and persevere in solving them. CRP11. Use technology to enhance productivity. CRP12. Work productively in teams while using cultural global competence.</p>	Essential Questions	
	<p>1. What happens to a beam of light when you put different kinds of things in front of it?</p> <p>2. How would you design an experiment to prove your thinking?</p>	Assessments
	<p>Formative: participation in team activities, research, verbal response, observations, experiments, interactive notebooks</p> <p>Summative/Topic Assessment: Interactive Science assessments, formal lab sheets, experiments</p>	
	Enduring Understanding	
	<p>1. Simple tests can be designed to gather evidence to support or refute student ideas about causes. Some materials allow light to pass through them, others allow only some light through, and others block all the light and create a dark shadow on any surface beyond them, where the light cannot reach.</p> <p>2. Mirrors can be used to redirect a light beam. (Boundary: The idea that light travels from place to place is developed through experiences with light sources, mirrors, and shadows, but no attempt is made to discuss the speed of light.)</p>	
	Resources	
	<p>Interactive Science Series Trade Books/Classroom Library Assorted Manipulatives NJ DOE Model Curriculum NGSS www.nextgenerationscience.org/ NSTA www.nsta.org</p>	

QUARTER 4 - 4 days

Big Idea: Plan and conduct investigations to provide evidence that vibrating materials can make sound and that sound can make materials vibrate.

Topic: Light and Sound

Standards:	GOAL		
<p>1-PS4-1. Plan and conduct investigations to provide evidence that vibrating materials can make sound and that sound can make materials vibrate. 1-PS4-2. Make observations to construct an evidence-based account that objects can be seen only when illuminated. 1-PS4-3. Plan and conduct an investigation to determine the effect of placing objects made with different materials in the path of a beam of light. 1-PS4-4. Use tools and materials to design and build a device that uses light or sound to solve the problem of communicating over a distance.</p> <p>Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool. (K-2-ETS1-1) Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem. (K-2-ETS1-2)</p> <p>Common Core Standards Connections:</p> <p>ELA/Literacy - Write informative/explanatory texts in which they name a topic, supply some facts about the topic, and provide some sense of closure. (1-PS4-2) W.1.2 Participate in shared research and writing projects (e.g., explore a number of “how-to” books on a given topic and use them to write a sequence of instructions). (1-PS4-1), (1-PS4-2), (1-PS4-3) W.1.7 With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question. (1-PS4-1), (1-PS4-2), (1-PS4-3) W.1.8 Participate in collaborative conversations with diverse partners about grade 1 topics and texts with peers and adults in small and larger groups. (1-PS4-1), (1-PS4-2), (1-PS4-3) SL.1.1 Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text. (K-2-ETS1-1) RI.2.1 With guidance and support from adults, use a variety of digital tools to produce and publish writing, including in collaboration with peers. (K-2-ETS1-1) W.2.6 Recall information from experiences or gather information from provided sources to answer a question. (K-2-ETS1-1) W.2.8 Create audio recordings of stories or poems; add drawings or other visual displays to stories or recounts of experiences when appropriate to clarify ideas, thoughts, and feelings. (K-2-ETS1-2) SL.2.5 Mathematics - Reason abstractly and quantitatively. (K-2-ETS1-1) MP.2 Model with mathematics. (K-2-ETS1-1) MP.4 Use appropriate tools strategically. (1-PS4-4), (K-2-ETS1-1) MP.5 Order three objects by length; compare the lengths of two objects indirectly by using a third object. (1-PS4-4) 1.MD.A.1 Express the length of an object as a whole number of length units, by layering multiple copies of a shorter object (the length unit) end to end; understand that the length measurement of an object is the number of same-size length units that span it with no gaps or overlaps. Limit to contexts where the object being measured is spanned by a whole number of length units with no gaps or overlaps. (1-PS4-4) 1.MD.A.2 Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems using information presented in a bar graph. (K-2-ETS1-1) 2.MD.D.10</p> <p>Career Ready Practices CRP4. Communicate clearly and effectively and with reason. CRP5. Consider the environmental, social and economic impacts of decisions. CRP6. Demonstrate creativity and innovation. CRP7. Employ valid and reliable research strategies. CRP8. Utilize critical thinking to make sense of problems and persevere in solving them. CRP11. Use technology to enhance productivity. CRP12. Work productively in teams while using cultural global competence.</p>	Essential Questions		
	<p>1. How do instruments (band) make sound?</p>		Assessments
			<p>Formative: participation in team activities, research, verbal response, observations, experiments, interactive notebooks</p> <p>Summative/Topic Assessment: Interactive Science assessments, formal lab sheets, experiments</p>
	Enduring Understanding		Resources
<p>1. Sound can make matter vibrate, and vibrating matter can make sound. Simple tests can be designed to gather evidence to support or refute student ideas about causes.</p>		<p>Interactive Science Series Trade Books/Classroom Library Assorted Manipulatives NJ DOE Model Curriculum NGSS www.nextgenerationscience.org/ NSTA www.nsta.org</p>	

QUARTER 4 – 8 days

Big Idea: Use tools and materials to design and build a device that uses light or sound to solve the problem of communicating over a distance.
Topic: Light and Sound

Standards:	GOAL	
<p>1-PS4-1. Plan and conduct investigations to provide evidence that vibrating materials can make sound and that sound can make materials vibrate. 1-PS4-2. Make observations to construct an evidence-based account that objects can be seen only when illuminated. 1-PS4-3. Plan and conduct an investigation to determine the effect of placing objects made with different materials in the path of a beam of light. 1-PS4-4. Use tools and materials to design and build a device that uses light or sound to solve the problem of communicating over a distance.</p> <p>Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool. (K-2-ETS1-1) Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem. (K-2-ETS1-2)</p> <p>Common Core Standards Connections: ELA/Literacy - Write informative/explanatory texts in which they name a topic, supply some facts about the topic, and provide some sense of closure. (1-PS4-2) W.1.2 Participate in shared research and writing projects (e.g., explore a number of “how-to” books on a given topic and use them to write a sequence of instructions). (1-PS4-1),(1-PS4-2),(1-PS4-3) W.1.7 With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question. (1-PS4-1),(1-PS4-2),(1-PS4-3) W.1.8 Participate in collaborative conversations with diverse partners about grade 1 topics and texts with peers and adults in small and larger groups. (1-PS4-1),(1-PS4-2),(1-PS4-3) SL.1.1 Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text. (K-2-ETS1-1) RI.2.1 With guidance and support from adults, use a variety of digital tools to produce and publish writing, including in collaboration with peers. (K-2-ETS1-1) W.2.6 Recall information from experiences or gather information from provided sources to answer a question. (K-2-ETS1-1) W.2.8 Create audio recordings of stories or poems; add drawings or other visual displays to stories or recounts of experiences when appropriate to clarify ideas, thoughts, and feelings. (K-2-ETS1-2) SL.2.5 Mathematics - Reason abstractly and quantitatively. (K-2-ETS1-1) MP.2 Model with mathematics. (K-2-ETS1-1) MP.4 Use appropriate tools strategically. (1-PS4-4),(K-2-ETS1-1) MP.5 Order three objects by length; compare the lengths of two objects indirectly by using a third object. (1-PS4-4) 1.MD.A.1 Express the length of an object as a whole number of length units, by layering multiple copies of a shorter object (the length unit) end to end; understand that the length measurement of an object is the number of same-size length units that span it with no gaps or overlaps. Limit to contexts where the object being measured is spanned by a whole number of length units with no gaps or overlaps. (1-PS4-4) 1.MD.A.2 Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems using information presented in a bar graph. (K-2-ETS1-1) 2.MD.D.10</p> <p>Career Ready Practices CRP4. Communicate clearly and effectively and with reason. CRP5. Consider the environmental, social and economic impacts of decisions. CRP6. Demonstrate creativity and innovation. CRP7. Employ valid and reliable research strategies. CRP8. Utilize critical thinking to make sense of problems and persevere in solving them. CRP11. Use technology to enhance productivity. CRP12. Work productively in teams while using cultural global competence</p>	<p>Students will ask questions based on observations to find more information about the natural and/or designed world, define a simple problem that can be solved through the development of a new or improved object or tool, develop a simple model based on evidence to represent a proposed object or tool and use tools and materials provided to design a device that solves a specific problem.</p>	
	Essential Questions	Assessments
	<ol style="list-style-type: none"> How can light or sound be used to communicate over a distance? What are strategies for approaching a problem that needs to be solved? 	<p>Formative: participation in team activities, research, verbal response, observations, experiments, interactive notebooks</p> <p>Summative/Topic Assessment: Interactive Science assessments, formal lab sheets, experiments</p>
Enduring Understanding	Resources	
	<ol style="list-style-type: none"> People depend on various technologies in their lives; human life would be very different without technology. People also use a variety of devices to communicate (send and receive information) over long distances. A situation that people want to change or create can be approached as a problem to be solved through engineering. Asking questions, making observations, and gathering information are helpful in thinking about problems. Before beginning to design a solution, it is important to clearly understand the problem. Designs can be conveyed through sketches, drawings, or physical models. These representations are useful in communicating ideas for a problem’s solutions to other people. 	<p>Interactive Science Series Trade Books/Classroom Library Assorted Manipulatives NJ DOE Model Curriculum NGSS www.nextgenerationscience.org/ NSTA www.nsta.org</p>