



BURCH CHARTER SCHOOL OF EXCELLENCE

2020-2021

Kindergarten Science

Approved by the Burch Charter School of Excellence Board of Trustees

August 2020

MISSION STATEMENT OF BURCH CHARTER SCHOOL OF EXCELLENCE:

Burch Charter School of Excellence (BCSE) was founded in September, 2008. Our primal mission is to enable students to reach their intellectual and personal potential. We strive to instill integrity and respect in our students' in partnership with families and the community. We maintain a blended learning environment that enhances positive character traits that ensures our students become productive 21st century world citizens. The Burch Charter School of Excellence, a public school, is committed to providing best practices for educating our students in an environment that enables them to develop into critical thinkers that evolve into digital, life-long learners. Our curriculum emphasizes literacy and mathematics infused with technology.

We believe:

- Our students will be effective communicators, quality producers, self-directed lifelong learners, community contributors, collaborative workers and complex thinkers;
- All students are entitled to opportunities to maximize their talents and abilities;
- Our ethnic and cultural diversity is our strength and prepares students for success in a global society;
- Setting high expectations for students, teachers and administrators ensures that our students successfully meet or exceed the New Jersey Student Learning Standards.
- Parents are essential partners in the education of their children;
- Maintaining a strong partnership with the Irvington community is integral to student success;
- Understanding, implementing and responding to current trends in technology is intrinsic to success in a 21st century world; In ensuring that the district has a well-trained, highly qualified and competent staff; In maintaining a safe and secure learning environment.

The underlying values and principles that drive our mission and vision are our personal responsibility, a strong work ethic, cooperation, respect for others, honesty, integrity and the firm belief that every child can learn.

Burch Charter School of Excellence

Kindergarten Science Model Curriculum Overview

Unit 1: Weather

Instructional Days: 10 to start and then *ongoing*

In this unit of study, students develop an understanding of patterns and variations in local weather and the use of weather forecasting to prepare for and respond to severe weather. The crosscutting concepts of *patterns; cause and effect; interdependence of science, engineering, and technology; and the influence of engineering, technology, and science on society and the natural world* are called out as organizing concepts for the disciplinary core ideas. Students are expected to demonstrate grade-appropriate proficiency in *asking questions, analyzing and interpreting data, and obtaining, evaluating, and communicating information*. Students are also expected to use these practices to demonstrate understanding of the core ideas.

This unit is based on K-ESS2-1, K-ESS3-2, and K-2-ETS1-1.

Unit 2: Pushes and Pulls

Instructional Days: 15

During this unit of study, students apply an understanding of the effects of different strengths or different directions of pushes and pulls on the motion of an object to analyze a design solution. The crosscutting concept of *cause and effect* is called out as the organizing concept for this disciplinary core idea. Students are expected to demonstrate grade-appropriate proficiency in *planning and carrying out investigations and analyzing and interpreting data*. Students are also expected to use these practices to demonstrate understanding of the core ideas.

This unit is based on K-PS2-1, K-PS2-2, and K-2: ETS1-3.

Unit 3: Effects of the Sun

Instructional Days: 15

During this unit of study, students apply an understanding of the effects of the sun on the Earth's surface. The crosscutting concepts of *cause and effect* and *structure and function* are called out as organizing concepts for this disciplinary core idea. Students are expected to demonstrate grade-appropriate proficiency in *developing and using models*; *planning and carrying out investigations*; *analyzing and interpreting data*; and *designing solutions*. Students are also expected to use these practices to demonstrate understanding of the core ideas.

This unit is based on K-PS3-1, K-PS3-2, K-2 ETS1-1, K-2-ETS1-2, and K-2-ETS1-3.

Unit 4: Basic Needs of Living Things

Instructional Days: 20

In this unit of study, students develop an understanding of what plants and animals need to survive and the relationship between their needs and where they live. Students compare and contrast what plants and animals need to survive and the relationship between the needs of living things and where they live. The crosscutting concepts of *patterns* and *systems and system models* are called out as organizing concepts for these disciplinary core ideas. Students are expected to demonstrate grade-appropriate proficiency in *developing and using models*, *analyzing and interpreting data*, and *engaging in argument from evidence*. Students are also expected to use these practices to demonstrate understanding of the core ideas.

This unit is based on K-LS1-1, K-ESS3-1, and K-ESS2-2.

Unit 5: Basic Needs of Humans

Instructional Days: 15

In this unit of study, students develop an understanding of what humans need to survive and the relationship between their needs and where they live. The crosscutting concept of *cause and effect* is called out as the organizing concept for the disciplinary core ideas. Students demonstrate grade-appropriate proficiency in *asking questions* and *defining problems*, and *in obtaining, evaluating, and communicating information*. Students are also expected to use these practices to demonstrate understanding of the core ideas.

This unit is based on K-ESS3-3 and K-2 ETS1-1.

Note: 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.

Grade: K		Content: Science
Unit 1: Weather		Time Frame: 10 Days
Next Generation Science Standards	Skills	I Can Statements
<p><u>K-ESS2-1:</u> Use and share observations of local weather conditions to describe patterns over time</p> <p>Essential Question:</p> <ul style="list-style-type: none"> ❖ <i>How can someone predict what the weather will be tomorrow?</i> 	<ul style="list-style-type: none"> ❖ Weather is the combination of sunlight, wind, snow, or rain and temperature in a particular region at a particular time. ❖ People measure these conditions to describe and record the weather and to notice patterns over time. ❖ People look for patterns in the weather data when they organize and order when making observations about the world. ❖ Patterns in the natural world can be observed, used to describe phenomena, and used as evidence. 	<ul style="list-style-type: none"> ❖ I can observe weather patterns
<p><u>K-ESS3-2:</u> Ask questions to obtain information about the purpose of weather forecasting to prepare for, and respond to, severe weather.</p> <p>Essential Question:</p> <ul style="list-style-type: none"> ❖ <i>How does weather forecasting help us to prepare for dangerous weather?</i> 	<ul style="list-style-type: none"> ❖ Some kinds of severe weather are more likely than others in a given region. ❖ Weather scientists forecast severe weather so that communities can prepare for and respond to these events. ❖ Events have causes that generate observable patterns. 	<ul style="list-style-type: none"> ❖ I can observe patterns in events generated by cause-and-effect relationships.

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.

Essential Question:

How can I define a simple problem that can be solved through the development of a new or improved object or tool?

- ❖ People encounter questions about the natural world every day.
- ❖ People depend on various technologies in their lives; human life would be very different without technology.
- ❖ Before beginning to design a solution, it is important to clearly understand the problem.
- ❖ Asking questions, making observations, and gathering information are helpful in thinking about problems.
- ❖ A situation that people want to change or create can be approached as a problem to be solved through engineering.

- ❖ I can read grade-appropriate texts and/or use media to obtain scientific information to describe patterns in the natural world.
- ❖ I can ask questions based on observations to find more information about the designed world.
- ❖ I can ask questions to obtain information about the purpose of weather forecasting to prepare for and respond to severe weather.
- ❖ I can define a simple problem that can be solved through the development of a new or improved object or tool.
- ❖ I can ask questions, make observations, and gather information about a situation people want to change in order to define a simple problem that can be solved through the development of a new or improved object or tool.

Resources

[Watching Weather](#): Students will make their own weather station consisting of actual and simplified versions of real weather equipment. The weather station will consist of a thermometer and a student-made weather vane. They will use that equipment to make observations about the local weather.

[Weather Patterns](#): This lesson is the first in a two-part series on the weather. The study of the weather in these early years is important because it can help students understand that some events in nature have a repeating pattern. It also is important for students to study the earth repeatedly because they take years to acquire the knowledge that they need to complete the picture. The full picture requires the introduction of such concepts as temperature, the water cycle, and other related concepts. In the second activity, What's the Season, students identify the seasonal patterns in temperature and precipitation.

[Weather Walks](#): Students learn about weather by taking walks during various weather conditions over the course of time. Walks take place during sunny, rainy, windy, or snowy conditions. The lesson is divided into four sections with activities assigned to each of the weather conditions being observed. Suggested activities include appropriate investigations to help students observe and describe weather phenomenon through first hand experiences.

[Science- Weather](#): This is a free interactive learning activity designed for individual students and can easily be used as a whole class interactive whiteboard activity. This particular title explores weather in relationship to season and temperature. Students learn to use a thermometer as a tool for recording temperature and identify the four seasons through measurable changes in the thermometer readings.

Connections to NJSLS – English Language Arts

W.K.7: Participate in shared research and writing projects (e.g., explore a number of books by a favorite author and express opinions about them).

RI.K.1: With prompting and support, ask and answer questions about key details in a text.

SL.K.3: Ask and answer questions in order to seek help, get information, or clarify something that is not understood.

RI.2.1: Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text.

W.2.6: With guidance and support from adults, use a variety of digital tools to produce and publish writing, including in collaboration with peers.)

W.2.8: Recall information from experiences or gather information from provided sources to answer a question.

Connections to NJSLS – Math

MP.2: Reason abstractly and quantitatively.

MP.4 Model with mathematics.

MP.5: Use appropriate tools strategically.

K.CC: Counting and Cardinality (K-ESS3-2)

K.CC.A: Know number names and the count sequence.

K.MD.A.1: Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object.

K.MD.B.3: Classify objects into given categories; count the number of objects in each category and sort the categories by count.

2. MD.D.10: Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems using information presented in a bar graph.

Grade: K		Content: Science
Unit 2: Pushes and Pulls		Time Frame: 15 Days
Next Generation Science Standards	Skills	I Can Statements
<p><u>K-PS2-1:</u> 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.</p> <p>Essential Question:</p> <ul style="list-style-type: none"> ❖ <i>How can pushes and pulls have different strengths and directions?</i> 	<ul style="list-style-type: none"> ❖ People use different ways to study the world. ❖ Simple tests can be designed to gather evidence to support or refute student ideas about causes. ❖ Pushes and pulls can have different strengths and directions. ❖ Pushing or pulling on an object can change the speed or direction of its motion and can start or stop it. ❖ When objects touch or collide, they push on one another and can change motion. ❖ A bigger push or pull makes things speed up or slow down more quickly 	<ul style="list-style-type: none"> ❖ With guidance, I can design simple tests to gather evidence to support or refute ideas about cause-and-effect relationships. ❖ With guidance, I can plan and conduct an investigation in collaboration with peers. ❖ With guidance, I can collaboratively 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
<p><u>K-PS2-2:</u> 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.</p> <p>Essential Question:</p> <ul style="list-style-type: none"> ❖ <i>How can pushing or pulling on an object change the speed or direction of its motion, as well as start or stop it?</i> ❖ <i>How can you design a simple way to change the speed or direction of an object using a push or pull from another object?</i> 	<ul style="list-style-type: none"> ❖ Simple tests can be designed to gather evidence to support or refute student ideas about causes. ❖ Pushes and pulls can have different strengths and directions. ❖ Pushing or pulling on an object can change the speed or direction of its motion and can start or stop it. ❖ A situation that people want to change or create can be approached as a problem to be solved through engineering. Such problems may have many acceptable solutions. 	<ul style="list-style-type: none"> ❖ With guidance, I can design simple tests to gather evidence to support or refute ideas about cause-and-effect relationships. ❖ I can analyze data from tests of an object or tool to determine if it works as intended.

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.

Essential Question:

- ❖ *How can a situation that people want to change or create be approached as a problem to be solved through engineering with many acceptable solutions?*

- ❖ There's always more than one possible solution to a problem, it is useful to compare and test designs.

- ❖ I can analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.

Resources

Push Pull-Changing Direction: Students investigate the interactions between colliding objects using pushes and pulls. Students play a game of kickball and observe how the ball is pushed, pulled, started, stopped, or collided with other objects and how it changed position and speed. As a group, students will then brainstorm about other objects being pushed, pulled or colliding and then choose one of those objects to investigate.

Marble Roll: This is an assessment probe from the book *Uncovering Student Ideas in Primary Science Vol. 1* that is used to elicit children's descriptions of motion. The probe is designed to reveal how students describe the path of a moving object as it leaves a winding track.

Roller Coaster: There are two parts to this lesson from the book *More Picture Perfect Science Lessons*. In the first part learners explore ways to change the speed and direction of a rolling object by building roller coasters out of pipe insulation after reading the book, *Roller Coaster* by Marla Frazee. In the second part students read *I Fall Down* by Vicki Cobb and then investigate the idea that gravity affects all objects equally by conducting dropping races with everyday items.

Ramps 2: Ramp Builder: This is a multi-day lesson plan that has students design, build, and test their own ramps. Students are introduced to a variety of materials and explore putting them together. Students engage in an inquiry-based learning experience to reinforce math, science, and technology. They create plans for ramps by evaluating a variety of materials provided to them.

Pearson Realize: <https://www.savvasrealize.com/index.html#/>

Connections to NJSLS – English Language Arts

RI.K.1: With prompting and support, ask and answer questions about key details in a text.

W.K.7: Participate in shared research and writing projects (e.g., explore a number of books by a favorite author and express opinions about them).

SL.K.3: Ask and answer questions in order to seek help, get information, or clarify something that is not understood.

Connections to NJSLS – Math

MP.2: Reason abstractly and quantitatively.

MP.4: Model with mathematics.

MP.5: Use appropriate tools strategically.

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 difference.

Grade: K		Content: Science
Unit 3: Effects of the Sun		Time Frame: 15 Days
Next Generation Science Standards	Skills	I Can Statements
<p><u>K-PS3-1:</u> Make observations to determine the effect of sunlight on Earth’s surface.</p> <p>Essential Question: ❖ <i>How does sunlight affect the playground?</i></p>	<ul style="list-style-type: none"> ❖ Scientists use different ways to study the world. ❖ Events have causes that generate observable patterns. ❖ Sunlight warms Earth’s surface. 	<ul style="list-style-type: none"> ❖ I can observe patterns in events generated by cause-and-effect relationships. ❖ I can make observations (firsthand or from media) to collect data that can be used to make comparisons. ❖ I can make observations to determine the effect of sunlight on Earth’s surface.
<p><u>K-PS3-2:</u> Use tools and materials provided to design and build a structure that will reduce the warming effect of sunlight on Earth’s surface.</p> <p>Essential Question: ❖ <i>Imagine that we have been asked to design a new playground. How would we keep the sand, soil, rocks, and water found on the playground cool during the summer?</i></p>	<ul style="list-style-type: none"> ❖ Events have causes that generate observable patterns. ❖ The shape and stability of structures of natural and designed objects are related to their function(s). ❖ Sunlight warms Earth’s surface. 	<ul style="list-style-type: none"> ❖ I can observe patterns in events generated by cause-and-effect relationships. ❖ I can describe how the shape and stability of structures are related to their function. ❖ I can use tools and materials provided to design and build a device that solves a specific problem or a solution to a specific problem. ❖ I can use tools and materials to design and build a structure (e.g., umbrellas, canopies, tents) that will reduce the warming effect of sunlight on an area.

<p><u>K-2-ETS1-1:</u> 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>Essential Question:</p> <ul style="list-style-type: none"> ❖ <i>How can I define a simple problem that can be solved through the development of a new or improved object or tool?</i> 	<ul style="list-style-type: none"> ❖ People encounter questions about the natural world every day. ❖ People depend on various technologies in their lives; human life would be very different without technology. ❖ Before beginning to design a solution, it is important to clearly understand the problem. ❖ Asking questions, making observations, and gathering information are helpful in thinking about problems. ❖ A situation that people want to change or create can be approached as a problem to be solved through engineering. 	<ul style="list-style-type: none"> ❖ I can read grade-appropriate texts and/or use media to obtain scientific information to describe patterns in the natural world. ❖ I can ask questions based on observations to find more information about the designed world. ❖ I can ask questions to obtain information about the purpose of weather forecasting to prepare for and respond to severe weather. ❖ I can define a simple problem that can be solved through the development of a new or improved object or tool. ❖ I can ask questions, make observations, and gather information about a situation people want to change in order to define a simple problem that can be solved through the development of a new or improved object or tool.
<p><u>K-2-ETS1-2</u> 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>Essential Question:</p> <ul style="list-style-type: none"> ❖ <i>How can I draw and label a simple diagram?</i> 	<ul style="list-style-type: none"> ❖ 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. ❖ Because there is always more than one possible solution to a problem, it is useful to compare and test designs. 	<ul style="list-style-type: none"> ❖ I can develop a simple model based on evidence to represent a proposed object or tool. ❖ I can 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. ❖ I can analyze data from tests of an object or tool to determine if it works as intended. ❖ I can analyze data from tests of two objects designed to solve the same problem to compare the strengths

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.

Essential Question:

- ❖ *How can a situation that people want to change or create be approached as a problem to be solved through engineering with many acceptable solutions?*

- ❖ There's always more than one possible solution to a problem, it is useful to compare and test designs.

- ❖ I can analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.

Resources

Casting Shadows Across Literacy and Science: This lesson introduces shadows by taking students on a shadow walk. Ideally this should be done on a sunny day in the schoolyard or neighborhood, but it can be a simple walk around the classroom.

A Big Star: This reading passage that explains what the sun is and that it provides heat to the Earth. This activity comes with comprehension and critical thinking questions.

The Warmth of the Sun: This lesson helps students broaden their understanding of the sun, particularly its critical role in warming the land, air, and water around us.

The Sun Lesson Plan: This lesson plan is adaptable to several grade band levels. The adjustments are included in the lesson plan along with suggestions for extension activities.

Cooler in the Shadows: This lesson includes several activities where students observe, explore, and analyze shadows. Students will make inferences about the cause of shadows, The lesson is linked to NASA's MESSENGER spacecraft in its voyage to and around Mercury. This lesson is designed to last 4 or more days. There are four different activities within the lesson. The teacher will need to gather some materials prior to beginning the lesson.

Shadow Smile! - Part 6 | Sid the Science Kid: In this song, Miss Susie teaches the class about shadows and the necessary shade they provide for people and animals in the heat! Learn how shadows are a result of an object getting in the way of the path of the sun and that the shadow it casts over the ground provides shade.

Pearson Realize: <https://www.savvasrealize.com/index.html#/>

Connections to NJSL – English Language Arts

W.K.7: Participate in shared research and writing projects (e.g., explore a number of books by a favorite author and express opinions about them).

K.MD.A.2: Directly compare two objects with a measurable attribute in common, to see which object has “more of”/”less of” the attribute, and describe the difference.

RI.2.1: Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text.

W.2.6: With guidance and support from adults, use a variety of digital tools to produce and publish writing, including in collaboration with peers.

W.2.8: Recall information from experiences or gather information from provided sources to answer a question.

SL.2.5: Create audio recordings of stories or poems; add drawings or other visual displays to stories or recounts of experiences when appropriate to clarify ideas, thoughts, and feelings.

Connections to NJSL – Math

K.MD.A.2: Directly compare two objects with a measurable attribute in common, to see which object has “more of”/”less of” the attribute, and describe the difference.

MP.2: Reason abstractly and quantitatively.

MP.4: Model with mathematics.

MP.5: Use appropriate tools strategically.

2. MD.D.10: Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems using information presented in a bar graph.

Grade: K		Content: Science
Unit 4: Basic Needs of Living Things		Time Frame: 20 Days
Next Generation Science Standards	Skills	I Can Statements
<p><u>K-LS1-1:</u> Use observations to describe patterns of what plants and animals need to survive.</p> <p>Essential Question:</p> <ul style="list-style-type: none"> ❖ <i>What do animals and plants need to survive?</i> 	<ul style="list-style-type: none"> ❖ All animals need food in order to live and grow. They obtain their food from plants or from other animals ❖ Plants need water and light to live and grow. 	<ul style="list-style-type: none"> ❖ I can name a variety of things that plants and animals need to survive
<p><u>K-ESS3-1:</u> Use a model to represent the relationship between the needs of different plants and animals (including humans) and the places they live.</p> <p>Essential Question:</p> <ul style="list-style-type: none"> ❖ <i>Where do organisms live and why do they live there?</i> 	<ul style="list-style-type: none"> ❖ Living things need water, air, and resources from the land, and they live in places that have the things they need. ❖ Humans use natural resources for everything they do 	<ul style="list-style-type: none"> ❖ I can use a model to represent relationships in the natural world.
<p><u>K-ESS2-2:</u> Construct an argument supported by evidence for how plants and animals (including humans) can change the environment to meet their needs</p> <p>Essential Question:</p> <ul style="list-style-type: none"> ❖ <i>Why do plants and animals change their environment to meet their needs?</i> 	<ul style="list-style-type: none"> ❖ Plants and animals can change their environment. 	<ul style="list-style-type: none"> ❖ I can explain why plants and animals (including humans) change their environment.
Resources		

Read-Aloud Lesson: Where Do Polar Bears Live? Students identify and recall characteristics that allow polar bears to survive in the extremely cold Arctic environment.

"Good Night" & Where Do Polar Bears Live? This is a Paired Text activity that uses the “Where Do Polar Bears Live” read aloud and the non-fiction text “Good Night” which addresses hibernation.

The Needs of Living Things This lesson plan has one level for Grades K-2 and another level for Grades 3-5. Students will learn about what plants and animals need to survive and how habitats support those needs. They will also learn about how organisms can change their environment.

Living Things and Their Needs: This is an excellent resource that provides a Teacher Guide, videos, reading resources, and student activity sheets. The objective of the lessons is for students to learn about living organisms and what they need to survive. These lessons can easily be taught as an interdisciplinary set of learning experiences.

How do living things Interact: This unit plan is about unit plan about living things and environmental interactions

Pearson Realize: <https://www.savvasrealize.com/index.html#/>

Connections to NJSLs – English Language Arts

W.K.1: Use a combination of drawing, dictating, and writing to compose opinion pieces in which they tell a reader the topic or the name of the book they are writing about and state an opinion or preference about the topic or book.

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.

W.K.7: Participate in shared research and writing projects (e.g., explore a number of books by a favorite author and express opinions about them).

SL.K.5: Add drawings or other visual displays to descriptions as desired to provide additional detail

R.K.1: With prompting and support, ask and answer questions about key details in a text.

Connections to NJSLs – Math

K.MD.A.2: Directly compare two objects with a measurable attribute in common, to see which object has “more of”/”less of” the attribute, and describe the difference.)

MP.2: Reason abstractly and quantitatively.

MP.4: Model with mathematics.

K.CC: Counting and Cardinality

Grade: K		Content: Science
Unit 5: Basic Needs of Humans		Time Frame: 15 Days
Next Generation Science Standards	Skills	I Can Statements
<p><u>K-ESS3-3:</u> Communicate solutions that will reduce the impact of humans on the land, water, air, and/or other living things in the local environment.</p> <p>Essential Question:</p> <ul style="list-style-type: none"> ❖ <i>How can humans reduce their impact on the land, water, air, and other living things in the local environment?</i> 	<ul style="list-style-type: none"> ❖ Events have causes that generate observable patterns. ❖ Things that people do to live comfortably can affect the world around them. ❖ People can make choices that reduce their impacts on the land, water, air, and other living things. ❖ 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. 	<ul style="list-style-type: none"> ❖ I can observe patterns in events generated due to cause-and-effect relationships. ❖ I can communicate solutions with others in oral and/or written forms using models and/or drawings that provide detail about scientific ideas. ❖ I can communicate solutions that will reduce the impact of humans on the land, water, air, and/or other living things in the local environment.
<p><u>K-2-ETS1-1:</u> 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>Essential Question:</p> <ul style="list-style-type: none"> ❖ <i>How can I define a simple problem that can be solved through the development of a new or improved object or tool?</i> 	<ul style="list-style-type: none"> ❖ People encounter questions about the natural world every day. ❖ People depend on various technologies in their lives; human life would be very different without technology. ❖ Before beginning to design a solution, it is important to clearly understand the problem. ❖ Asking questions, making observations, and gathering information are helpful in thinking about problems. ❖ A situation that people want to change or create can be approached as a problem to be solved through engineering. 	<ul style="list-style-type: none"> ❖ I can read grade-appropriate texts and/or use media to obtain scientific information to describe patterns in the natural world. ❖ I can ask questions based on observations to find more information about the designed world. ❖ I can ask questions to obtain information about the purpose of weather forecasting to prepare for and respond to severe weather. ❖ I can define a simple problem that can be solved through the development of a new or improved object or tool. ❖ I can ask questions, make observations, and gather information about a situation

people want to change in order to define a simple problem that can be solved through the development of a new or improved object or tool.

Resources

[Humans on Earth](#): This is a 3.5 minute narrated video explaining the use of natural resources to supply the needs of humans, and solutions for preserving them.

[The Clean Water Book: Choices for Resource Water Protection](#): This book is available from the New Jersey Department of Environmental Protection

[Recycling Manual for New Jersey Schools](#): This [manual](#) will guide school personnel through a step-by-step process of setting up a recycling program in the school. It provides all the necessary tools for designing and implementing a viable and comprehensive program in private, public and parochial institutions.

[Speakers Program](#): The New Jersey Department of Environmental Protection (DEP) fields requests for public speakers, classroom presentations and exhibitors regarding the various environmental topics, programs and services that are administered by the agency.

[Practice the 5 R's](#) – Poster

[The USGS Water Science School](#): Welcome to the [U.S. Geological Survey's](#) (USGS) Water Science School. We offer information on many aspects of water, along with pictures, data, maps, and an interactive center where you can give opinions and test your water knowledge.

[Pearson Realize](https://www.savvasrealize.com/index.html#/): <https://www.savvasrealize.com/index.html#/>

Connections to NJSLs – English Language Arts

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.

RI.2.1: Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text.

W.2.6: With guidance and support from adults, use a variety of digital tools to produce and publish writing, including in collaboration with peers.

W.2.8: Recall information from experiences or gather information from provided sources to answer a question.)

Connections to NJSLs – Math

MP.2: Reason abstractly and quantitatively. **MP.4:** Model with mathematics. **MP.5:** Use appropriate tools strategically.

2. MD.D.10: Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems using information presented in a bar graph.

Differentiated Instruction

(content, process, product and learning environment)

At Risk Students

Modifications for Classroom

- Pair visual prompts with verbal presentations
- Use of lab or experiments to give visual representation of concept
- Ask students to restate information, directions, and assignments.
- Work within group or partners
- Repetition and practice
- Model skills / techniques to be mastered.
- Use metacognitive work
- Extended time to complete class work
- Provide copy of class notes
- Student may request to use a computer to complete assignments.
- Use manipulatives to examine concepts
- Assign a peer helper in the class setting
- Provide oral reminders and check student work during independent work time

Special Education

English Language Learners

Modifications for Classroom

- Native Language Translation
(peer, online assistive technology, translation device, bilingual dictionary)
- Preteach vocabulary
- Use graphic organizers or other visual models
- Use of manipulatives to visualize concept
- Highlight key vocabulary-chart or vocabulary bank
- Use of nonverbal responses
(thumbs up/down)
- Use sentence frames
- Design questions for different proficiency levels
- Utilize partners and partner talk

Gifted and Talented

Modifications for Classroom

- Pair visual prompts with verbal presentations
- Use of lab or experiments to give visual representation of concept
- Ask students to restate information, directions, and assignments.
- Preteach vocabulary
- Repetition and practice
- Model skills / techniques to be mastered.
- Use manipulatives and visual representation to examine
Breakdown large assignments
into smaller tasks
- Extended time to complete
class work
- Provide copy of class notes
- Preferential seating to be mutually determined by the student and
teacher
- Use of online component of book
- 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

Extension Activities

- Conduct research and provide presentation of cultural topics.
- Design surveys to generate and analyze data to be used in discussion.
- Use of Higher Level
Questioning Techniques
- Provide assessments at a
higher level of thinking
- Create alternative assessment which requires writing,
research and presentation

