

Green Township School District Kindergarten Science Curriculum Overview - Revised 2017

Year Overview by Unit & Pacing Guide		
Unit 1: Measurement		Approximate length: 19 instructional periods
	<p>NJ Student Learning Standards:</p> <ul style="list-style-type: none"> ● K.MD.A.1 ● K.MD.A.2 <p>*The concepts covered in this unit are foundational for future science units. Activities can be taught in conjunction with corresponding math lessons</p>	<p>Unit Big Ideas:</p> <ul style="list-style-type: none"> ● Comparing: same or different ● Comparing height and length ● Comparing weight ● Comparing capacity
Unit 2: Motion and Forces		Approximate length: 7 instructional periods
	<p>NJ Student Learning Standards:</p> <ul style="list-style-type: none"> ● K-PS2-1 ● K-PS2-2 ● K-2: ETS1-3 	<p>Unit Big Ideas:</p> <ul style="list-style-type: none"> ● Forces and motion
Unit 3: Senses		Approximate length: 6 instructional periods
	<p>NJ Student Learning Standards:</p> <ul style="list-style-type: none"> ● K-LS1-1 	<p>Unit Big Ideas:</p> <ul style="list-style-type: none"> ● How organisms use their senses to collect information

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Unit 4: Living Things		Approximate length: 21 instructional periods
	<p>NJ Student Learning Standards:</p> <ul style="list-style-type: none"> ● K-LS1-1 ● K-ESS3-1 ● K-ESS2-2 	<p>Unit Big Ideas:</p> <ul style="list-style-type: none"> ● Comparing living and non-living things ● Plants and their basic needs ● Animals and their basic needs ● Taking care of the Earth
Unit 5: Weather		Approximate length: 9 instructional periods
	<p>NJ Student Learning Standards:</p> <ul style="list-style-type: none"> ● K-ESS2-1 ● K-ESS3-2 ● K-2-ETS1-1 	<p>Unit Big Ideas:</p> <ul style="list-style-type: none"> ● Observing and communicating weather conditions ● Types of/predicting severe weather
Unit 6: Sunlight and Energy		Approximate length: 4 instructional periods
	<p>NJ Student Learning Standards:</p> <ul style="list-style-type: none"> ● K-PS3-1 ● K-PS3-2 ● K-2 ETS1-1 ● K-2-ETS1-2 ● K-2-ETS1-3 	<p>Unit Big Ideas:</p> <ul style="list-style-type: none"> ● Sunlight and energy

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Kindergarten Science Curriculum Unit 1

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Unit 1: Measurement

Lesson 1.1	<p><i>NJ Student Learning Science Standards:</i></p> <ul style="list-style-type: none"> This Science unit is foundational and based on crucial mathematic standards to be used throughout the rest of the year See Kindergarten Math Curriculum Units 1-3 <p><i>NJ Student Learning Math Standards:</i></p> <ul style="list-style-type: none"> K.MD.B.3. Classify objects into given categories; count the numbers of objects in each category and sort the categories by count *(benchmarked) K.G.A.2. Correctly name shapes regardless of their orientation or overall size. K.G.A.3. Identify shapes as two-dimensional (lying in a plane, “flat”) or three-dimensional (“solid”) K.G.B.4. Analyze and compare two- and three-dimensional shapes, in different sizes, and orientations, using informal language to describe their similarities, differences, parts (<i>e.g. number of sides and vertices “corners”</i>) and other attributes (<i>e.g. having sides of equal length</i>). 	<p>Concept(s):</p> <ul style="list-style-type: none"> Comparing objects: same or different <p>Students will be able to:</p> <ul style="list-style-type: none"> Identify and describe two objects as <i>same</i> or <i>different</i> Communicate understanding of <i>same</i> and <i>different</i>
Lesson 1.2	<p><i>NJ Student Learning Science Standards:</i></p> <ul style="list-style-type: none"> This Science unit is foundational and based on crucial mathematic standards to be used throughout the rest of the year See Kindergarten Math Curriculum Units 1-3 <p><i>NJ Student Learning Math Standards:</i></p> <ul style="list-style-type: none"> K.MD.A.1. Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object. 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 differences. 	<p>Concept(s):</p> <ul style="list-style-type: none"> Comparing height and length <p>Students will be able to:</p> <ul style="list-style-type: none"> Compare three or more objects* according to their length as same or different, long, longer, longest, tall, taller, tallest, and short, shorter, shortest Describe the length of different objects using comparative language Use direct comparison and nonstandard units to measure the length of common objects <p><i>*Kindergarten measurement standards require comparison of only 2 objects. Three object comparison is not required until Grade 1. Teachers should align to math standard. Long, longer; tall, taller, etc.</i></p>

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	<p><i>For example, directly compare the heights of two children and describe one child as taller/shorter.</i></p> <ul style="list-style-type: none"> • K.CC.B.4. Understand the relationship between numbers and quantities; connect counting to cardinality. • K.CC.B.4a. When counting objects, say the number names in the standard order, pairing each object with one and only one number name and each number name with one and only one object. 	
Lesson 1.3	<p><i>NJ Student Learning Science Standards:</i></p> <ul style="list-style-type: none"> • This Science unit is foundational and based on crucial mathematic standards to be used throughout the rest of the year • See Kindergarten Math Curriculum Units 1-3 <p><i>NJ Student Learning Math Standards:</i></p> <ul style="list-style-type: none"> • K.MD.A.1. Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object. • 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 differences. <p><i>For example, directly compare the heights of two children and describe one child as taller/shorter.</i></p>	<p>Concept(s):</p> <ul style="list-style-type: none"> • Comparing weight <p>Students will be able to:</p> <ul style="list-style-type: none"> • Compare two objects according to their weight as about the same or different, heavier or lighter • Describe the weight of different objects as heavy (heavier) or light (lighter) • Use a balance and nonstandard units to measure the weight of common objects
Lesson 1.4	<p><i>NJ Student Learning Science Standards:</i></p> <ul style="list-style-type: none"> • This Science unit is foundational and based on crucial mathematic standards to be used throughout the rest of the year • See Kindergarten Math Curriculum Units 1-3 <p><i>NJ Student Learning Math Standards:</i></p> <ul style="list-style-type: none"> • K.MD.A.1. Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object. • K.MD.A.2. Directly compare two objects with a 	<p>Concept(s):</p> <ul style="list-style-type: none"> • Capacity <p>Students will be able to:</p> <ul style="list-style-type: none"> • Compare relative capacities of various common containers • Describe the capacity of the containers using comparative language such as some, more, and most • Work cooperatively to share materials and complete tasks

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	<p>measurable attribute in common, to see which object has “more of” “less of” the attribute, and describe the differences.</p> <p><i>For example, directly compare the heights of two children and describe one child as taller/shorter.</i></p> <ul style="list-style-type: none"> • K.CC.B.4b. Understand that the last number name said tells the number of objects counted. The number of objects is the same regardless of their arrangement or the order in which they were counted. 	
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Other Interdisciplinary Connections

<p><u>NGSS Appendix for Alignment</u></p>	<p><u>English-Language Arts:</u></p> <p>RI.K.3. With prompting and support, describe the connection between two individuals, events, ideas, or pieces of information in a text</p> <p>SL.K.1. Participate in collaborative conversations with diverse partners about kindergarten topics and texts with peers and adults in small and larger groups.</p> <p>A. Follow agreed-upon norms for discussions (e.g., listening to others with care and taking turns speaking about the topics and texts under discussion).</p> <p>B. Continue a conversation through multiple exchanges.</p> <p>SL.K.3: Ask and answer questions in order to seek help, get information, or clarify something that is not understood.</p> <p>SL.K.5. Add drawings or other visual displays to descriptions as desired to provide additional detail.</p> <p>SL.K.6. Speak audibly and express thoughts, feelings, and ideas clearly</p> <p>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.</p>
<p><u>21st Century Skills/ Career Ready Practices:</u></p>	<p>CRP1. Act as a responsible and contributing citizen and employee.</p> <p>CRP2. Apply appropriate academic and technical skills.</p> <p>CRP3. Attend to personal health and financial well-being.</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>CRP9. Model integrity, ethical leadership and effective management.</p> <p>CRP10. Plan education and career paths aligned to personal goals.</p> <p>CRP11. Use technology to enhance productivity.</p> <p>CRP12. Work productively in teams while using cultural global competence.</p>

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<p><u>2014 NJ Technology Standards:</u></p>	<p>8.1 Educational Technology (Word PDF) All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and create and communicate knowledge.</p> <p>8.2 Technology Education, Engineering, Design and Computational Thinking - Programming (Word PDF) All students will develop an understanding of the nature and impact of technology, engineering, technological design, computational thinking and the designed world as they relate to the individual, global society, and the environment.</p> <p>Please see relevant projects for technology standards 8.1 and 8.2:</p>
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District/School Primary and Supplementary Resources

<p><u>Primary Resource:</u></p> <p><i>Knowing Science: Kindergarten: Let's Compare</i> www.knowingscience.com 2016 Knowing Science, LLC</p>	<p>BrainPOP Pebble Go</p>
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Materials

Materials for each session activity and lesson are listed in the Knowing Science Teacher's Manual.

School/ Formative Assessment Plan	School/District Summative Assessment Plan
<ul style="list-style-type: none"> ● Teacher observation of students engaged in group and independent activities. ● Individual and small group conferences/interviews to assess understanding with rubric ● Self-assessment by students with guidance from teacher. 	<ul style="list-style-type: none"> ● Teacher created assessments and projects ● Teacher/District created benchmark assessments

Differentiation/Accommodations/Modifications

Gifted and Talented

(content, process, product and learning environment)

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Extension Activities

- Conduct research and provide presentation of various topics.
- Design surveys to generate and analyze data to be used in discussion.
- Debate topics of interest / cultural importance.
- Authentic listening and reading sources that provide data and support for speaking and writing prompts.
- Exploration of art and/or artists to understand society and history.
- Implement RAFT Activities as they pertain to the types / modes of communication (role, audience, format, topic).

Anchor Activities

- Use of Higher Level Questioning Techniques
- Provide assessments at a higher level of thinking

English Language Learners

Modifications for Classroom

- Pair visual prompts with verbal presentations
- Ask students to restate information, directions, and assignments.
- Repetition and practice.
- Model skills/techniques that need to be mastered.
- Extended time to complete class work
- Visual dictionaries to help build vocabulary
- Provide copy of classnotes
- Pair with a peer for assistance during class

Modifications for Homework/Assignments

- Modified Assignments
- Native Language Translation (peer, online assistive technology, translation device, bilingual dictionary)
- Extended time for assignment completion as needed
- Highlight key vocabulary
- Use graphic organizers

Students with Disabilities

(appropriate accommodations, instructional adaptations, and/or modifications as determined by the IEP or 504 team)

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Modifications for Classroom

- Pair visual prompts with verbal presentations
- Ask students to restate information, directions, and assignments.
- Repetition and practice
- Model skills / techniques to be mastered.
- Extended time to complete class work
- Provide copy of classnotes
- Preferential seating to be mutually determined by the student and teacher
- Student may request to use a computer to complete assignments.
- Establish expectations for correct spelling on assignments.
- Extra textbooks for home.
- Student may request books on tape / CD / digital media, as available and appropriate.
- Assign a peer helper in the class setting
- Provide oral reminders and check student work during independent work time
- Assist student with long and short term planning of assignments
- Encourage student to proofread assignments and tests
- Provide regular parent/ school communication
- Teachers will check/sign student agenda daily
- Student requires use of other assistive technology device

Modifications for Homework and Assignments

- Extended time to complete assignments.
- Student requires more complex assignments to be broken up and explained in smaller units, with work to be submitted in phases.
- Provide the student with clearly stated (written) expectations and grading criteria for assignments.
- Implement RAFT activities as they pertain to the types / modes of communication (role, audience, format, topic).

Modifications for Assessments

- Extended time on classroom tests and quizzes.
- Student may take/complete tests in an alternate setting as needed.
- Restate, reread, and clarify directions/questions
- Distribute study guide for classroom tests.
- Establish procedures for accommodations / modifications for assessments.

Students at Risk of School Failure

Modifications for Classroom

- Pair visual prompts with verbal presentations
- Ask students to restate information, directions, and assignments.
- Repetition and practice

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- Model skills / techniques to be mastered.
- Extended time to complete class work
- Provide copy of classnotes
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Kindergarten Science Curriculum Unit 2
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Unit 2: Forces and Interactions

Lesson 2.1	<p><i>NJ Student Learning Science Standards:</i></p> <ul style="list-style-type: none"> This Science unit is foundational and based on crucial mathematic standards to be used throughout the rest of the year See Kindergarten Math Curriculum Units 5 <p><i>NJ Student Learning Math Standards:</i></p> <ul style="list-style-type: none"> K.CC.A.1. Count to 100 by ones and by tens. *(benchmarked) K.CC.B.4. Understand the relationship between numbers and quantities; connect counting to cardinality. K.CC.B.4a. When counting objects, say the number names in the standard order, pairing each object with one and only one number name and each number name with one and only one object. 	<p>Concept(s):</p> <ul style="list-style-type: none"> Motion <p>Students will be able to**:</p> <ul style="list-style-type: none"> Compare the speed of two objects using a stopwatch Measure the distance that an object has traveled.* <p><i>* Teacher notes regarding the book objectives: To align the science and math curriculums, modify this objective - Kindergarteners may measure through counting blocks or counting steps to begin to develop conceptual understanding of distance; Session 1 #5 needs to be modified - no tape measures; Session 2 can be modified to compare distance without measurement - for example - use the cones but just have students determine which is farther by sight and/or counting steps. Session 3 - Stopwatch activity - reinforce counting standards from math using this activity - See K-Math Unit 5 - counting to 100</i></p> <p><i>**Session 2 #7 - Skip objective to analyze bar graphs; Creating and analyzing bar graphs is a grade 2 skill.</i></p>
Lesson 2.2	<p><i>NJ Student Learning Science Standards:</i></p> <ul style="list-style-type: none"> K-PS2-1. 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. [Clarification Statement: Examples of pushes or pulls could include a string attached to an object being pulled, a person pushing an object, a person stopping a rolling ball, and two objects colliding and pushing on each other.] [Assessment Boundary: Assessment is limited to different relative strengths or different directions, but not both at the same time. Assessment does not include non-contact pushes or pulls such as those produced by 	<p>Concept(s):</p> <ul style="list-style-type: none"> Forces and Motion <p>Students will be able to:</p> <ul style="list-style-type: none"> Differentiate between pushes and pulls Make predictions about the application of a force Measure and record on a chart the distance a thrown object travels* Analyze data and draw conclusions about the effect of applying more or less force when throwing an object Relate the change of speed or direction of the motion to the action of a force

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<p>magnets.]</p> <ul style="list-style-type: none"> ● K-PS2-2. Analyze data to determine if a design solution works as intended to change the speed or direction of an object with a push or a pull.* [Clarification Statement: Examples of problems requiring a solution could include having a marble or other object move a certain distance, follow a particular path, and knock down other objects. Examples of solutions could include tools such as a ramp to increase the speed of the object and a structure that would cause an object such as a marble or ball to turn.] [Assessment Boundary: Assessment does not include friction as a mechanism for change in speed.] 	<p>* Teacher notes regarding the book objectives: <i>Students don't measure distance in math until grade 2 using tape measures and rulers; focus on push/pull activities without measurement objectives as written. Modify any measurement activity to use non-standard units of measurement and counting (e.g. use blocks. How many blocks long is it?) instead of using measuring tapes and rulers. Bar graph activities are not taught for conceptual understanding until grade 2 in math.</i></p>
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Other Interdisciplinary Connections

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Differentiation/Accommodations/Modifications

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Gifted and Talented

(content, process, product and learning environment)

Extension Activities

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Modifications for Classroom

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Students with Disabilities

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(appropriate accommodations, instructional adaptations, and/or modifications as determined by the IEP or 504 team)

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Modifications for Homework and Assignments

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Students at Risk of School Failure

Modifications for Classroom

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Kindergarten Science Curriculum Unit 3
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Unit 3: Senses and Gathering Information

Lesson 3.1	<p><i>NJ Student Learning Science Standards:</i></p> <ul style="list-style-type: none"> K-LS1-1. Use observations to describe patterns of what plants and animals (including humans) need to survive. [Clarification Statement: Examples of patterns could include that animals need to take in food but plants do not; the different kinds of food needed by different types of animals; the requirement of plants to have light; and, that all living things need water.] 	<p>Concept(s):</p> <ul style="list-style-type: none"> The 5 senses, their uses, and their corresponding physical structure <p>Students will be able to:</p> <ul style="list-style-type: none"> Identify each sense by name Relate corresponding body parts to each sense Uses senses to identify properties of objects Compare and classify objects using one or more senses
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Other Interdisciplinary Connections

<u>NGSS Appendix for Alignment</u>	<p><u>English-Language Arts:</u></p> <p>RI.K.3. With prompting and support, describe the connection between two individuals, events, ideas, or pieces of information in a text</p> <p>SL.K.1. Participate in collaborative conversations with diverse partners about kindergarten topics and texts with peers and adults in small and larger groups.</p> <p>A. Follow agreed-upon norms for discussions (e.g., listening to others with care and taking turns speaking about the topics and texts under discussion).</p> <p>B. Continue a conversation through multiple exchanges.</p> <p>SL.K.3: Ask and answer questions in order to seek help, get information, or clarify something that is not understood.</p> <p>SL.K.5. Add drawings or other visual displays to descriptions as desired to provide additional detail.</p> <p>SL.K.6. Speak audibly and express thoughts, feelings, and ideas clearly</p> <p>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.</p>
<u>21st Century Skills/ Career Ready Practices:</u>	<p>CRP1. Act as a responsible and contributing citizen and employee.</p> <p>CRP2. Apply appropriate academic and technical skills.</p> <p>CRP3. Attend to personal health and financial well-being.</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>CRP9. Model integrity, ethical leadership and effective management.</p>

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	<p>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.</p>	
<p><u>2014 NJ Technology Standards:</u></p>	<p>8.1 Educational Technology (Word PDF) All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and create and communicate knowledge.</p> <p>8.2 Technology Education, Engineering, Design and Computational Thinking - Programming (Word PDF) All students will develop an understanding of the nature and impact of technology, engineering, technological design, computational thinking and the designed world as they relate to the individual, global society, and the environment.</p> <p>Please see relevant projects for technology standards 8.1 and 8.2:</p>	
<p><i>District/School Primary and Supplementary Resources</i></p>		
<p><u>Primary Resource:</u></p> <p><i>Knowing Science: Kindergarten: Let's Compare</i> www.knowingscience.com 2016 Knowing Science, LLC</p>	<p>BrainPOP Pebble Go</p>	
<p><i>Materials</i></p>		
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<ul style="list-style-type: none">• Teacher observation of students engaged in group and independent activities.• Individual and small group conferences/interviews to assess understanding with rubric• Self-assessment by students with guidance from teacher.	<ul style="list-style-type: none">• Teacher created assessments and projects• Teacher/District created benchmark assessments
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Differentiation/Accommodations/Modifications

Gifted and Talented

(content, process, product and learning environment)

Extension Activities

- Conduct research and provide presentation of various topics.
- Design surveys to generate and analyze data to be used in discussion.
- Debate topics of interest / cultural importance.
- Authentic listening and reading sources that provide data and support for speaking and writing prompts.
- Exploration of art and/or artists to understand society and history.
- Implement RAFT Activities as they pertain to the types / modes of communication (role, audience, format, topic).

Anchor Activities

- Use of Higher Level Questioning Techniques
- Provide assessments at a higher level of thinking

English Language Learners

Modifications for Classroom

- Pair visual prompts with verbal presentations
- Ask students to restate information, directions, and assignments.
- Repetition and practice.
- Model skills/techniques that need to be mastered.
- Extended time to complete class work
- Visual dictionaries to help build vocabulary
- Provide copy of classnotes
- Pair with a peer for assistance during class

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Modifications for Homework/Assignments

- Modified Assignments
- Native Language Translation (peer, online assistive technology, translation device, bilingual dictionary)
- Extended time for assignment completion as needed
- Highlight key vocabulary
- Use graphic organizers

Students with Disabilities

(appropriate accommodations, instructional adaptations, and/or modifications as determined by the IEP or 504 team)

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- Assign a peer helper in the class setting
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- Assist student with long and short term planning of assignments
- Encourage student to proofread assignments and tests
- Provide regular parent/ school communication
- Teachers will check/sign student agenda daily
- Student requires use of other assistive technology device

Modifications for Homework and Assignments

- Extended time to complete assignments.
- Student requires more complex assignments to be broken up and explained in smaller units, with work to be submitted in phases.
- Provide the student with clearly stated (written) expectations and grading criteria for assignments.
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Modifications for Assessments

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- Extended time on classroom tests and quizzes.
- Student may take/complete tests in an alternate setting as needed.
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- Distribute study guide for classroom tests.
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Students at Risk of School Failure

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- Establish procedures for accommodations / modifications for assessments.

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Unit 4: Living Organisms

Lesson 4.1	<p><i>NJ Student Learning Science Standards:</i></p> <ul style="list-style-type: none"> ● K-LS1-1. Use observations to describe patterns of what plants and animals (including humans) need to survive. [Clarification Statement: Examples of patterns could include that animals need to take in food but plants do not; the different kinds of food needed by different types of animals; the requirement of plants to have light; and, that all living things need water.] 	<p>Concept(s):</p> <ul style="list-style-type: none"> ● Characteristics of living things <p>Students will be able to:</p> <ul style="list-style-type: none"> ● Develop criteria to distinguish between living and non-living things ● Understand that living things take in nutrients, breathe, grow, respond to the environment, and reproduce within a life cycle ● Compare basic needs of plants and animals ● Develop criteria for distinguishing between plants and animals using observable traits
Lesson 4.2	<p><i>NJ Student Learning Science Standards:</i></p> <ul style="list-style-type: none"> ● K-LS1-1. Use observations to describe patterns of what plants and animals (including humans) need to survive. [Clarification Statement: Examples of patterns could include that animals need to take in food but plants do not; the different kinds of food needed by different types of animals; the requirement of plants to have light; and, that all living things need water.] ● K-ESS2-2. Construct an argument supported by evidence for how plants and animals (including humans) can change the environment to meet their needs. [Clarification Statement: Examples of plants and animals changing their environment could include a squirrel digs in the ground to hide its food and tree roots can break concrete.] ● K-ESS3-1. Use a model to represent the relationship between the needs of different plants or animals (including humans) and the places they live. [Clarification Statement: Examples of relationships could include that deer eat buds and leaves, therefore, they usually live in forested areas; and, grasses need sunlight so they often grow in meadows. Plants, animals, and 	<p>Concept(s):</p> <ul style="list-style-type: none"> ● Basic needs of plants <p>Students will be able to:</p> <ul style="list-style-type: none"> ● Describe requirements for plant growth ● Identify observable physical structures of plants and their functions ● Compare plants that live in different habitats ● Describe how plants can change their habitats ● Explore the relationship between humans and plants

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	their surroundings make up a system.]	
Lesson 4.3	<p><i>NJ Student Learning Science Standards:</i></p> <ul style="list-style-type: none"> ● K-LS1-1. Use observations to describe patterns of what plants and animals (including humans) need to survive. [Clarification Statement: Examples of patterns could include that animals need to take in food but plants do not; the different kinds of food needed by different types of animals; the requirement of plants to have light; and, that all living things need water.] ● K-ESS2-2. Construct an argument supported by evidence for how plants and animals (including humans) can change the environment to meet their needs. [Clarification Statement: Examples of plants and animals changing their environment could include a squirrel digs in the ground to hide its food and tree roots can break concrete.] ● K-ESS3-1. Use a model to represent the relationship between the needs of different plants or animals (including humans) and the places they live. [Clarification Statement: Examples of relationships could include that deer eat buds and leaves, therefore, they usually live in forested areas; and, grasses need sunlight so they often grow in meadows. Plants, animals, and their surroundings make up a system.] 	<p>Concept(s):</p> <ul style="list-style-type: none"> ● Basic needs of animals <p>Students will be able to:</p> <ul style="list-style-type: none"> ● Understand basic needs of all animals ● Recognize that some animals care for the basic needs of their offspring and some do not ● Explain how an animal’s external physical structures contribute to its survival ● Compare animals that live in different habitats ● Explore the relationship between humans and animals

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Lesson 4.4	<p><i>NJ Student Learning Science Standards:</i></p> <ul style="list-style-type: none"> K-ESS3-3. Communicate solutions that will reduce the impact of humans on the land, water, air, and/or other living things in the local environment.* [Clarification Statement: Examples of human impact on the land could include cutting trees to produce paper and using resources to produce bottles. Examples of solutions could include reusing paper and recycling cans and bottles.] 	<p>Concept(s):</p> <ul style="list-style-type: none"> Interdependency of Earth and humans <p>Students will be able to:</p> <ul style="list-style-type: none"> Describe natural resources that all living things need to live and grow COmmunicate ideas of how people can conserve natural resources Compare observable properties of metal and plastic containers Sort waste into two categories: recyclable and non-recyclable Sort recyclables into categories for plastic, paper, and metal Work cooperatively within a group to accomplish a goal
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Other Interdisciplinary Connections

NGSS Appendix for Alignment

English-Language Arts:

- RI.K.3.** With prompting and support, describe the connection between two individuals, events, ideas, or pieces of information in a text
- SL.K.1.** Participate in collaborative conversations with diverse partners about kindergarten topics and texts with peers and adults in small and larger groups.
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- SL.K.3:** Ask and answer questions in order to seek help, get information, or clarify something that is not understood.
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- 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.

21st Century Skills/ Career Ready Practices:

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- CRP2. Apply appropriate academic and technical skills.**
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<p><u>2014 NJ Technology Standards:</u></p>	<p>8.1 Educational Technology (Word PDF) All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and create and communicate knowledge.</p> <p>8.2 Technology Education, Engineering, Design and Computational Thinking - Programming (Word PDF) All students will develop an understanding of the nature and impact of technology, engineering, technological design, computational thinking and the designed world as they relate to the individual, global society, and the environment.</p> <p>Please see relevant projects for technology standards 8.1 and 8.2:</p>
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(content, process, product and learning environment)

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Anchor Activities

- Use of Higher Level Questioning Techniques
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English Language Learners

Modifications for Classroom

- Pair visual prompts with verbal presentations
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- Provide copy of classnotes
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- Modified Assignments
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- Encourage student to proofread assignments and tests
- Provide regular parent/ school communication
- Teachers will check/sign student agenda daily
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Modifications for Homework and Assignments

- Extended time to complete assignments.
- Student requires more complex assignments to be broken up and explained in smaller units, with work to be submitted in phases.
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Modifications for Assessments

- Extended time on classroom tests and quizzes.
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Students at Risk of School Failure

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Unit 5: Weather

Lesson 5.1	<p><i>NJ Student Learning Science Standards:</i></p> <ul style="list-style-type: none">● K-ESS2-1. Use and share observations of local weather conditions to describe patterns over time. [Clarification Statement: Examples of qualitative observations could include descriptions of the weather (such as sunny, cloudy, rainy, and warm); examples of quantitative observations could include numbers of sunny, windy, and rainy days in a month. Examples of patterns could include that it is usually cooler in the morning than in the afternoon and the number of sunny days versus cloudy days in different months.] [Assessment Boundary: Assessment of quantitative observations limited to whole numbers and relative measures such as warmer/cooler.]	<p>Concept(s):</p> <ul style="list-style-type: none">● Observing weather <p>Students will be able to:</p> <ul style="list-style-type: none">● Describe ways that weather influences human behavior● Observe and describe weather conditions including temperature, wind speed, precipitation, and sky conditions● Record daily observations of general weather conditions*● Create a bar graph of daily weather observations over time (weekly and monthly)● Analyze weather over time to identify patterns <p><i>* Teacher notes regarding the book objectives: To align the science and math curriculums, modify this objective - Modify or skip bar graphs as they are not taught in math until grade 2; can connect to counting and cardinality in math - counting objects in a line or array on calendar math is a better alignment.</i></p>
Lesson 5.2	<p><i>NJ Student Learning Science Standards:</i></p> <ul style="list-style-type: none">● K-ESS2-1. Use and share observations of local weather conditions to describe patterns over time. [Clarification Statement: Examples of qualitative observations could include descriptions of the weather (such as sunny, cloudy, rainy, and warm); examples of quantitative observations could include numbers of sunny, windy, and rainy days in a month. Examples of patterns could include that it is usually cooler in the morning than in the afternoon and the number of sunny days versus cloudy days in different months.] [Assessment Boundary: Assessment of quantitative observations limited to whole numbers and relative measures such as warmer/cooler.]● K-ESS3-2. Ask questions to obtain information about the purpose of weather forecasting to prepare for, and	<p>Concept(s):</p> <ul style="list-style-type: none">● Using patterns to predict weather <p>Students will be able to:</p> <ul style="list-style-type: none">● Understand how meteorologists predict weather from observed patterns● Describe at least two kinds of severe weather● Explain what steps families should take to prepare for severe weather

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respond to, severe weather.* [Clarification Statement:
Emphasis is on local forms of severe weather.]

Other Interdisciplinary Connections

[NGSS Appendix for Alignment](#)

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RI.K.3. With prompting and support, describe the connection between two individuals, events, ideas, or pieces of information in a text

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Modifications for Homework and Assignments

- Extended time to complete assignments.
- Student requires more complex assignments to be broken up and explained in smaller units, with work to be submitted in phases.
- Provide the student with clearly stated (written) expectations and grading criteria for assignments.
- Implement RAFT activities as they pertain to the types / modes of communication (role, audience, format, topic).

Modifications for Assessments

- Extended time on classroom tests and quizzes.
- Student may take/complete tests in an alternate setting as needed.
- Restate, reread, and clarify directions/questions
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Unit 6: Sunlight and Energy

Lesson 6.1	<p><i>NJ Student Learning Science Standards:</i></p> <ul style="list-style-type: none"> ● K-PS3-1. Make observations to determine the effect of sunlight on Earth’s surface. [Clarification Statement: Examples of Earth’s surface could include sand, soil, rocks, and water] [Assessment Boundary: Assessment of temperature is limited to relative measures such as warmer/cooler.] ● K-PS3-2. Use tools and materials to design and build a structure that will reduce the warming effect of sunlight on an area.* [Clarification Statement: Examples of structures could include umbrellas, canopies, and tents that minimize the warming effect of the sun.] 	<p>Concept(s):</p> <ul style="list-style-type: none"> ● Earth’s dependence on the Sun <p>Students will be able to:</p> <ul style="list-style-type: none"> ● Describe that sunlight heats the Earth’s surface ● Observe and compare heating properties of various materials ● Design and build a structure that will reduce the warming effects of sunlight on an area
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Other Interdisciplinary Connections

<p><u>NGSS Appendix for Alignment</u></p>	<p><u>English-Language Arts:</u></p> <p>RI.K.3. With prompting and support, describe the connection between two individuals, events, ideas, or pieces of information in a text</p> <p>SL.K.1. Participate in collaborative conversations with diverse partners about kindergarten topics and texts with peers and adults in small and larger groups.</p> <p>A. Follow agreed-upon norms for discussions (e.g., listening to others with care and taking turns speaking about the topics and texts under discussion).</p> <p>B. Continue a conversation through multiple exchanges.</p> <p>SL.K.3: Ask and answer questions in order to seek help, get information, or clarify something that is not understood.</p> <p>SL.K.5. Add drawings or other visual displays to descriptions as desired to provide additional detail.</p> <p>SL.K.6. Speak audibly and express thoughts, feelings, and ideas clearly</p> <p>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.</p>
<p><u>21st Century Skills/ Career Ready Practices:</u></p>	<p>CRP1. Act as a responsible and contributing citizen and employee.</p> <p>CRP2. Apply appropriate academic and technical skills.</p> <p>CRP3. Attend to personal health and financial well-being.</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>

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	<p>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.</p>
<p><u>2014 NJ Technology Standards:</u></p>	<p>8.1 Educational Technology (Word PDF) All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and create and communicate knowledge.</p> <p>8.2 Technology Education, Engineering, Design and Computational Thinking - Programming (Word PDF) All students will develop an understanding of the nature and impact of technology, engineering, technological design, computational thinking and the designed world as they relate to the individual, global society, and the environment.</p> <p>Please see relevant projects for technology standards 8.1 and 8.2:</p>
<p><i>District/School Primary and Supplementary Resources</i></p>	
<p><u>Primary Resource:</u></p> <p><i>Knowing Science: Kindergarten: Let's Compare</i> www.knowingscience.com 2016 Knowing Science, LLC</p>	<p>BrainPOP Pebble Go</p>
<p><i>Materials</i></p>	
<p>Materials for each session activity and lesson are listed in the Knowing Science Teacher's Manual.</p>	
<p>School/ Formative Assessment Plan</p>	<p>School/District Summative Assessment Plan</p>
<ul style="list-style-type: none"> ● Teacher observation of students engaged in group and independent activities. ● Individual and small group conferences/interviews to assess understanding with rubric ● Self-assessment by students with guidance from teacher. 	<ul style="list-style-type: none"> ● Teacher created assessments and projects ● Teacher/District created benchmark assessments

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Differentiation/Accommodations/Modifications

Gifted and Talented

(content, process, product and learning environment)

Extension Activities

- Conduct research and provide presentation of various topics.
- Design surveys to generate and analyze data to be used in discussion.
- Debate topics of interest / cultural importance.
- Authentic listening and reading sources that provide data and support for speaking and writing prompts.
- Exploration of art and/or artists to understand society and history.
- Implement RAFT Activities as they pertain to the types / modes of communication (role, audience, format, topic).

Anchor Activities

- Use of Higher Level Questioning Techniques
- Provide assessments at a higher level of thinking

English Language Learners

Modifications for Classroom

- Pair visual prompts with verbal presentations
- Ask students to restate information, directions, and assignments.
- Repetition and practice.
- Model skills/techniques that need to be mastered.
- Extended time to complete class work
- Visual dictionaries to help build vocabulary
- Provide copy of classnotes
- Pair with a peer for assistance during class

Modifications for Homework/Assignments

- Modified Assignments
- Native Language Translation (peer, online assistive technology, translation device, bilingual dictionary)
- Extended time for assignment completion as needed
- Highlight key vocabulary
- Use graphic organizers

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Students with Disabilities

(appropriate accommodations, instructional adaptations, and/or modifications as determined by the IEP or 504 team)

Modifications for Classroom

- Pair visual prompts with verbal presentations
- Ask students to restate information, directions, and assignments.
- Repetition and practice
- Model skills / techniques to be mastered.
- Extended time to complete class work
- Provide copy of classnotes
- Preferential seating to be mutually determined by the student and teacher
- Student may request to use a computer to complete assignments.
- Establish expectations for correct spelling on assignments.
- Extra textbooks for home.
- Student may request books on tape / CD / digital media, as available and appropriate.
- Assign a peer helper in the class setting
- Provide oral reminders and check student work during independent work time
- Assist student with long and short term planning of assignments
- Encourage student to proofread assignments and tests
- Provide regular parent/ school communication
- Teachers will check/sign student agenda daily
- Student requires use of other assistive technology device

Modifications for Homework and Assignments

- Extended time to complete assignments.
- Student requires more complex assignments to be broken up and explained in smaller units, with work to be submitted in phases.
- Provide the student with clearly stated (written) expectations and grading criteria for assignments.
- Implement RAFT activities as they pertain to the types / modes of communication (role, audience, format, topic).

Modifications for Assessments

- Extended time on classroom tests and quizzes.
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- Restate, reread, and clarify directions/questions
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- Establish procedures for accommodations / modifications for assessments.

Students at Risk of School Failure

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Modifications for Classroom

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- Ask students to restate information, directions, and assignments.
- Repetition and practice
- Model skills / techniques to be mastered.
- Extended time to complete class work
- Provide copy of classnotes
- Preferential seating to be mutually determined by the student and teacher
- Student may request to use a computer to complete assignments.
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- Extra textbooks for home.
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