



MIDLAND PARK PUBLIC SCHOOLS
Midland Park, New Jersey
CURRICULUM

Science

Grade 2

Prepared by:
Jason Whelpley

Superintendent of Schools:

Marie C. Cirasella, Ed.D.

Director of Curriculum, Instruction, & Assessment:

Melissa Quackenbush

Approved by the Midland Park Board of Education on
August 15, 2017

Grade 2 Science Curriculum Overview

Grade 2 science is taught in five units throughout the school year. The science curriculum is a hands-on, open-ended and sequential process of investigating the biological and physical world. As part of the spiraling curriculum, aspects of physical science, life science, earth & space science, and engineering; technology & applications of science are taught throughout the year. A guided inquiry program gives students the opportunity to explore topics and concepts through investigations. Participating in this hands-on program helps students:

1. To foster a life-long enjoyment of learning science.
2. To observe science in the world around them.
3. To meet the science standards for New Jersey Public Schools.

Suggested Course Sequence*:

Unit 1: Relationships in Habitats: 15 days

Unit 2: Properties of Matter: 20 days

Unit 3: Changes to Matter: 15 days

Unit 4: The Earth's Land and Water: 20 days

Unit 5: Changes to Earth's Land: 20 days

Pre-Requisite: Grade 1 Science

**The number of instructional days is an estimate based on the information available at this time. 1 day equals approximately 42 minutes of seat time. Teachers are strongly encouraged to review the entire unit of study carefully and collaboratively to determine whether adjustments to this estimate need to be made.*

Content Area: Science	
Unit Title: Relationships in Habitats	
Grade Level: 2nd	
<p>Unit Summary: In this unit of study, students develop an understanding of what plants need to grow and how plants depend on animals for seed dispersal and pollination. Students also compare the diversity of life in different habitats. The crosscutting concepts of <i>cause and effect</i> and <i>structure and function</i> are called out as organizing concepts for these disciplinary core ideas. Students demonstrate grade-appropriate proficiency in <i>planning and carrying out investigations</i> and <i>developing and using models</i>. Students are also expected to use these practices to demonstrate understanding of the core ideas.</p> <p>Interdisciplinary Connections:</p> <p>English Language Arts/Literacy English Language Arts can be leveraged in this unit in a number of ways. Students can participate in shared research using trade books and online resources to learn about the diversity of life in different habitats or to discover ways in which animals help pollinate plants or distribute seeds. Students can record their findings in science journals or use the research to write and illustrate their own books. Students can also learn to take notes in their journals order to help them recall information from experiences or gather information from provided sources. They can add drawings or other visual displays to their work, when appropriate, to clarify ideas, thoughts, and feelings.</p> <p>Mathematic Throughout this unit of study, students need opportunities to represent and interpret categorical data by drawing picture graphs and/or bar graphs (with a single unit scale) to represent a data set with up to four categories. This will lead to opportunities to solve simple put-together, take-apart, and compare problems using information presented in these types of graphs. For example, students could create bar graphs that show the number of seedlings that sprout with and without watering or that document plant growth. They could also create a picture graph showing the number of plant species, vertebrate animal species, and invertebrate animal species observed during a field trip or in a nature photograph. As students analyze the data in these types of graphs, they can use the data to answer simple put-together, take apart, and compare problems. This unit also presents opportunities for students to model with mathematics. They can diagram situations mathematically or solve a one-step addition or subtraction word problems. Data collected in bar graphs and picture graphs can easily be used for this purpose.</p> <p>21st Century Themes and Skills: CRP2. Apply appropriate academic and technical skills. CRP4. Communicate clearly and effectively and with reason. CRP6. Demonstrate creativity and innovation. CRP7. Employ valid and reliable research strategies. CRP8. Utilize critical thinking to make sense of problems and persevere in solving them. CRP11. Use technology to enhance productivity.</p>	
Standards (Content and Technology):	
CPI#:	Statement:
NJSLS 2-LS4-1	Make observations of plants and animals to compare the diversity of life in different habitats.
NJSLS 2-LS2-1	Plan and conduct an investigation to determine if plants need sunlight and water to grow.
NJSLS 2-LS2-2	Develop a simple model that mimics the function of an animal in dispersing seeds or pollinating plants.

NJSLS K-2-ETS1-1	Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.
8.1.2.B.1	Illustrate and communicate original ideas and stories using multiple digital tools and resources.
8.1.2.E.1	Use digital tools and online resources to explore a problem or issue.
<p>Unit Essential Question(s):</p> <ul style="list-style-type: none"> ● How does the diversity of plants and animals compare among different habitats? ● What do plants need to live and grow? ● Why do some plants rely on animals for reproduction? 	<p>Unit Enduring Understandings:</p> <ul style="list-style-type: none"> ● People look for patterns and order when making observations about the world. ● There are many different kinds of living things in any area, and they exist in different places on land and in water ● Events have causes that generate observable patterns. ● Plants depend on water and light to grow. ● The shape and stability of structures of natural and designed objects are related to their function. ● Plants depend on animals for pollination or to move their seeds around. ● Designs can be conveyed through sketches, drawings, or physical models. These representations are useful in communicating ideas for a problem’s solutions to other people.
<p>Unit Learning Targets/Objectives: <i>Students will...</i></p> <ul style="list-style-type: none"> ● Make observations of plants and animals to compare the diversity of life in different habitats. ● Plan and conduct an investigation to determine if plants need sunlight and water to grow. ● Develop a simple model that mimics the function of an animal in dispersing seeds or pollinating plants. ● Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool. 	
<p>Formative Assessments:</p> <ul style="list-style-type: none"> - Look for patterns and order when making observations about the world. - Make observations (firsthand or from media) to collect data that can be used to make comparisons. - Make observations of plants and animals to compare the diversity of life in different habitats. (Note: The emphasis is on the diversity of living things in each of a variety of different habitats; assessment does not include specific animal and plant names in specific habitats.) - Observe patterns in events generated by cause-and-effect relationships. - Plan and conduct an investigation collaboratively to produce data to serve as a basis for evidence to answer a question. - Plan and conduct an investigation to determine whether plants need sunlight and water to grow. (Note: Assessment is limited to one variable at a time.) - Describe how the shape and stability of structures are related to their function. - Develop a simple model based on evidence to represent a proposed object or tool. - Develop a simple model that mimics the function of an animal in dispersing seeds or pollinating plants. 	

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

Summative/Benchmark Assessment(s):

- Make observations of plants and animals to compare the diversity of life in different habitats.
- Plan and conduct an investigation to determine if plants need sunlight and water to grow.
- Develop a simple model that mimics the function of an animal in dispersing seeds or pollinating plants.
- Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.

Resources/Materials (copy hyperlinks for digital resources):

- <http://ngss.nsta.org/Resource.aspx?ResourceID=217>
- <http://ngss.nsta.org/Resource.aspx?ResourceID=325>
- <http://ngss.nsta.org/Resource.aspx?ResourceID=395>
- <http://ngss.nsta.org/Resource.aspx?ResourceID=396>
- <http://ngss.nsta.org/Resource.aspx?ResourceID=459>
- <http://ngss.nsta.org/Resource.aspx?ResourceID=460>

Modifications:

Special Education Students:

- Allow errors
- Rephrase questions, directions, and explanations
- Allow extended time to answer questions, and permit drawing, as an explanation
- Accept participation at any level, even one word
- Consult with Case Managers and follow IEP accommodations/modifications

At-Risk Students:

- Provide extended time to complete tasks
- Consult with Guidance Counselors and follow I&RS procedures/action plans
- Consult with classroom teacher(s) for specific behavior interventions
- Provide rewards as necessary

English Language Learners:

- Assign a buddy, same language or English speaking
- Allow errors in speaking
- Rephrase questions, directions, and explanations
- Allow extended time to answer questions
- Accept participation at any level, even one word

Gifted and Talented Students:

- Provide extension activities
- Build on students' intrinsic motivations
- Consult with parents to accommodate students' interests in completing tasks at their level of engagement

Lesson Name/Topic	Lesson Objective(s)	Time frame (day(s) to complete)	Entire Unit: 15 Days
1	Make observations of plants and animals	4 Days	
2	Plan and conduct an investigation	5 Days	
3	Develop a simple model	3 Days	

4	Ask questions, make observations, and gather information	3 Days
<p>Teacher Notes:</p> <p>Additional Resources Click links below to access additional resources used to design this unit:</p>		

Content Area: Science**Unit Title: Properties of Matter****Grade Level: 2nd****Unit Summary:**

In this unit of study, students demonstrate an understanding of observable properties of materials through analysis and classification of different materials. The crosscutting concepts of *patterns*, *cause and effect*, and *the influence of engineering, technology, and science on society and the natural world* are called out as organizing concepts for these disciplinary core ideas. Students demonstrate grade-appropriate proficiency in *planning and carrying out investigations* and *analyzing and interpreting data*. Students are also expected to use these practices to demonstrate understanding of the core ideas.

Interdisciplinary**Connections:****English Language Arts**

The CCSS for English Language Arts can be incorporated in this unit in a number of ways. Students can participate in shared research, using trade books and online resources, to learn about the properties of matter. As students explore different types of materials, they can record their observations in science journals, and then use their notes to generate questions that can be used for formative or summative assessment. Students can add drawings or other visual displays to their work, when appropriate, to help clarify their thinking. To teach students how to describe how reasons support specific points an author makes in a text, teachers can model the comprehension skill of main idea and details using informational text about matter. Technology can be integrated into this unit of study using free software programs (e.g., Animoto) that students can use to produce and publish their writing in science.

Mathematics

Throughout this unit of study, students have opportunities to model with mathematics and reason abstractly and quantitatively. During investigations, students can collect and organize data using picture graphs and/or bar graphs (with a single-unit scale). This can lead to opportunities to analyze data and solve simple put together, take-apart, and compare problems using information presented in these types of graphs. Some examples of ways to sort and classify materials in order to create graphs include: Classifying materials as solids, liquids, or gases. Classifying materials by color, shape, texture, or hardness. Classifying materials based on what they are made of (e.g., wood, metal, paper, plastic). Classifying materials based on potential uses. With any graph that students create, they should be expected to analyze the data and answer questions that require them to solve problems.

21st Century**Themes and Skills:**

CRP2. Apply appropriate academic and technical skills.

CRP4. Communicate clearly and effectively and with reason.

CRP6. Demonstrate creativity and innovation.

CRP7. Employ valid and reliable research strategies.

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

CRP11. Use technology to enhance productivity.

Standards (Content and Technology):

CPI#:	Statement:
NJSLS 2-PS1-1	Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.
NJSLS 2-PS1-2	Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose.

NJSLS K-2-ETS1-3	Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.
8.1.2.B.1	Illustrate and communicate original ideas and stories using multiple digital tools and resources.
8.1.2.E.1	Use digital tools and online resources to explore a problem or issue.
<p>Unit Essential Question(s):</p> <ul style="list-style-type: none"> ● How can we sort objects into groups that have similar patterns? ● Can some materials be a solid or a liquid? ● What should the three little pigs have used to build their houses? 	<p>Unit Enduring Understandings:</p> <ul style="list-style-type: none"> ● Patterns in the natural and human-designed world can be observed. ● Different kinds of matter exist and many of them can be either solid or liquid, depending on temperature. ● Matter can be described and classified by its observable properties. ● Every human-made product is designed by applying some knowledge of the natural world and is built using materials derived from the natural world. ● Simple tests can be designed to gather evidence to support or refute student ideas about causes. ● Different properties are suited to different purposes. ● Because there is always more than one possible solution to a problem, it is useful to compare and test designs.
<p>Unit Learning Targets/Objectives: <i>Students will...</i></p> <ul style="list-style-type: none"> ● Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties. ● Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose. ● Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs. 	
<p>Formative Assessments:</p> <ul style="list-style-type: none"> - Observe patterns in the natural and human-designed world. - Plan and conduct an investigation collaboratively to produce data to serve as the basis for evidence to answer a question. - Plan and conduct an investigation to describe and classify different kinds of material by their observable properties. - Observations could include color, texture, hardness, and flexibility. - Patterns could include the similar properties that different materials share. - Design simple tests to gather evidence to support or refute student ideas about causes. - Analyze data from tests of an object or tool to determine if it works as intended. - Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose. (Assessment of quantitative measurements is limited to length.) Examples of properties could include: - Strength 	

- Flexibility
 - Hardness
 - Texture
 - Absorbency
- Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of each.

Summative/Benchmark Assessment(s):

- Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.
- Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose.
- Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.

Resources/Materials (copy hyperlinks for digital resources):

- <http://ngss.nsta.org/Resource.aspx?ResourceID=183>
- <http://ngss.nsta.org/Resource.aspx?ResourceID=424>
- <http://ngss.nsta.org/Resource.aspx?ResourceID=144>
- <http://ngss.nsta.org/Resource.aspx?ResourceID=426>
- <http://ngss.nsta.org/Resource.aspx?ResourceID=303>
- <http://ngss.nsta.org/Resource.aspx?ResourceID=427>

Modifications:

Special Education Students:

- Allow errors
- Rephrase questions, directions, and explanations
- Allow extended time to answer questions, and permit drawing, as an explanation
- Accept participation at any level, even one word
- Consult with Case Managers and follow IEP accommodations/modifications

At-Risk Students:

- Provide extended time to complete tasks
- Consult with Guidance Counselors and follow I&RS procedures/action plans
- Consult with classroom teacher(s) for specific behavior interventions
- Provide rewards as necessary

English Language Learners:

- Assign a buddy, same language or English speaking
- Allow errors in speaking
- Rephrase questions, directions, and explanations
- Allow extended time to answer questions
- Accept participation at any level, even one word

Gifted and Talented Students:

- Provide extension activities
- Build on students' intrinsic motivations
- Consult with parents to accommodate students' interests in completing tasks at their level of engagement

Lesson Name/Topic	Lesson Objective(s)	Time frame (day(s) to complete)	Entire Unit: 20 Days
1	Plan and conduct an investigation	10 Days	

2	Analyze data to determine which materials have the properties that are best suited for an intended purpose.	5 Days
3	Analyze data to compare the strengths and weaknesses of two object designs	5 Days

Teacher Notes:

Additional Resources

Click links below to access additional resources used to design this unit:

Content Area: Science**Unit Title: Changes to Matter****Grade Level: 2nd****Unit Summary:**

In this unit of study, students continue to develop an understanding of observable properties of materials through analysis and classification of different materials. The crosscutting concepts of *cause and effect* and *energy and matter* are called out as organizing concepts for these disciplinary core ideas. Students are expected to demonstrate grade-appropriate proficiency in *constructing explanations*, *designing solutions*, and *engaging in argument from evidence*. Students are also expected to use these practices to demonstrate understanding of the core ideas.

Interdisciplinary Connections:**English Language Arts**

Students need opportunities to read texts that give information about matter and the changes that can happen to matter. With adult support, students can identify the main idea and details in informational text in order to answer questions about matter. With teacher support and modeling, students can ask and answer who, what, where, when, why, and how questions to demonstrate their understanding of key details in informational text. As students investigate reversible and irreversible changes to matter, they should record observations in science journals, using drawings or other visual displays, when appropriate, to help clarify their thinking. To further support their learning, students can conduct shared research using trade books and online resources in order to learn more about physical changes to matter. After reading informational texts and conducting investigations, students should be able to write opinion pieces in which they state an opinion, supply evidence to support their opinion, use linking words to connect opinion to evidence (reasons), and provide a concluding statement. For example, students can be presented with an example of matter that has been changed in some way, then asked to write an opinion piece in which they state whether or not they think the change is reversible or irreversible, and supply evidence to support their thinking. Evidence can include information recalled from experiences or information gathered from informational texts or other resources. Some possible changes that can be used are:

- Tearing paper
- Bending a spoon
- Baking a cake
- Hammering a nail into a piece of wood
- Getting grass stains on a pair of jeans
- Cutting your hair.

Mathematics

N/A

21st Century**Themes and Skills:**

CRP2. Apply appropriate academic and technical skills.

CRP4. Communicate clearly and effectively and with reason.

CRP6. Demonstrate creativity and innovation.

CRP7. Employ valid and reliable research strategies.

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

CRP11. Use technology to enhance productivity..

Standards (Content and Technology):

CPI#:	Statement:
NJSLS 2-PS1-3	Make observations to construct an evidence-based account of how an object made of a small set of pieces can be disassembled and made into a new object.
NJSLS 2-PS1-4	Construct an argument with evidence that some changes caused by heating or cooling can be reversed and some cannot.
8.1.2.B.1	Illustrate and communicate original ideas and stories using multiple digital tools and resources.
8.1.2.E.1	Use digital tools and online resources to explore a problem or issue.
Unit Essential Question(s): <ul style="list-style-type: none"> • In what ways can an object made of a small set of pieces be disassembled and made into a new object? • Can all changes caused by heating or cooling be reversed? 	Unit Enduring Understandings: <ul style="list-style-type: none"> • Objects may break into smaller pieces and be put together into larger pieces or change shapes. • Different properties are suited to different purposes. • A great variety of objects can be built up from a small set of pieces • People search for cause-and-effect relationships to explain natural events. • Events have causes that generate observable patterns. • Heating or cooling a substance may cause changes that can be observed. Sometimes these changes are reversible, and sometimes they are not.
Unit Learning Targets/Objectives: <i>Students will...</i> <ul style="list-style-type: none"> • Make observations to construct an evidence-based account of how an object made of a small set of pieces can be disassembled and made into a new object. • Construct an argument with evidence that some changes caused by heating or cooling can be reversed and some cannot. 	
Formative Assessments: <ul style="list-style-type: none"> • Break objects into smaller pieces and put them together into larger pieces or change shapes. • Make observations (firsthand or from media) to construct an evidence-based account for natural phenomena. • Make observations to construct an evidence-based account of how an object made of a small set of pieces can be disassembled and made into a new object. • Observe patterns in events generated due to cause-and-effect relationships. • Construct an argument with evidence to support a claim. • Construct an argument with evidence that some changes caused by heating or cooling can be reversed, and some cannot. Examples of reversible changes could include materials such as water and butter at different temperatures. Examples of irreversible changes could include Cooking an egg, Freezing a plant leaf, Heating paper 	
Summative/Benchmark Assessment(s): <ul style="list-style-type: none"> - Make observations to construct an evidence-based account of how an object made of a small set of pieces can be disassembled and made into a new object. - Construct an argument with evidence that some changes caused by heating or cooling can be reversed and some cannot. - Illustrate and communicate original ideas and stories using multiple digital tools and resources. 	

- Use digital tools and online resources to explore a problem or issue.

Resources/Materials (copy hyperlinks for digital resources):

- <http://ngss.nsta.org/Resource.aspx?ResourceID=186>
- <http://ngss.nsta.org/Resource.aspx?ResourceID=437>
- <http://ngss.nsta.org/Resource.aspx?ResourceID=438>
- <http://ngss.nsta.org/Resource.aspx?ResourceID=183>
- <http://ngss.nsta.org/Resource.aspx?ResourceID=279>
- <http://ngss.nsta.org/Resource.aspx?ResourceID=310>

Modifications:

Special Education Students:

- Allow errors
- Rephrase questions, directions, and explanations
- Allow extended time to answer questions, and permit drawing, as an explanation
- Accept participation at any level, even one word
- Consult with Case Managers and follow IEP accommodations/modifications

At-Risk Students:

- Provide extended time to complete tasks
- Consult with Guidance Counselors and follow I&RS procedures/action plans
- Consult with classroom teacher(s) for specific behavior interventions
- Provide rewards as necessary

English Language Learners:

- Assign a buddy, same language or English speaking
- Allow errors in speaking
- Rephrase questions, directions, and explanations
- Allow extended time to answer questions
- Accept participation at any level, even one word

Gifted and Talented Students:

- Provide extension activities
- Build on students' intrinsic motivations
- Consult with parents to accommodate students' interests in completing tasks at their level of engagement

Lesson Name/Topic	Lesson Objective(s)	Time frame (day(s) to complete)	Entire Unit: 15 Days
1	Make observations to construct an evidence-based account	8 Days	
2	Construct an argument with evidence	7 Days	

Teacher Notes:

Additional Resources

Click links below to access additional resources used to design this unit:

Content Area: Science**Unit Title: The Earth's Land and Water****Grade Level: 2nd****Unit Summary:**

In this unit of study, students use information and models to identify and represent the shapes and kinds of land and bodies of water in an area and where water is found on Earth. The crosscutting concept of *patterns* is called out as an organizing concept for these disciplinary core ideas. Students demonstrate grade-appropriate proficiency in *developing and using models* and *obtaining, evaluating, and communicating information*. Students are also expected to use these practices to demonstrate understanding of the core ideas.

Interdisciplinary**Connections:****English Language Arts**

Students gather information about the types of landforms and bodies of water from experiences or from text and digital resources. They can use this information to answer questions such as, "Where can water be found as solid ice or snow year round?" Students should also have the opportunity to use their research to publish a writing piece, with guidance and support from adults or collaboratively with peers, based on their findings about various landforms and bodies of water. Diagrams, drawings, photographs, audio or video recordings, poems, dioramas, models, or other visual displays can accompany students' writing to help recount experiences or clarify thoughts and ideas.

Mathematics

As students collect data about the size of landforms and bodies of water, these numbers can be used to answer questions, make comparisons, or solve problems. For example, If students know that a mountain is 996 feet in height, a lake is 550 feet deep, a river is 687 miles long, and a forest began growing about 200 years ago, have students show each number in three ways using base-ten blocks, number words, and expanded form. A stream was 17 inches deep before a rainstorm and 33 inches deep after a rainstorm. How much deeper did it get during the rainstorm? As students engage in these types of mathematical connections, they are also modeling with mathematics and reasoning abstractly and quantitatively. When modeling with mathematics, students diagram situations mathematically (using equations, for example) and/or solve addition or subtraction word problems. When students reason abstractly and quantitatively, they manipulate symbols (numbers and other math symbols) abstractly and attend to the meaning of those symbols while doing so.

21st Century**Themes and Skills:**

- CRP2. Apply appropriate academic and technical skills.
- CRP4. Communicate clearly and effectively and with reason.
- CRP6. Demonstrate creativity and innovation.
- CRP7. Employ valid and reliable research strategies.
- CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.
- CRP11. Use technology to enhance productivity.

Standards (Content and Technology):

CPI#:	Statement:
NJSLS 2-ESS2-3	Obtain information to identify where water is found on Earth and that it can be solid or liquid.
NJSLS 2-ESS2-2	Develop a model to represent the shapes and kinds of land and bodies of water in an area.
8.1.2.B.1	Illustrate and communicate original ideas and stories using multiple digital tools and resources.
8.1.2.E.1	Use digital tools and online resources to explore a problem or issue.

<p>Unit Essential Question(s):</p> <ul style="list-style-type: none"> ● How can we identify where water is found on Earth and if it is solid or liquid? ● In what ways can you represent the shapes and kinds of land and bodies of water in an area? 	<p>Unit Enduring Understandings:</p> <ul style="list-style-type: none"> ● Patterns in the natural world can be observed. ● Water is found in the ocean, rivers, lakes, and ponds. Water exists as solid ice and in liquid form. ● Patterns in the natural world can be observed. ● Maps show where things are located. One can map the shapes and kinds of land and water in any area. 				
<p>Unit Learning Targets/Objectives: <i>Students will...</i></p> <ul style="list-style-type: none"> ● Obtain information to identify where water is found on Earth and that it can be solid or liquid. ● Develop a model to represent the shapes and kinds of land and bodies of water in an area. 					
<p>Formative Assessments:</p> <ul style="list-style-type: none"> - Observe patterns in the natural world. - Obtain information using various texts, text features (e.g., headings, tables of contents, glossaries, electronic menus, icons) and other media that will be useful in answering a scientific question. - Obtain information to identify where water is found on Earth and to communicate that it can be a solid or liquid. - Develop a model to represent patterns in the natural world. • Develop a model to represent the shapes and kinds of land and bodies of water in an area. (Assessment does not include quantitative scaling in models.) <p>Summative/Benchmark Assessment(s):</p> <ul style="list-style-type: none"> - Obtain information to identify where water is found on Earth and that it can be solid or liquid. - Develop a model to represent the shapes and kinds of land and bodies of water in an area. <p>Resources/Materials (copy hyperlinks for digital resources): http://betterlesson.com/lesson/635801/where-is-water-found-on-earth?from=cc_lesson_title http://betterlesson.com/lesson/631459/the-earth-is-mostly-water?from=cc_lesson_title http://betterlesson.com/lesson/633683/water-on-earth-liquid-or-solid?from=cc_lesson_title http://betterlesson.com/lesson/638227/will-it-ice?from=cc_lesson_title</p>					
<p>Modifications:</p> <table border="0"> <tr> <td data-bbox="115 1493 808 1787"> <p><u>Special Education Students:</u></p> <ul style="list-style-type: none"> ● Allow errors ● Rephrase questions, directions, and explanations ● Allow extended time to answer questions, and permit drawing, as an explanation ● Accept participation at any level, even one word ● Consult with Case Managers and follow IEP accommodations/modifications </td> <td data-bbox="841 1493 1495 1759"> <p><u>At-Risk Students:</u></p> <ul style="list-style-type: none"> ● Provide extended time to complete tasks ● Consult with Guidance Counselors and follow I&RS procedures/action plans ● Consult with classroom teacher(s) for specific behavior interventions ● Provide rewards as necessary </td> </tr> <tr> <td data-bbox="115 1856 808 1948"> <p><u>English Language Learners:</u></p> <ul style="list-style-type: none"> ● Assign a buddy, same language or English speaking </td> <td data-bbox="841 1843 1495 1967"> <p><u>Gifted and Talented Students:</u></p> <ul style="list-style-type: none"> ● Provide extension activities ● Build on students' intrinsic motivations </td> </tr> </table>		<p><u>Special Education Students:</u></p> <ul style="list-style-type: none"> ● Allow errors ● Rephrase questions, directions, and explanations ● Allow extended time to answer questions, and permit drawing, as an explanation ● Accept participation at any level, even one word ● Consult with Case Managers and follow IEP accommodations/modifications 	<p><u>At-Risk Students:</u></p> <ul style="list-style-type: none"> ● Provide extended time to complete tasks ● Consult with Guidance Counselors and follow I&RS procedures/action plans ● Consult with classroom teacher(s) for specific behavior interventions ● Provide rewards as necessary 	<p><u>English Language Learners:</u></p> <ul style="list-style-type: none"> ● Assign a buddy, same language or English speaking 	<p><u>Gifted and Talented Students:</u></p> <ul style="list-style-type: none"> ● Provide extension activities ● Build on students' intrinsic motivations
<p><u>Special Education Students:</u></p> <ul style="list-style-type: none"> ● Allow errors ● Rephrase questions, directions, and explanations ● Allow extended time to answer questions, and permit drawing, as an explanation ● Accept participation at any level, even one word ● Consult with Case Managers and follow IEP accommodations/modifications 	<p><u>At-Risk Students:</u></p> <ul style="list-style-type: none"> ● Provide extended time to complete tasks ● Consult with Guidance Counselors and follow I&RS procedures/action plans ● Consult with classroom teacher(s) for specific behavior interventions ● Provide rewards as necessary 				
<p><u>English Language Learners:</u></p> <ul style="list-style-type: none"> ● Assign a buddy, same language or English speaking 	<p><u>Gifted and Talented Students:</u></p> <ul style="list-style-type: none"> ● Provide extension activities ● Build on students' intrinsic motivations 				

- Allow errors in speaking
- Rephrase questions, directions, and explanations
- Allow extended time to answer questions
- Accept participation at any level, even one word
- Consult with parents to accommodate students' interests in completing tasks at their level of engagement

Lesson Name/Topic	Lesson Objective(s)	Time frame (day(s) to complete)	Entire Unit: 20 Days
1	Obtain information to identify where water is found on Earth	10 Days	
2	Develop a model	10 Days	

Teacher Notes:

Additional Resources

Click links below to access additional resources used to design this unit:

Content Area: Science	
Unit Title: Changes to Earth's Land	
Grade Level: 2nd	
<p>Unit Summary: In this unit of study, students apply their understanding of the idea that wind and water can change the shape of land to compare design solutions to slow or prevent such change. The crosscutting concepts of <i>stability and change</i>; <i>structure and function</i>; and <i>the influence of engineering, technology, and science on society and the natural world</i> are called out as organizing concepts for these disciplinary core ideas. Students demonstrate grade-appropriate proficiency in <i>asking questions and defining problems</i>, <i>developing and using models</i>, and <i>constructing explanations and designing solutions</i>. Students are also expected to use these practices to demonstrate understanding of the core ideas.</p> <p>Interdisciplinary Connections:</p> <p>English Language Arts Students participate in shared research to gather information about Earth events from texts and other media and digital resources. They will use this information to answer questions and describe key ideas and details about ways in which the land can change and what causes these changes. Students should also have opportunities to compose a writing piece, either independently or collaboratively with peers, using digital tools to produce and publish their writing. Students should describe connections between Earth events and the changes they cause, and they should include photographs, videos, poems, dioramas, models, drawings, or other visual displays of their work, when appropriate, to clarify ideas, thoughts, and feelings.</p> <p>Mathematics Students have multiple opportunities to reason abstractly and quantitatively as they gather information from media sources. Students can organize data into picture graphs or bar graphs in order to make comparisons. For example, students can graph rainfall amounts. Students can use the data to solve simple addition and subtraction problems using information from the graphs to determine the amount of change that has occurred to local landforms. For example, a gully was 17 inches deep before a rainstorm and 32 inches deep after a rainstorm. How much deeper is it after the rainstorm? Students must also have an understanding of place value as they encounter the varying timescales on which Earth events can occur. For example, students understand that a period of thousands of years is much longer than a period of hundreds of years, which in turn is much longer than a period of tens of years. In addition, teachers should give students opportunities to work with large numbers as they describe length, height, size, and distance when learning about Earth events and the changes they cause. For example, students might write about a canyon that is 550 feet deep, a river that is 687 miles long, or a forest that began growing about 200 years ago.</p> <p>21st Century Themes and Skills: CRP2. Apply appropriate academic and technical skills. CRP4. Communicate clearly and effectively and with reason. CRP6. Demonstrate creativity and innovation. CRP7. Employ valid and reliable research strategies. CRP8. Utilize critical thinking to make sense of problems and persevere in solving them. CRP11. Use technology to enhance productivity.</p>	
Standards (Content and Technology):	
CPI#:	Statement:
NJSLS 2-ESS1-1	Use information from several sources to provide evidence that Earth events can occur quickly or slowly.

<p>NJSLS 2-ESS2-1</p>	<p>Compare multiple solutions designed to slow or prevent wind or water from changing the shape of the land.</p>
<p>NJSLS K-2-ETS1-1</p>	<p>Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.</p>
<p>NJSLS K-2-ETS1-2</p>	<p>Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.</p>
<p>8.1.2.B.1</p>	<p>Illustrate and communicate original ideas and stories using multiple digital tools and resources.</p>
<p>8.1.2.E.1</p>	<p>Use digital tools and online resources to explore a problem or issue.</p>
<p>Unit Essential Question(s):</p> <ul style="list-style-type: none"> ● What evidence can we find to prove that Earth events can occur quickly or slowly? ● In what ways do humans slow or prevent wind or water from changing the shape of the land? 	<p>Unit Enduring Understandings:</p> <ul style="list-style-type: none"> ● Some events happen very quickly; others occur very slowly over a time period much longer than one can observe. ● Things may change slowly or rapidly. ● Things may change slowly or rapidly. ● Developing and using technology has impacts on the natural world. ● Scientists study the natural and material world. ● The shape and stability of structures of natural and designed objects are related to their function(s). ● Wind and water can change the shape of the land. ● Because there is always more than one possible solution to a problem, it is useful to compare and test designs. ● A situation that people want to change or create can be approached as a problem to be solved through engineering. ● Asking questions, making observations, and gathering information are helpful in thinking about problems. ● Before beginning to design a solution, it is important to clearly understand the problem. ● Designs can be conveyed through sketches, drawings, or physical models. These representations are useful in communicating ideas for a problem's solutions to other people.
<p>Unit Learning Targets/Objectives: <i>Students will...</i></p> <ul style="list-style-type: none"> ● Use information from several sources to provide evidence that Earth events can occur quickly or slowly. ● Compare multiple solutions designed to slow or prevent wind or water from changing the shape of the land. ● Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool. ● Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem. 	

Formative Assessments:

- Make observations from several sources to construct an evidence-based account for natural phenomena.
- Use information from several sources to provide evidence that Earth events can occur quickly or slowly. (Assessment does not include quantitative measurements of timescales.) Some examples of these events include: Volcanic explosions Earthquakes Erosion of rocks.
- Compare multiple solutions to a problem.
- Compare multiple solutions designed to slow or prevent wind or water from changing the shape of the land. Examples of solutions could include: Different designs of dikes and windbreaks to hold back wind and water Different designs for using shrubs, grass, and trees to hold back the land.
- Ask questions based on observations to find more information about the natural and/or designed world.
- Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.
- Define a simple problem that can be solved through the development of a new or improved object or tool.
- Develop a simple model based on evidence to represent a proposed object or tool.
- Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.

Summative/Benchmark Assessment(s):

- Use information from several sources to provide evidence that Earth events can occur quickly or slowly.
- Compare multiple solutions designed to slow or prevent wind or water from changing the shape of the land.
- Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.
- Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.

Resources/Materials (copy hyperlinks for digital resources):

- <http://ngss.nsta.org/Resource.aspx?ResourceID=390>
- <http://ngss.nsta.org/Resource.aspx?ResourceID=401>
- <http://ngss.nsta.org/Resource.aspx?ResourceID=391>

Modifications:

Special Education Students:

- Allow errors
- Rephrase questions, directions, and explanations
- Allow extended time to answer questions, and permit drawing, as an explanation
- Accept participation at any level, even one word
- Consult with Case Managers and follow IEP accommodations/modifications

At-Risk Students:

- Provide extended time to complete tasks
- Consult with Guidance Counselors and follow I&RS procedures/action plans
- Consult with classroom teacher(s) for specific behavior interventions
- Provide rewards as necessary

English Language Learners:

- Assign a buddy, same language or English speaking

Gifted and Talented Students:

- Provide extension activities

- Allow errors in speaking
- Rephrase questions, directions, and explanations
- Allow extended time to answer questions
- Accept participation at any level, even one word
- Build on students' intrinsic motivations
- Consult with parents to accommodate students' interests in completing tasks at their level of engagement

Lesson Objectives and Time Frame			
Lesson Name/Topic	Lesson Objective(s)	Time frame (day(s) to complete)	Entire Unit: 20 Days
1	Use information from several sources to provide evidence	5 Days	
2	Compare multiple solutions	5 Days	
3	Ask questions, make observations, and gather information about a situation	5 Days	
4	Develop a simple sketch, drawing, or physical model	5 Days	
<p>Teacher Notes:</p> <p>Additional Resources Click links below to access additional resources used to design this unit:</p>			