

**Secaucus Board  
of Education**

# **Kindergarten Science Curriculum**

Course Code: 4011

*Curriculum and Instruction Department*



Born on August 1, 2015  
Aligned to the New Jersey Student Learning  
Standards - Science (2016)  
Approved by the Secaucus Board of Education  
on August 27, 2015

**District Equity Statement**

The Board of Education directs that all students enrolled in the schools of this district shall be afforded equal educational opportunities in strict accordance with the law. No students shall be denied access to or benefit from any educational program or activity or from a co-curricular or athletic activity on the basis of the student’s race, color, creed, religion, national origin, ancestry, age, marital status, affectional or sexual orientation, gender, gender identity or expression, socioeconomic status, or disability....The Board directs the Superintendent to allocate faculty, administrators, support staff members, curriculum materials, and instructional equipment supplies among and between the schools and classes of this district in a manner that ensures equivalency of educational opportunity throughout this district. The school district’s curricula in the following areas will eliminate discrimination, promote mutual acceptance and respect among students, and enable students to interact effectively with others, regardless of race, color, creed, religion, national origin, ancestry, age, marital status, affectional or sexual orientation, gender, gender identity or expression, socioeconomic status, or disability:

1. School climate/learning environment
2. Courses of study, including Physical Education
3. Instructional materials and strategies
4. Library materials
5. Software and audio-visual materials
6. Guidance and counseling
7. Extra-curricular programs and activities
8. Testing and other assessments.

Excerpt from Secaucus Board of Education, Policy 5750, Edited September 2016

### **Kindergarten Science Course Description**

The Kindergarten Science Curriculum is taught using *New Jersey Center for Teaching and Learning Progressive Science Initiative* coursework. All components of these units present a balance of Biological, Physical, Earth/Space and Environmental Science topics. The units covered in this course include: Energy, Weather & Climate, Plant & Animal Needs, Plant & Animal Environments, Human Impact on Earth, Severe Weather, and Forces & Motion. All courses are designed to prepare students for The New Jersey Assessment of Skills and Knowledge (NJASK), Middle school science courses, and for scientific problems and issues in their everyday lives.

The material is presented at a moderate pace. Lessons are based on discussions and student-driven activities. Hands-on activities are meant to show connections to real-life science applications and to promote critical thinking and problem solving skills. Students who are placed in this course based on ESL placement will also receive accommodations based upon their ESL level. Students receiving Special Education services will receive modifications and accommodations to information and assessments as indicated in their Individual Education Plan.

**Course Modifications (ELLs, Special Education, Gifted and Talented)**

The course instructor will determine, with the assistance of guidance counselors, teacher assistant/aides, and/or special education teachers, what modifications will be made for his/her students. Such examples of modifications can include, but not be limited to:

- Extended time as needed
- Modification of tests and quizzes
- Preferential seating
- Alternative/Formative assessment (projects)
- Effective teacher questioning (ranging from simple recall to higher order critical thinking questions)
- Supplemental materials
- Cooperative learning
- Teacher tutoring
- Peer tutoring
- Differentiated Instruction

### **Interdisciplinary Connections**

The following NJSLS Standards for ELA and Mathematics depict what standards align to the science standards taught in this Kindergarten Science Course.

#### ***NJSLS - ELA/Literacy:***

- RI.K.1 With prompting and support, ask and answer questions about key details in a text. (K-PS2-2)
- W.K.7 Participate in shared research and writing projects (e.g., explore a number of books by a favorite author and express opinions about them). (K-PS2-1)
- SL.K.3 Ask and answer questions in order to seek help, get information, or clarify something that is not understood. (K-PS2-2)
- W.K.7 Participate in shared research and writing projects (e.g., explore a number of books by a favorite author and express opinions about them). (K-PS3-1),(KPS3-2)
- W.K.7 Participate in shared research and writing projects (e.g., explore a number of books by a favorite author and express opinions about them). (K-LS1-1)
- RI.K.1 With prompting and support, ask and answer questions about key details in a text. (K-ESS2-2)
- W.K.1 Use a combination of drawing, dictating, and writing to compose opinion pieces in which they tell a reader the topic or the name of the book they are writing about and state an opinion or preference about the topic or book. (K-ESS2-2)
- W.K.2 Use a combination of drawing, dictating, and writing to compose informative/explanatory texts in which they name what they are writing about and supply some information about the topic. (K-ESS2-2)
- W.K.7 Participate in shared research and writing projects (e.g., explore a number of books by a favorite author and express opinions about them). (K-ESS2-1)
- RI.K.1 With prompting and support, ask and answer questions about key details in a text. (K-ESS3-2)

- W.K.2 Use a combination of drawing, dictating, and writing to compose informative/explanatory texts in which they name what they are writing about and supply some information about the topic. (K-ESS3-3)
- SL.K.3 Ask and answer questions in order to seek help, get information, or clarify something that is not understood. (K-ESS3-2)
- SL.K.5 Add drawings or other visual displays to descriptions as desired to provide additional detail. (K-ESS3-1)
- RI.2.1 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)
- W.2.6 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),(K-2-ETS1-3)
- W.2.8 Recall information from experiences or gather information from provided sources to answer a question. (K-2-ETS1-1),(K-2-ETS1-3)
- SL.2.5 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)

***NJSLS – Mathematics:***

- MP.2 Reason abstractly and quantitatively. (K-PS2-1)
- K.MD.A.1 Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object. (K-PS2-1)
- K.MD.A.2 Directly compare two objects with a measurable attribute in common, to see which object has “more of”/”less of” the attribute, and describe the difference. (K-PS2-1)
- K.MD.A.2 Directly compare two objects with a measurable attribute in common, to see which object has “more of”/”less of” the attribute, and describe the difference. (K-PS3-1),(KPS3-2)

- K.MD.A.2 Directly compare two objects with a measurable attribute in common, to see which object has “more of”/”less of” the attribute, and describe the difference. (K-LS1-1)
- MP.2 Reason abstractly and quantitatively. (K-ESS2-1)
- MP.4 Model with mathematics. (K-ESS2-1)
- K.CC.A Know number names and the count sequence. (K-ESS2-1)
- K.MD.A.1 Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object. (K-ESS2-1)
- K.MD.B.3 Classify objects into given categories; count the number of objects in each category and sort the categories by count. (K-ESS2-1)
- MP.2 Reason abstractly and quantitatively. (K-2-ETS1-1),(K-2-ETS1-3)
- MP.4 Model with mathematics. (K-2-ETS1-1),(K-2-ETS1-3)
- MP.5 Use appropriate tools strategically. (K-2-ETS1-1),(K-2-ETS1-3)
- 2. MD.D.10 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),(K-2-ETS1-3)

**Kindergarten Science Curriculum Plan**

<b>Unit 1: Energy</b>	<b>Unit 2: Weather &amp; Climate</b>
<p><b>PS3.B: Conservation of Energy and Energy Transfer</b></p> <p>Sunlight warms Earth’s surface. (K-PS3-1),(K-PS3-2)</p>	<p><b>ESS2.D: Weather and Climate</b></p> <p>Weather is the combination of sunlight, wind, snow or rain, and temperature in a particular region at a particular time. People measure these conditions to describe and record the weather and to notice patterns over time. (K-ESS2-1)</p>
<b>Unit 3: Plant &amp; Animal Needs</b>	<b>Unit 4: Plant &amp; Animal Environments</b>
<p><b>LS1.C: Organization for Matter and Energy Flow in Organisms</b></p> <p>All animals need food in order to live and grow. They obtain their food from plants or from other animals. Plants need water and light to live and grow. (K-LS1-1)</p>	<p><b>ESS2.E: Biogeology</b></p> <p>Plants and animals can change their environment. (K- ESS2-2)</p> <p><b>ESS3.A: Natural Resources</b></p> <p>Living things need water, air, and resources from the land, and they live in places that have the things they need. Humans use natural resources for everything they do. (K-ESS3-1)</p>
<b>Unit 5: Human Impact on Earth</b>	<b>Unit 6: Severe Weather</b>
<p><b>ESS3.C: Human Impacts on Earth Systems</b></p> <p>Things that people do to live comfortably can affect the world around them. But they can make choices that reduce their impacts on the land, water, air, and other living things.</p>	<p><b>ESS3.B: Natural Hazards</b></p> <p>Some kinds of severe weather are more likely than others in a given region. Weather scientists forecast severe weather so that the communities can prepare for and respond to these events.</p>



<p>(secondary to K-ESS2-2)</p> <p><b>ETS1.B: Developing Possible Solutions</b></p> <p>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. (secondary to K-ESS3-3)</p>	<p>(K-ESS3-2)</p> <p><b>ETS1.A: Defining and Delimiting an Engineering Problem</b></p> <p>Asking questions, making observations, and gathering information are helpful in thinking about problems.(secondary to K-ESS3-2)</p>
<p><b>Unit 7: Forces &amp; Motion</b></p>	
<p><b>PS2.A: Forces and Motion</b></p> <p>Pushes and pulls can have different strengths and directions. (K- PS2-1),(K-PS2-2)</p> <p>Pushing or pulling on an object can change the speed or direction of its motion and can start or stop it. (K-PS2-1),(K-PS2-2)</p> <p><b>PS2.B: Types of Interactions</b></p> <p>When objects touch or collide, they push on one another and can change motion. (K-PS2-1)</p> <p><b>PS3.C: Relationship Between Energy and Forces</b></p> <p>A bigger push or pull makes things go faster. (secondary to K-PS2-1)</p> <p><b>ETS1.A: Defining Engineering Problems</b></p>	

<p>A situation that people want to change or create can be approached as a problem to be solved through engineering. Such problems may have many acceptable solutions. (secondary to K-PS2-2)</p>	
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**Unit 1 Lesson Plan - Energy**

<b>Teacher:</b>	SBOE Faculty	<b>Time Frame:</b>	10 days (depending on individual teacher schedule)
<b>Grade:</b>	Kindergarten	<b>School:</b>	Elementary School
<b>Subject:</b>	Kindergarten Science		
<b>NJSLS-SCIENCE DCI</b>	<b>Sunlight warms Earth's Surface (K-PS3-1), (K-PS3-2)</b>		
<b>PS3.B: Conservation of Energy and Energy Transfer</b>	<a href="http://www.nextgenscience.org/kps3-energy">http://www.nextgenscience.org/kps3-energy</a>		
<b>Instructional Objective:</b>	<b>Make observations to determine the effect of sunlight on Earth's surface.</b>		
<b>K-PS3-1</b>			
<b>Instructional Objective:</b>	<b>Use tools and materials provided to design and build a structure that will reduce the warming effect of sunlight on Earth's surface.</b>		
<b>K-PS3-2</b>			
<b>Essential Questions</b>			
<b>(What questions will the student be able to answer as a result of the instruction?)</b>			
<ul style="list-style-type: none"> <li>● What are characteristics of the sun?</li> <li>● Can structures reduce the warming effect of sunlight on Earth's surface?</li> </ul>			

**Knowledge & Skills**

**(What skills are needed to achieve the desired results?)**

By the end of this unit, students will know:

How sunlight affects different surfaces on Earth.  
They will use the terms warm, cool, and hot to describe what they learned.

By the end of this unit, students will be able to:

- Describe the sun’s characteristics
- Design and build a structure that will reduce the warming effect of sunlight on Earth’s surface. They will choose materials for their design that will create shade.

**Assessment**

**Acceptable evidence to show desired results**

During the Smart Notebook lesson designed to introduce concepts, students will be continually questioned on these concepts using a combination of class work, whole group discussion, and the SMART Response system. Class work, experiments, and Discovery Center activities will be discussed as a class and misconceptions will be addressed by the teacher prior to evaluations listed below.

**Assessments:**

- Responder Questions used throughout unit.
- Teacher observation during completion of experiments and whole group activities (including completed activity lab sheets).
- Unit Test

**Labs/ Classroom Experiments**

Lab 1: Energy Lab

Lab 2: Sunlight Lab

Lab 3: Design/Build a Shade Structure

**Suggested Sequence**

Day	Topic	Class work	Homework
1	Energy Slides 5-13	Activity on slide 13	N/A
2	Types of Energy Slides 14-16	Energy Lab Slide 16	N/A
3	Types of Energy Slides 17-22	N/A	N/A
4	Energy Transfer Slides 23-25	Sunlight Lab Slide 25	N/A
5	Energy Transfer Slides 26-29	Activity on slide 28	N/A
6	Designing Shade Structures Slides 30-32	Discussion	Parents contribute supplies for shade structures.
7-8	Build Shade Structure	Building	N/A
9	Build Shade Structure	Share Design with	N/A

		Class	
10	Unit Test	Testing	

\*Home/school connection. Parents will help contribute supplies for shade structures; and request parent volunteers to complete lab project.

\*\*\*Please note that all lessons are designed as 40 minute lessons so you may need to make adjustments based on your school schedule.

**Unit 2 Lesson Plan - Weather and Climate**

<b>Teacher:</b>	<b>SBOE Faculty</b>	<b>Time Frame:</b>	35 days (A second round of weather observations will be completed in another season: see pacing guide below)
<b>Grade:</b>	<b>Kindergarten</b>	<b>School:</b>	
<b>Subject:</b>	<b>Kindergarten Science</b>		
<b>NJSLS-SCIENCE DCI ESS2.D: Weather and Climate</b>	<p><b>Weather is the combination of sunlight, wind, snow or rain, and temperature in a particular region at a particular time. People measure these conditions to describe and record the weather and to notice patterns over time. (K-ESS2-1)</b></p> <p><a href="http://www.nextgenscience.org/kess2-earth-systems">http://www.nextgenscience.org/kess2-earth-systems</a></p>		
<b>Instructional Objective: K-ESS2-1</b>	<b>Use and share observations of local weather conditions to describe patterns over time.</b>		
<b>Essential Questions</b>			
<b>(What questions will the student be able to answer as a result of the instruction?)</b>			
<ul style="list-style-type: none"> <li>● <b>What are examples of qualitative observations of the local weather?</b></li> <li>● <b>How can we record quantitative observations of the local weather and temperature?</b></li> <li>● <b>What patterns were observed in their observations?</b></li> <li>● <b>Does this pattern change with seasons?</b></li> </ul>			

**Knowledge & Skills**

**(What skills are needed to achieve the desired results?)**

By the end of this unit, students will know:

- How to make qualitative and quantitative observations of the local weather and temperature. This will include descriptions of the weather (such as sunny, cloudy, rainy, warm).

By the end of this unit, students will be able to:

- Measure these conditions to describe and record the local weather.
- Use daily data of weather to notice patterns over time.
- Use daily data of weather to compare two different seasons.

**Assessment**

**Acceptable evidence to show desired results**

During the Smart Notebook lesson designed to introduce concepts, students will be continually questioned on these concepts using a combination of class work, whole group discussion, and the SMART Response system. Class work, experiments, and Discovery Center activities will be discussed as a class and misconceptions will be addressed by the teacher prior to evaluations listed below.

**Assessments:**

- Responder Questions used throughout unit.
- Teacher observation during completion of experiments and whole group activities (including completed activity lab sheets).
- Unit Test

**Labs/ Classroom Experiments - Activities**

Lab 1: Describing Weather - Temperature



Lab 2: Describing Weather- Temperature  
 Lab 3: Describing Weather – Wind Speed  
 Lab 4: Describing Weather – Wind Direction  
 Lab 5: Describing Weather – Clouds  
 Lab 6: Describing Weather - Clouds  
 Lab 7: Describing Weather – Precipitation  
 Lab 8: Analyzing Data – Weather Journal  
 Lab 9: Analyzing Data – Weather Journal  
 Unit Test

**Suggested Sequence**

Day	Topic	Classwork	Homework
1	Weather Slides 7-16	Activity Sheet 1 Questions 1-5 (slides 17-21)	N/A
2	Describing Weather- Temperature	Lab 1 Activity Sheet 2	N/A

	Slides 22-30		
3	Describing Weather- Temperature  Slides 31-36	Lab 2  Activity Sheet 3  Questions 6-8 (slides 37-40)	N/A
4	Describing Weather- Wind  Slides 41-47	Kite Activity  Activity Sheet 4	N/A
5	Describing Weather-  Wind Speed  Slides 48-52	Lab 3  Activity Sheet 5	N/A
6	Describing Weather – Wind Direction  Slides 53-54	Lab 4  Questions 9-12 (slides 55-58)	Activity Sheet 6
7	Describing Weather- Clouds  Slides 59-62	Lab 5  Activity Sheet 7	N/A
8	Describing Weather – Clouds	Lab 6	N/A

	Slides 63-66	Activity Sheet 8 Questions 13-14 (slides 67-68)	
9	Describing Weather – Precipitation Slides 69-77	Lab 7 Rain Gauge Questions 15-17 (slides 78-80)	N/A
10	Recording Daily Weather Season One Slides 81-86	Weather Observation Activity Sheet 9	N/A
11	Recording Sky Observations AM/PM Slides 87-88	Weather Journal Activity Sheet 10	Weekend Weather Chart Sheet 10a
12- 32	Recording Sky Observations for Month Slide 89	Weather Journal Activity Sheet 11	N/A

13 - 32	Recording Wind Speed and Direction (Month) Slides 90-91	Weather Journal Activity Sheet 12	N/A
14	Recording Daily Temperature AM/PM Slides 92-94	Weather Journal Activity Sheet 13	N/A
15- 32	Recording Temperature for Month Slide 95	Weather Journal Activity Sheet 14	N/A
16-32	Recording Precipitation Slides 96-98	Weather Journal Activity Sheet 15	N/A
33	Analyzing Weather Data Slides 99-100	Lab 8 Weather Journal Questions 18-22 (slides 101-105)	N/A
34	Seasons Slides 106-112	Activity Sheet 16 Questions 23-25(slides 113-115)	N/A

35	Unit Test	Testing	
36-56	Season Two Recording Weather Slides 116-123	Weather Journal Two Activity Sheets 10-16	N/A
57	Analyze and Compare Data Season One & Two Slide 124	Lab 9 Weather Journals One and Two Questions 26-30 (slides 125-130)	

**Unit 3 Lesson Plan - Plant and Animal Needs**

<b>Teacher:</b>	SBOE Faculty	<b>Time Frame:</b>	26 Days- can be shortened by combining multiple labs into one day
<b>Grade:</b>	Kindergarten	<b>School:</b>	Elementary School
<b>Subject:</b>	Kindergarten Science		
<b>NJSLS-SCIENCE DCI</b> <b>LS1.C: Organization for Matter and Energy Flow in Organisms</b>	<p><b>All animals need food in order to live and grow. They obtain their food from plants or from other animals. Plants need water and light to live and grow. (K-LS1-1</b></p> <p><a href="http://www.nextgenscience.org/kls1-molecules-organisms-structures-processes">http://www.nextgenscience.org/kls1-molecules-organisms-structures-processes</a></p>		
<b>Instructional Objective:</b> <b>K-LS1-1</b>	<p><b>Use observations to describe patterns of what plants and animals (including humans) need to survive.</b></p>		
<b>Essential Questions</b>			
<b>(What questions will the student be able to answer as a result of the instruction?)</b>			
<ul style="list-style-type: none"> <li>● <b>What are the basic needs of organisms?</b></li> <li>● <b>What do animals need to live and grow?</b></li> <li>● <b>Where do animals obtain their food?</b></li> <li>● <b>Do all animals need the same kind of food?</b></li> <li>● <b>What do plants need to live and grow?</b></li> <li>● <b>Do all living things need water? Where can they get the water?</b></li> </ul>			

**Knowledge & Skills**

**(What skills are needed to achieve the desired results?)**

By the end of this unit, students will know:

- All animals need food in order to live and grow.
- They obtain their food from plants or other animals.
- Different kinds of food are needed by different types of animals.
- Plants need light and water to live and grow.
- All living things need water.

By the end of this unit, students will be able to:

- Differentiate between the needs of animals and plants.
- Recognize the basic needs of organisms.
- Describe patterns of what plants and animals (including humans) need to survive.

**Assessment**

**Acceptable evidence to show desired results**

During the Smart Notebook lesson designed to introduce concepts, students will be continually questioned on these concepts using a combination of class work, whole group discussion, and the SMART Response system. Class work, experiments, and Discovery Center activities will be discussed as a class and misconceptions will be addressed by the teacher prior to evaluations listed below.

**Assessments:**

- Responder Questions used throughout unit.
- Teacher observation during completion of experiments and whole group activities (including completed activity lab sheets).
- Unit Test

**Labs/ Classroom Experiments - Activities**

Lab 1 : Lima Bean Lab

Lab 2: Birdseed Lab

Lab 3: Sweet Potato Lab  
 Lab 4: Carrot top Lab  
 Lab 5: Sunlight Lab  
 Lab 6: Searching for Light Lab  
 Lab 7: Leaves & Buds Lab  
 Lab 8: Celery Lab  
 Lab 9: Water & Leaves Lab  
 Unit Test

**Suggested Sequence**

Day	Topic	Classwork	Homework
1	Energy Source Slides 5-8	Questions 1-3	N/A
2	Plants Slides 12-17	Lab 1 Activity Sheet 1 Questions 4-5	N/A



3	Plant Needs- Birdseed Slides 22-26	Lab 2 Activity Sheet 2	N/A
4	Plant Needs- Potato Slides 27-30	Lab 3 Activity Sheet 3	N/A
5	Plant Needs – Carrot Slides 31-33	Lab 4 Activity Sheet 4	N/A
6	Plant Needs – Review Slides 34-35	Questions 6-7	N/A
7	Plants & Sunlight Slides 38-41	Lab 5 Activity sheet 5 Questions 8-9	N/A
8	Searching for Light Slides 44-50	Lab 6 Activity Sheet 6 Questions 10-11	N/A
9	From Roots to Leaves Slides 53-57	Discovery Center Lab/ Activity Sheet 7	N/A

10	From Roots to Leaves Slides 58-61	Lab 8 Activity Sheet 8	N/A
11	From Roots to Leaves Slides 62-66	Lab/Activity Sheet 9 Questions 12-14	N/A
12	Animal Needs Slides 70-72	Outdoor Exploration	N/A
13	Exploring Plants & Animals Slides 73-75	Activity Sheet 10	N/A
14	Animal Babies Needs Slides 76-78	Activity Sheet 11 Questions 15-17	N/A
15	Life in Forest- Squirrels Slides 82-91	Observing Squirrels Activity Sheet 12	N/A
16	Life in Forest – Birds Slides 92-96	Activity Sheet 13 Questions 18-19	N/A
17	Life in Forest – Worms Slides 99-101	Soil Observation Activity Sheet 14	N/A

18	Life in Forest – Worms Slides 102 - 106	Activity Sheet 15 Questions 20-21	Search for Worms Sheet 17
19	Life in Swamp – Water Slides 109-113	Swamp Water Observation Activity Sheet 16	N/A
20	Life in Swamp – Animals Slides 114-123	Swamp Animal Illustration Questions 22-24	N/A
21	Life in Swamp – Animals Slide 127	Observation Station Set-Up	N/A
22	Life in Desert – Plants Slides 128-133	Desert Plants Observation	N/A
23	Life in Desert – Animals Slides 134-144	Desert Illustration Questions 25-26 Discovery Center Activity	N/A
24	Animal Needs Review Slides 145-147	Interactive Slides	N/A

25	Human Needs Slides 148-151	Illustration	N/A
26	Unit 3 Test	Testing	

**Unit 4 Lesson Plan - Plant and Animal Environments**

<b>Teacher:</b>	SBOE Faculty	<b>Time Frame:</b>	27 Days
<b>Grade:</b>	Kindergarten	<b>School:</b>	Elementary School
<b>Subject:</b>	Kindergarten Science		
<b>NJSLS-SCIENCE DCI</b>			
<b>ESS2.E: Biogeology</b>	<p><b>Plants and animals can change their environment. (K- ESS2-2)</b></p> <p><a href="http://www.nextgenscience.org/kess2-earth-systems">http://www.nextgenscience.org/kess2-earth-systems</a></p>		
<b>ESS3.A: Natural Resources</b>	<p><b>Living things need water, air, and resources from the land, and they live in places that have the things they need. Humans use natural resources for everything they do. (K-ESS3-1)</b></p> <p><a href="http://www.nextgenscience.org/kess3-earth-human-activity">http://www.nextgenscience.org/kess3-earth-human-activity</a></p>		
<b>Instructional Objective:</b> <b>K-ESS2-2</b>	<p><b>Construct an argument supported by evidence for how plants and animals (including humans) can change the environment to meet their needs.</b></p>		
<b>Instructional Objective:</b> <b>K-ESS3-1</b>	<p><b>Use a model to represent the relationship between the needs of different plants or animals (including humans) and the places they live.</b></p>		

**Essential Questions**

**(What questions will the student be able to answer as a result of the instruction?)**

- **What is the relationship between animals and what they eat, and how does that determine where they live?**
- **What features help plants and animals survive in different environments?**
- **How are these features used?**
- **How do plants and animals depend on the land, air, and water to survive?**
- **How do plants and animals change the environment to meet their needs?**

**Knowledge & Skills**

**(What skills are needed to achieve the desired results?)**

By the end of this unit, students will know:

- How plants and animals can change their environment.
- Living things need water, air, resources from land to survive.
- Living things live in places that have the things they need to survive.
- Humans use natural resources from the environment.
- Plants, animals and their surroundings make a system, they work together to meet needs.

By the end of this unit, students will be able to:

- Diagram/explain how plants and animals can change their environment to meet their needs.
- Diagram/explain the relationship between the needs of different plants or animals and the places they live.
- Diagram/explain what features animals and plants have to survive in different environments.
- Sketch/explain how human use resources in different environments.

**Assessment**

**Acceptable evidence to show desired results**

During the Smart Notebook lesson designed to introduce concepts, students will be continually questioned on these concepts using a combination of class work, whole group discussion, and the SMART Response system. Class work, experiments, and Discovery Center activities will be discussed as a class and misconceptions will be addressed by the teacher prior to evaluations listed below.

**Assessments:**

- Responder Questions used throughout unit.
- Teacher observation during completion of experiments and whole group activities (including completed activity lab sheets).
- Unit Test

**Labs/ Classroom Experiments – Activities**

- 1- Transfer of Energy – Owl Activity
- 2- Spider – Features Activity
- 3- Wetlands Food Web Activity
- 4- “Action” Food Web Activity
- 5- Camouflage Caterpillar Activity
- 6- Snowshoe Hare Activity
- 7- Lab 1 Winter Survival “Warmth”
- 8- Hibernation Mural Activity
- 9- Migration Activity
- 10- Desert Food Web Activity
- 11- Nature Walk Activity

**Suggested Sequence**

Day	Topic	Class Work	Homework

1	Environment Slides 7-14	Activity Sheets 1&2 Questions 1-3 (Slides 15-17)	N/A
2	Ecosystem Transfer of Energy Slides 18-25	Activity - Owl- Transfer of Energy	N/A
3	Food Chain Slides 26-28	Activity Sheets 4&5 Questions 4-6 (Slides 29-31)	N/a
4	Ecosystem Animals Slides 32-34	Activity Sheet 6	N/A
5	Ecosystem Animals Survival Slides 35-42	Spider Feature Activity 7(slide 38) Questions 7-9 (Slides 43-45)	N/A
6	Wetlands – Animals Slides 46-54	Activity Sheets 8&9 Questions 10-11	N/A



		(Slides 55-56)	
7	Wetlands – Plants Slides 56-63	Activity Sheet 10 Questions 12-14 (Slides 64-66)	Activity Sheet 12
8	Wetlands Food Chain Slides 67-74	Activity Sheets 11&13 Wetlands Food Web Activity	N/A
9	Wetlands Food Web Slide 75	“Action” Food Web Activity 14 (slide 75) Questions 15-16 (Slides 76-77)	N/A
10	People & the Wetlands Slides 78-81	Activity Sheet 15 Questions 17&18 (Slides 82-83)	N/A
11	Forest – Plants & Animals Slides 84-89	Questions 19&20 (Slides 90-91)	N/A

12	Forest Survival Camouflage Slides 92-98	Caterpillar Camouflage Activity Activity 16 (Slide 98)	N/A
13	Changing Environment Camouflage Slides 99-102	Snowshoe Hare Activity Activity Sheet 17 a&b Questions 21-23 (Slides 103-105)	N/A
14	Forest Environment Winter Survival Slides 106-111	Lab 1 Winter Survival Activity 18 (slide 109)	N/A
15-16	Winter Survival Hibernation Slides 112-123	Hibernation Mural Activity 19 (slide 123) Questions 24-26 (Slides 124-126)	N/A

17	<p>Winter Survival Migration Slides 127-131</p>	<p>Migration Activity Activity 20 (slide 131) Questions 27-28 (Slides 132-133)</p>	N/A
18	<p>Forest Animals – Defenses Slides 134-137</p>	<p>Activity Sheet 21 Questions 29-31 (Slides 138-140)</p>	N/A
19	<p>Forest Food Web Slides 141-144</p>	<p>Activity Sheet 22 Questions 32-33 (Slides 145-146)</p>	N/A
20	<p>People in the Forest Slides 147-153</p>	<p>Activity Sheet 23&amp;24 Questions 34-36 (Slides 154-156)</p>	N/A
21	<p>Desert Plants &amp; Animals Slides 157-169</p>	<p>Desert Plants &amp; Water Activity 25 (slide 169) Questions 37-39 (Slides 170-172)</p>	N/A

22	Desert Animals Adapting to Heat Slides 173-184	Activity Sheet 26 Questions 40&41 (Slides 185-186)	N/A
23	Desert Homes/Shelter Slides 187-190	Activity Sheet 27 Questions 42 & 43 (Slides 191-192)	N/A
24	Desert Food Web Slides 193-195	Desert Food Web Activity 28 (slide 195) Questions 44-45 (Slides 196-197)	N/A
25	People in the Desert Slides 198-202	Questions 46-47 (Slides 203-204)	N/a
26	Changes in the Environment Slides 205-213	Nature Walk Activity Activity Sheet 29	N/A
27	Test	Testing	N/A

\*Please note that all lessons are designed as 40 minute lessons so you may need to make adjustments based on your school schedule.

Unit 5 Lesson Plan - Human Impacts on Earth Systems			
<b>Teacher:</b>	SBOE Faculty	<b>Time Frame:</b>	18 days
<b>Grade:</b>	Kindergarten	<b>School:</b>	Elementary School
<b>Subject:</b>	Kindergarten Science		
<b>NJSLS-SCIENCE DCI</b> <b>ESS3.C: Human Impacts on Earth Systems</b>	<b>Things that people do to live comfortably can affect the world around them. But they can make choices that reduce their impacts on the land, water, air, and other living things. (secondary to K-ESS2-2)</b>		
<b>ETS1.B: Developing Possible Solutions</b>	<b>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. (secondary to K-ESS3-3)</b>		
<b>Instructional Objective:</b> <b>K-ESS3-3</b>	<b>Communicate solutions that will reduce the impact of humans on the land, water, air, and/or other living things in the local environment</b>		
Essential Questions			
<b>(What questions will the student be able to answer as a result of the instruction?)</b>			
<ul style="list-style-type: none"> <li>• <b>What are examples of things that people do to live comfortably that can affect the world around them?</b></li> <li>• <b>How does man affect the forest/land with his choices?</b></li> <li>• <b>How can man conserve water?</b></li> </ul>			

<ul style="list-style-type: none"> <li>● What can a child do to keep the air clean?</li> <li>● How can our families help keep the Earth healthy?</li> <li>● What can we do to reduce, reuse, and recycle our natural resources?</li> </ul>	
<b>Knowledge &amp; Skills</b>	
<b>(What skills are needed to achieve the desired results?)</b>	
<p>By the end of this unit, students will know:</p> <ul style="list-style-type: none"> <li>● There are specific things that people do to live comfortably that can affect the world around them.</li> <li>● We need to reduce, reuse, and recycle our resources.</li> <li>● Water conservation is saving our natural resources.. We must try everyday to conserve water.</li> <li>● Humans use natural resources for everything they do.</li> <li>● Resources are renewable or nonrenewable.</li> </ul>	<p>By the end of this unit, students will be able to:</p> <ul style="list-style-type: none"> <li>● Identify and practice activities they can do to reduce their impact on land, water, air, and other living things..</li> <li>● Identify and use water conservation practices..</li> <li>● Explore and communicate solutions that will reduce the impact of humans in their local environment.</li> </ul>
<b>Assessment</b>	
<b>Acceptable evidence to show desired results</b>	
<p>During the Smart Notebook lesson designed to introduce concepts, students will be continually questioned on these concepts using a combination of class work, whole group discussion, and the SMART Response system. Class work, experiments, and Discovery Center activities will be discussed as a class and misconceptions will be addressed by the teacher prior to evaluations listed below.</p> <p><b>Assessments:</b></p> <ul style="list-style-type: none"> <li>● Responder Questions used throughout unit.</li> <li>● Teacher observation during completion of experiments and whole group activities (including completed activity lab sheets and</li> </ul>	

worksheets)).

- Unit Test

**Labs/ Classroom Experiments - Activities**

Lab 1 : Soil Samples

Lab 2: Compost Activity

Lab 3: Recycling Activity

Lab 4: Keeping Environment Clean Activity

Lab 5: Plant a Tree Activity

Lab 6: Cleaning Dirty Water Activity

Unit 5 Test

**Suggested Sequence**

Day	Topic	Classwork	Homework
1	Intro to Human Impact Slides 6-10	Activity sheet 1 Questions 1-3	N/A
2	Earth's Resources Slides 14-20	Activity Sheet 2 Questions 4-6	N/A



3	Taking Care of the Earth Slides 24-31	Labs 1 & 2 Activity Sheet 3 Questions 7-8	N/A
4	Trash Slides 34-44	Activity Sheet 4 Questions 9-10	N/A
5	Reduce ,Reuse ,Recycle Slides 47-56	Activity Sheets 5, 6, 7 Discovery Center Slides 57-60	N/A
6	Reduce, Reuse, Recycle Slides 61-66	Lab 3 Activity Sheet 8 Recycle Poster Questions 11-13	N/A
7	Human Impact on Land Slides 72-79	Lab 4 Activity sheet 9 Litter Poster Questions 14-15	Activity Sheet 10

8	Human Impact on Forests Slides 82-90	Lab 5 Activity Sheet 11 Questions 16-17	N/A
9	Human Impact on Water Slides 93-98	Lab 6 Activity Sheets 12-13 Discovery Center Questions 18-19	N/A
10	Human Impact on Water Slides 101-112	Activity Sheets 14-15 Questions 20-21	N/A
11	Treating Water Slides 115-118	Activity Sheet 16 Trip Questions 22-23	N/A
12	Wasting Precious Water Slides 121-124	Water Activity Activity Sheet 17 Questions 24-25	N/A

13	Water Around the World Slides 127-130	Activity Sheet 18 Questions 26-27	N/A
14	Water Around the World Slides 133-142	Activity Sheet 19 Questions 28-29	N/A
15	What Can You Do? Slides 145-149	Activity 20 Poster Questions 30-31	N/A
16	Human Impact on Air Slides 152-155	Walk to School Questions 32-33	Activity Sheet 21
17	Human Impact at Home Slides 158-165	Activity Sheet 22	Activity Sheets 23& 24
18	Unit 5 Test	Testing	

**Unit 6 Lesson Plan - Severe Weather**

<b>Teacher:</b>	SBOE Faculty	<b>Time Frame:</b>	13 days
<b>Grade:</b>	Kindergarten	<b>School:</b>	Elementary School
<b>Subject:</b>	Kindergarten Science		
<b>NJSLS-SCIENCE DCI</b> <b>ESS3.B: Natural Hazards</b>  <b>ETS1.A: Defining and Delimiting an Engineering Problem</b>	<ul style="list-style-type: none"> <li>Some kinds of severe weather are more likely than others in a given region. Weather scientists forecast severe weather so that the communities can prepare for and respond to these events. (K-ESS3-2)</li> <li>Asking questions, making observations, and gathering information are helpful in thinking about problems.(secondary to K-ESS3-2)</li> </ul>		
<b>Instructional Objective:</b> <b>K-ESS3-2</b>	<b>Ask questions to obtain information about the purpose of weather forecasting to prepare for, and respond to, severe weather</b>		
<b>Essential Questions</b>			
<b>(What questions will the student be able to answer as a result of the instruction?)</b>			
<ul style="list-style-type: none"> <li>What types of severe weather can you name?</li> </ul>			

<ul style="list-style-type: none"> <li>● <b>What regions have certain types of severe weather?</b></li> <li>● <b>How can you prepare for severe weather?</b></li> <li>● <b>Who helps us prepare for severe weather?</b></li> <li>● <b>How do they do this?</b></li> </ul>	
<b>Knowledge &amp; Skills</b>	
<b>(What skills are needed to achieve the desired results?)</b>	
<p>By the end of this unit, students will know:</p> <ul style="list-style-type: none"> <li>● There are different types of severe weather.</li> <li>● Where you live can determine what types of severe weather occurs.</li> <li>● Weather scientists help us prepare for severe weather.</li> <li>● We can prepare for severe weather.</li> </ul>	<p>By the end of this unit, students will be able to:</p> <ul style="list-style-type: none"> <li>● Obtain information about weather forecasting to prepare for, and respond to, severe weather.</li> </ul>
<b>Assessment</b>	
<b>Acceptable evidence to show desired results</b>	
<p>During the Smart Notebook lesson designed to introduce concepts, students will be continually questioned on these concepts using a combination of class work, whole group discussion, and the SMART Response system. Class work, experiments, and Discovery Center activities will be discussed as a class and misconceptions will be addressed by the teacher prior to evaluations listed below.</p> <p><b>Assessments:</b></p> <ul style="list-style-type: none"> <li>● Responder Questions used throughout unit.</li> <li>● Teacher observation during completion of experiments and whole group activities (including completed activity lab sheets).</li> <li>● Unit Test</li> </ul> <p><b>Labs/ Classroom Experiments – Activities</b></p>	

**Activity 1 Types of Weather**

**Activity 2 Weather Forecasting**

**Activity 3 Weather Tools**

**Activity 4 Air Pressure**

Lab 1 : Making a Barometer

**Activity 5 National Weather Service**

**Activity 6 Blizzards**

**Activity 7 Hurricanes**

**Activity 8 Tornadoes**

Lab 2: Tornado Lab

**Activity 9 Sand Storms**

**Activity 10 Preparing for Severe Weather**

Unit Test

**Suggested Sequence**

Day	Topic	Classwork	Homework
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1	Types of Weather Slides 6-16	Activity 1 Questions 1-3 Slides 17-19	N/A
2	Weather Forecasting Slides 20-24	Activity 2 Questions 4-5 Slides 25-26	N/A
3	Weather Tools Slides 27-31	Activity 3 Questions 6-7 Slides 32-33	N/A
4	Air Pressure Slides 34-47	Activity 4 Lab 1 Discovery Center Questions 8-9 Slides 48-49	N/A
5	National Weather Service Slides 50-61	Activity 5a-5b Discovery Center	N/A

		Questions 10-11 Slides 62-63	
6	Severe Weather Blizzard Slides 64-69	Activity 6 Questions 12-13 Slides 70-71	N/A
7	Severe Weather Hurricane Slides 72-87	Activity 7a-7b Questions 14-16 Slides 88-90	N/A
8	Severe Weather Tornado Slides 91-105	Activity 8 Lab 2 Questions 17-18 Slides 106-107	N/A
9	Severe Weather Sand Storms Slides 108-116	Activity 9 Questions 19-20 Slides 117-118	N/A
10	Preparing for Severe Weather	Activity 10	Homework 11b&11d



	Hurricanes/Tornadoes Slides 119-126 Slides 129-131	Hurricane Questions 21-22 Slides 127-128 Tornado Questions 23-24 Slides 132-133	
11	Preparing for Severe Weather Blizzard/Sandstorm Slides 134-136 Slides 139-141	Activity 10 Blizzard Questions 25-26 Slides 137-18 Sandstorm Questions 27-28 Slides 142-143	Homework 11a&11c
12	We Can Be Prepared Slides 144-148	Severe Weather Adventure Game	N/A
13	Severe Weather Unit Test	Unit Test	N/A
<b>Unit 7 Lesson Plan – Motion and Stability: Forces and Interactions</b>			
<b>Teacher:</b>	SBOE Faculty	<b>Time Frame:</b>	7 Days
<b>Grade:</b>	Kindergarten	<b>School:</b>	Elementary School
<b>Subject:</b>	Kindergarten Science		

<p><b>NJSLS-SCIENCE DCI:</b></p> <p><b>PS2.A: Forces and Motion</b></p> <p><b>PS2.B: Types of Interactions</b></p> <p><b>PS3.C: Relationship Between Energy and Forces</b></p> <p><b>ETS1.A: Defining Engineering Problems</b></p>	<p><b>Pushes and pulls can have different strengths and directions. (K- PS2-1),(K-PS2-2)</b></p> <p><b>Pushing or pulling on an object can change the speed or direction of its motion and can start or stop it. (K-PS2-1),(K-PS2-2)</b></p> <p><b>When objects touch or collide, they push on one another and can change motion. (K-PS2-1)</b></p> <p><b>A bigger push or pull makes things go faster. (secondary to K- PS2-1)</b></p> <p><b>A situation that people want to change or create can be approached as a problem to be solved through engineering. Such problems may have many acceptable solutions. (secondary to K-PS2-2)</b></p> <p><a href="http://www.nextgenscience.org/kps2-motion-stability-forces-interactions">http://www.nextgenscience.org/kps2-motion-stability-forces-interactions</a></p>
<p><b>Instructional Objective:</b></p> <p><b>K-PS2-1.</b></p>	<p><b>Plan and conduct an investigation to compare the effects of different strengths or different directions of pushes and pulls on the motion of an object. K-PS2-1</b></p>
<p><b>Instructional Objective:</b></p> <p><b>K-PS2-2.</b></p>	<p><b>Analyze data to determine if a design solution works as intended to change the direction of an object with a push or pull. K-PS2-2</b></p>

<b>Essential Questions</b>	
<b>(What questions will the student be able to answer as a result of the instruction?)</b>	
<ul style="list-style-type: none"> <li>* Can pushes and pulls have different strengths and directions?</li> <li>* Can we change speed and direction of an object by pushing or pulling it?</li> <li>* What happens when objects touch or collide?</li> <li>* What does a bigger push or pull do to an object?</li> <li>* What tools can we use to increase the speed of an object or make the object turn?</li> </ul>	
<b>Knowledge &amp; Skills</b>	
<b>(What skills are needed to achieve the desired results?)</b>	
<p>By the end of this unit, students will know:</p> <ul style="list-style-type: none"> <li>* Pushes and pulls can have different strengths and directions.</li> <li>* Pushing or pulling on an object can change the speed or direction of its motion and start or stop it.</li> <li>* When objects touch or collide, they push on one another and can change motion.</li> <li>* A larger push or pull makes things go faster</li> </ul>	<p>By the end of this unit, students will be able to:</p> <ul style="list-style-type: none"> <li>* With guidance, students will plan and conduct an investigation of forces and interactions, in collaboration with peers. They will be able to design solutions (through engineering) to change the speed or direction of an object with pushes or pulls. The students may include tools (such as a ramp or structure) to solve this problem.</li> <li>* Analyze data from force and interaction tests (with tools) to determine if plan work as intended.</li> </ul>
<b>Assessment</b>	
<b>Acceptable evidence to show desired results</b>	

During the Smart Notebook lesson designed to introduce concepts, students will be continually questioned on these concepts using a combination of class work, whole group discussion, and the SMART Response system. Class work, experiments, and Discovery Center activities will be discussed as a class and misconceptions will be addressed by the teacher prior to evaluations listed below.

**Assessments:**

- \* Responder Questions used throughout unit.
- \* Teacher observation during completion of experiments and whole group activities (including completed activity lab sheets).
- \* Unit Test

**Labs/ Classroom Experiments - Activities**

Lab 1: Potato Sack Race

Lab 2: Colliding Balls Activity

Lab 3: Golf Course Activity

Unit Test

**Suggested Sequence**

Day	Topic	Class Work	Homework
1	Distance Slides 6-15	Potato Sack Race Lab  Question 1  (Slide 15)	N/A
2	Time	Classroom Walk	N/A

	Slides 16-22	Activity Question 2 (Slide 20)	
3	Speed Slides 23-29	Question 3 (Slides 29)	N/A
4	Forces: Push & Pull Slides 31-39	Golf Course Lab Fun with Blocks Question 4 (Slide 37)	N/A
5	Motion Slides 40-50	Box Races	N/A
6	Collisions Slides 51-58	Ball Collision Lab Questions 5 & 6 (Slide 57 & 58)	N/A
7	Unit Assessment		N/A