

# Mullica Township School District



## Science Curriculum Kindergarten

Board approval: 11/28/2018

**MULLICA TOWNSHIP SCHOOL DISTRICT**  
**Science Curriculum**  
**KINDERGARTEN**

**Content Area:** SCIENCE

**Course Title:** Elementary

**Grade Level:** Kindergarten

**UNIT 1**

Weather

20 days

**UNIT 2**

Pushes and Pulls

20 days

**UNIT 3**

Effects of the Sun

20 days

**UNIT 4**

Basic Needs of Living Things

25 days

**UNIT 5**

Basic Needs of Humans

15 days

**Date Created:** 10/10/2018

**Board Approved:**

**Created By:** Barbara Rheault

**MULLICA TOWNSHIP SCHOOL DISTRICT**

**Kindergarten - Unit 1**

**Content Area:** Science

**Unit Title:** Weather

**Target Course/Grade Level:** Kindergarten

**Unit Summary**

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.

**Primary Interdisciplinary Connections:**

**ELA/Literacy**

**W.K.7** Participate in shared research and writing projects (e.g., explore a number of books by a favorite author and express opinions about them). (K-ESS2-1)

**RI.K.1** With prompting and support, ask and answer questions about key details in a text. (K-ESS3-2)

**SL.K.3** Ask and answer questions in order to seek help, get information, or clarify something that is not understood. (K-ESS3-2)

**Mathematics**

**MP.2** Reason abstractly and quantitatively. (K-ESS2-1)

**MP.4** Model with mathematics. (K-ESS2-1)

**K.CC.A** Know number names and the count sequence. (K-ESS2-1)

**K.MD.A.1** Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object. (K-ESS2-1)

**K.MD.B.3** Classify objects into given categories; count the number of objects in each category and sort the categories by count. (K-ESS2-1)

**MP.4** Model with mathematics. (K-ESS3-2)

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

**21<sup>st</sup> Century Themes**

**Career Ready Practices and Financial Literacy**

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

**CRP2.** Apply appropriate academic and technical skills.

**CRP4.** Communicate clearly and effectively and with reason.

**CRP6.** Demonstrate creativity and innovation.

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

**9.2.4.A.4** Explain why knowledge and skills acquired in the elementary grades lay the foundation for future academic and career success.

**Technology Integration**

**8.1.2.E.1** Use digital tools and online resources to explore a problem or issue.

## Learning Targets

### Performance Expectations

**K-ESS2-1.** Use and share observations of local weather conditions to describe patterns over time

**K-ESS3-2.** Ask questions to obtain information about the purpose of weather forecasting to prepare for, and respond to, severe weather

**K-2-ETS1-1:** The student is expected to 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 Questions

- How does weather influence our clothing choices?
- What makes a weather pattern?
- How can weather be dangerous?

### Disciplinary Core Ideas

#### ESS2.D: Weather and Climate

- 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.

### Science and Engineering Practices

#### Analyzing and Interpreting Data

Analyzing data in K–2 builds on prior experiences and progresses to collecting, recording, and sharing observations.

- Use observations (firsthand or from media) to describe patterns in the natural world in order to answer scientific questions.

#### Obtaining, Evaluating, and Communicating Information

Obtaining, evaluating, and communicating information in K–2 builds on prior experiences and uses observations and texts to communicate new information.

- Read grade-appropriate texts and/or use media to obtain scientific information to describe patterns in the natural world.

### Crosscutting Concepts

#### Patterns

- Patterns in the natural world can be observed, used to describe phenomena, and used as evidence.

#### Cause and Effect

- Events have causes that generate observable patterns.

## Evidence of Learning

### Formative Assessments

- Activity w/report: Shoe vs. weather survey
- Activity w/report: Vocabulary Bingo
- Model Build: Weather Wheel
- Activity: Act out the weather (ELA link)
- STEM Talk: Discussion on forecasting. (Communicate Science)
- Interactive Concept Review Game
- View and interact with "Water and Weather "Pixelate" video
- View and interact with "Jules Verne Trophy" video
- eScopedia Quiz/Activity - Weather 1&2 interactive review
- Quiz/Activity: Math Connections
- STEM Talk: Teacher Read-Aloud [Looking Outside](#)
- Review: View and interact with "Science Today - Watch It!" by Associated Press

### Summative Assessments

**Argue: Claim-Evidence-Reasoning:** student writes a scientific explanation to show their understanding of a science in a way that uses evidence.

**Open-Ended Response:** a short-answer and essay assessment to evaluate student mastery of the concept.

**Multiple-Choice Assessment:** a standards-based assessment designed to gauge students' understanding of the science concept using their selections of the best possible answers from a list of choices

### Modifications (ELLs, Special Education, Gifted and Talented)

#### ELL

- Learn the backgrounds of LEP students
- Plan lessons that are both culturally and linguistically appropriate.
- Group students flexibly, in small groups based on individual or group interests as well as instructional need or ability.
- Give clear, simple directions
- Ask them to retell or restate, in their own words, the task.
- Reiterate, in the student's native language or in simplified English, the key concepts learned in content areas.
- Paraphrase information and main ideas.
- Reorganize and reinforce information.
- Provide bilingual classroom resources, such as bilingual dictionaries, picture books and dictionaries, and English language encyclopedias for LEP students.

#### Special Education

- Provide Instructional Strategies and Techniques that Address Learning Style
- Utilize Techniques and Activities to Support Personal-Social Development
- Modify the Presentation of Materials
- Modify the Learning Environment
- Modify Assessments
- Modify Grading
- Facilitate Appropriate Behavior
- Limit/Reduce/Modify/Permit Alternate Class Work Curricular Procedures
- Provide Alternative Homework
- Provide Access to Special Equipment and Instructional Materials

#### Gifted and Talented

- Accelerate or enrich content.
- Reduce regular classroom work
- Providing alternate assignments
- Schedule opportunities to work individually through independent study
- Schedule opportunities to work in homogeneous groupings with peers of similar ability and interests
- Schedule opportunities to participate heterogeneous groupings of mixed-ability students.
- Stimulate higher order thinking skills and give students opportunities to consider and express personal opinions by asking open-ended questions.
- Scaffold investigations and reports to require thinking skills such as comparison, synthesis, insight, judgment, hypothesis, conjecture, and assimilation.
- Curriculum compact to allow student to skip standard assignments in order to acquire time to pursue alternate assignments or independent projects.
- Compact curriculum in areas that represent student strengths; do not use time to improve skills in weaker subjects.
- Create a written plan outline and time frame for completion of assignments and alternate activities.
- Incorporate written independent study contracts to research topics of interest to become “resident experts.”
- Develop descriptions and the criteria for evaluating each project.
- Determine (jointly) deadline dates and work schedule.
- Provide complex, critical thinking tasks.

**Curriculum Development Resources/Instructional Materials/Equipment Needed/  
Resources:**

**STEMScopes - Kindergarten**

- Weather Conditions
- Measurement of Weather
- Weather Hazards

**Materials:**

- Science “Toolkit” (markers, crayons, pencils, pens, scissors, glue, glue sticks, rulers, colored pencils, tape, etc.)
- Student Journal
- Variety of shoes
- Weather Item/Activity Set
- Weather Condition Labels
- Weather Bingo Calling Cards, Bingo Markers, Bingo Cards
- Student Weather Wheel (printable)
- Chart Paper
- Paperbag
- Metal brads
- Paper plate
- Bowl
- Real weather devices (optional)

**Equipment:**

- Smartboard and Projector

**MULLICA TOWNSHIP SCHOOL DISTRICT**

**Kindergarten - Unit 2**

**Content Area:** Science

**Unit Title:** Pushes and Pulls

**Target Course/Grade Level:** Kindergarten

**Unit Summary**

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.

**Primary Interdisciplinary Connections:**

**ELA/Literacy**

**RI.K.1** With prompting and support, ask and answer questions about key details in a text. (K-PS2-2)

**W.K.7** Participate in shared research and writing projects (e.g., explore a number of books by a favorite author and express opinions about them). (K-PS2-1)

**SL.K.3** Ask and answer questions in order to seek help, get information, or clarify something that is not understood. (K-PS2-2)

**Mathematics**

**MP.2** Reason abstractly and quantitatively. (K-PS2-1)

**K.MD.A.1** Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object. (K-PS2-1)

**K.MD.A.2** Directly compare two objects with a measurable attribute in common, to see which object has “more of”/“less of” the attribute, and describe the difference. (K-PS2-1)

**21<sup>st</sup> Century Themes:**

**Career Ready Practices and Financial Literacy**

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

**CRP2.** Apply appropriate academic and technical skills.

**CRP4.** Communicate clearly and effectively and with reason.

**CRP6.** Demonstrate creativity and innovation.

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

**9.2.4.A.4** Explain why knowledge and skills acquired in the elementary grades lay the foundation for future academic and career success.

**Technology Integration**

**8.1.2.E.1** Use digital tools and online resources to explore a problem or issue.

**Learning Targets**

**Performance Expectations**

**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.

**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 pull.

**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.

<p style="text-align: center;"><b>Essential Questions</b></p> <ul style="list-style-type: none"><li>● Why is it hard to move something heavy?</li><li>● How can I make a car move without pushing or pulling?</li></ul>	<p style="text-align: center;"><b>Disciplinary Core Ideas</b></p> <p><b>PS2.A: Forces and Motion</b></p> <ul style="list-style-type: none"><li>● Pushes and pulls can have different strengths and directions.</li><li>● Pushing or pulling on an object can change the speed or direction of its motion and can start or stop it.</li></ul> <p><b>PS2.B: Types of Interactions</b></p> <ul style="list-style-type: none"><li>● When objects touch or collide, they push on one another and can change motion.</li></ul> <p><b>PS3.C: Relationship Between Energy and Forces</b></p> <ul style="list-style-type: none"><li>● A bigger push or pull makes things speed up or slow down more quickly. <i>(secondary)</i></li></ul> <p><b>ETS1.A: Defining Engineering Problems</b></p> <ul style="list-style-type: none"><li>● 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. <i>(secondary)</i></li></ul>
<p style="text-align: center;"><b>Science and Engineering Practices</b></p> <p><b>Planning and Carrying Out Investigations</b> Planning and carrying out investigations to answer questions or test solutions to problems in K–2 builds on prior experiences and progresses to simple investigations, based on fair tests, which provide data to support explanations or design solutions.</p> <ul style="list-style-type: none"><li>● With guidance, plan and conduct an investigation in collaboration with peers.</li></ul> <p><b>Analyzing and Interpreting Data</b> Analyzing data in K–2 builds on prior experiences and progresses to collecting, recording, and sharing observations.</p>	<p style="text-align: center;"><b>Crosscutting Concepts</b></p> <p><b>Cause and Effect</b></p> <ul style="list-style-type: none"><li>● Simple tests can be designed to gather evidence to support or refute student ideas about causes.</li></ul>



- Analyze data from tests of an object or tool to determine if it works as intended.

## Evidence of Learning

### Formative Assessments

- Activity: Hook- Let's Play Ball!
- Activity: Cross The Finish Line
- Activity: Pull!
- Activity w/report: Predict Pushes/Pulls (Linking Literacy)
- Activity w/report: Design a playground full of pushes and pulls(Communicate Science - Creative Design)
- STEMScopedia Activity - How can you move an object?
- Quiz/Activity: Concept Review Game
- STEM Talk: view and discuss Content Connections Interactive Video(s): What is Force? ; What is Force-jigsaw?; and Movement.
- Communicate Activity: Students use Science Rock "Movement" musical/video software platform where students can sing standards-based science songs and dance to the tune.
- Quiz/Activity: Math Connections interactive practice that uses grade-level appropriate math activities to address the concept.
- STEM Talk: View and discuss Teacher-Guided Read Aloud , [A Trip to the Grocery Store](#), includes five comprehension questions.
- Review: View and interact with "Science Today - Watch It!" by Associated Press

### Summative Assessments

**Argue: Claim-Evidence-Reasoning:** student writes a scientific explanation to show their understanding of a science in a way that uses evidence.

**Open-Ended Response:** a short-answer and essay assessment to evaluate student mastery of the concept.

**Multiple-Choice Assessment:** a standards-based assessment designed to gauge students' understanding of the science concept using their selections of the best possible answers from a list of choices

### Modifications (ELLs, Special Education, Gifted and Talented)

#### ELL

- Learn the backgrounds of LEP students
- Plan lessons that are both culturally and linguistically appropriate.
- Group students flexibly, in small groups based on individual or group interests as well as instructional need or ability.
- Give clear, simple directions
- Ask them to retell or restate, in their own words, the task.
- Reiterate, in the student's native language or in simplified English, the key concepts learned in content areas.
- Paraphrase information and main ideas.
- Reorganize and reinforce information.
- Provide bilingual classroom resources, such as bilingual dictionaries, picture books and dictionaries, and English language encyclopedias for LEP students.

### **Special Education**

- Provide Instructional Strategies and Techniques that Address Learning Style
- Utilize Techniques and Activities to Support Personal-Social Development
- Modify the Presentation of Materials
- Modify the Learning Environment
- Modify Assessments
- Modify Grading
- Facilitate Appropriate Behavior
- Limit/Reduce/Modify/Permit Alternate Class Work Curricular Procedures
- Provide Alternative Homework
- Provide Access to Special Equipment and Instructional Materials

### **Gifted and Talented**

- Accelerate or enrich content.
- Reduce regular classroom work
- Providing alternate assignments
- Schedule opportunities to work individually through independent study
- Schedule opportunities to work in homogeneous groupings with peers of similar ability and interests
- Schedule opportunities to participate heterogeneous groupings of mixed-ability students.
- Stimulate higher order thinking skills and give students opportunities to consider and express personal opinions by asking open-ended questions.
- Scaffold investigations and reports to require thinking skills such as comparison, synthesis, insight, judgment, hypothesis, conjecture, and assimilation.
- Curriculum compact to allow student to skip standard assignments in order to acquire time to pursue alternate assignments or independent projects.
- Compact curriculum in areas that represent student strengths
- Create a plan outline and time frame for completion of assignments & alternate activities.
- Incorporate written independent study contracts to research topics of interest to become “resident experts.”
- Develop descriptions and the criteria for evaluating each project.
- Determine (jointly) deadline dates and work schedule.
- Provide complex, critical thinking tasks.

### **Curriculum Development Resources/Instructional Materials/Equipment Needed/ Resources:**

#### **STEMScopes - Kindergarten**

- Pushes and Pulls
- Speed and Direction

#### **Materials**

- Science “Toolkit” (markers, crayons, pencils, pens, scissors, glue, glue sticks, rulers, colored pencils, tape, etc.)
- Student Journal
- paperclips
- straws
- ball
- wooden block
- shoeboxes
- string
- “heavier objects”

- “lighter objects”

**Equipment**

- Smartboard/projector

**MULLICA TOWNSHIP SCHOOL DISTRICT**  
**Kindergarten - Unit 3**

**Content Area:** Science

**Unit Title:** Effects of The Sun

**Target Course/Grade Level:** Kindergarten

**Unit Summary**

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.

**Primary Interdisciplinary Connections:**

**ELA/Literacy**

**W.K.7** Participate in shared research and writing projects (e.g., explore a number of books by a favorite author and express opinions about them). (K-PS3-1),(K-PS3-2)

**Mathematics**

**K.MD.A.2** Directly compare two objects with a measurable attribute in common, to see which object has “more of”/”less of” the attribute, and describe the difference. (K-PS3-1),(KPS3-2)

**21<sup>st</sup> Century Themes:**

**Career Ready Practices and Financial Literacy**

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

**CRP2.** Apply appropriate academic and technical skills.

**CRP4.** Communicate clearly and effectively and with reason.

**CRP6.** Demonstrate creativity and innovation.

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

**9.2.4.A.4** Explain why knowledge and skills acquired in the elementary grades lay the foundation for future academic and career success.

**Technology Integration**

**8.1.2.E.1** Use digital tools and online resources to explore a problem or issue.

**Learning Targets**

**Performance Expectations**

- **K-PS3-1:** The student is expected to make observations to determine the effect of sunlight on Earth's surface.
- **K-PS3-2:** The student is expected to use tools and materials to design and build a structure that will reduce the warming effect of sunlight on an area.
- **K-2-ETS1-1:** The student is expected to 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 Questions**

- Why does ice cream melt in the sun?

**Disciplinary Core Ideas**

- PS3.B:** Conservation of Energy and Energy Transfer
- Sunlight warms Earth's surface. (K-PS3-1),(K-PS3-2)

**Science and Engineering Practices****Planning and Carrying Out Investigations**

Planning and carrying out investigations to answer questions or test solutions to problems in K–2 builds on prior experiences and progresses to simple investigations, based on fair tests, which provide data to support explanations or design solutions.

- Make observations (firsthand or from media) to collect data that can be used to make comparisons. (K-PS3-1)

**Constructing Explanations and Designing Solutions**

Constructing explanations and designing solutions in K–2 builds on prior experiences and progresses to the use of evidence and ideas in constructing evidence-based accounts of natural phenomena and designing solutions.

- Use tools and materials provided to design and build a device that solves a specific problem or a solution to a specific problem. (K-PS3- 2)

**Crosscutting Concepts****Cause and Effect**

- Events have causes that generate observable patterns. (K-PS3-1),(K-PS3-2)

## Evidence of Learning

### Formative Assessments

- Activity: Hook- Sunny Day
- Activity: Hanging Out In The Shade (Science)
- Activity: Sammy the Snake
- Activity w/report: Save The Chocolate! (Engineering)
- Activity w/report: Energy From the Sun (Linking Literacy)
- How can you stay protected from the sun? (Communicate Science)
- Quiz/STEMScopedia Activity - What is the Sun?
- Activity: Concept Review Game
- STEM Talk: view and discuss Content Connections Interactive Video(s): Burning Wood.
- Communicate Activity: Students use Science Rock "Movement" musical/video software platform where students can sing standards-based science songs and dance to the tune.
- Quiz/Activity: Math Connections interactive practice/quiz that uses grade-level appropriate math activities to address the concept.
- STEM Talk: View and discuss Teacher-Guided Read Aloud: Power of the Sun.
- Review: View and interact with "Science Today - Watch It!" by Associated Press

### Summative Assessments

**Argue: Claim-Evidence-Reasoning:** student writes a scientific explanation to show their understanding of a science in a way that uses evidence.

**Open-Ended Response:** a short-answer and essay assessment to evaluate student mastery of the concept.

**Multiple-Choice Assessment:** a standards-based assessment designed to gauge students' understanding of the science concept using their selections of the best possible answers from a list of choices

### Modifications (ELLs, Special Education, Gifted and Talented)

#### ELL

- Learn the backgrounds of LEP students
- Plan lessons that are both culturally and linguistically appropriate.
- Group students flexibly, in small groups based on individual or group interests as well as instructional need or ability.
- Give clear, simple directions
- Ask them to retell or restate, in their own words, the task.
- Reiterate, in the student's native language or in simplified English, the key concepts learned in content areas.
- Paraphrase information and main ideas.
- Reorganize and reinforce information.
- Provide bilingual classroom resources, such as bilingual dictionaries, picture books and dictionaries, and English language encyclopedias for LEP students.

#### Special Education

- Provide Instructional Strategies and Techniques that Address Learning Style
- Utilize Techniques and Activities to Support Personal-Social Development
- Modify the Presentation of Materials
- Modify the Learning Environment
- Modify Assessments
- Modify Grading
- Facilitate Appropriate Behavior
- Limit/Reduce/Modify/Permit Alternate Class Work Curricular Procedures

- Provide Alternative Homework
- Provide Access to Special Equipment and Instructional Materials

**Gifted and Talented**

- Accelerate or enrich content.
- Reduce regular classroom work
- Providing alternate assignments
- Schedule opportunities to work individually through independent study
- Schedule opportunities to work in homogeneous groupings with peers of similar ability and interests
- Schedule opportunities to participate heterogeneous groupings of mixed-ability students.
- Stimulate higher order thinking skills and give students opportunities to consider and express personal opinions by asking open-ended questions.
- Scaffold investigations and reports to require thinking skills such as comparison, synthesis, insight, judgment, hypothesis, conjecture, and assimilation.
- Curriculum compact to allow student to skip standard assignments in order to acquire time to pursue alternate assignments or independent projects.
- Compact curriculum in areas that represent student strengths
- Create a plan outline and time frame for completion of assignments & alternate activities.
- Incorporate written independent study contracts to research topics of interest to become “resident experts.”
- Develop descriptions and the criteria for evaluating each project.
- Determine (jointly) deadline dates and work schedule.
- Provide complex, critical thinking tasks.

**Curriculum Development Resources/Instructional Materials/Equipment Needed/  
Resources:**

**STEMScopes - Kindergarten**

- Energy From The Sun

**Materials**

- Science “Toolkit” (markers, crayons, pencils, pens, scissors, glue, glue sticks, rulers, colored pencils, tape, etc.)
- Student Journal
- ice cubes
- chocolate
- wax paper
- 100 watt lightbulb/lamp
- printables

**Equipment**

- Smartboard/projector

**MULLICA TOWNSHIP SCHOOL DISTRICT**

**Kindergarten - Unit 4**

**Content Area:** Science

**Unit Title:** Basic Needs of Living Things

**Target Course/Grade Level:** Kindergarten

### **Unit Summary**

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.

### **Primary Interdisciplinary Connections:**

#### **ELA/Literacy**

**W.K.7** Participate in shared research and writing projects (e.g., explore a number of books by a favorite author and express opinions about them). (K-LS1-1)

**SL.K.5** Add drawings or other visual displays to descriptions as desired to provide additional detail. (K-ESS3-1)

**RI.K.1** With prompting and support, ask and answer questions about key details in a text. (K-ESS2-2)

**W.K.1** Use a combination of drawing, dictating, and writing to compose opinion pieces in which they tell a reader the topic or the name of the book they are writing about and state an opinion or preference about the topic or book. (K-ESS2-2)

**W.K.2** Use a combination of drawing, dictating, and writing to compose informative/explanatory texts in which they name what they are writing about and supply some information about the topic. (K-ESS2-2)

#### **Mathematics**

**K.MD.A.2** Directly compare two objects with a measurable attribute in common, to see which object has “more of/”less of” the attribute, and describe the difference. (K-LS1-1)

**MP.2** Reason abstractly and quantitatively. (K-ESS3-1)

**MP.4** Model with mathematics. (K-ESS3-1)

**K.CC** Counting and Cardinality (K-ESS3-1)

### **21<sup>st</sup> Century Themes:**

#### **Career Ready Practices and Financial Literacy**

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

**CRP2.** Apply appropriate academic and technical skills.

**CRP4.** Communicate clearly and effectively and with reason.

**CRP6.** Demonstrate creativity and innovation.

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

**9.2.4.A.4** Explain why knowledge and skills acquired in the elementary grades lay the foundation for future academic and career success.

#### **Technology Integration**

**8.1.2.E.1** Use digital tools and online resources to explore a problem or issue.

### **Learning Targets**

## Performance Expectations

**K-LS1-1.** Use observations to describe patterns of what plants and animals (including humans) need to survive.

**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.

**K-ESS2-2.** Construct an argument supported by evidence for how plants and animals (including humans) can change the environment to meet their needs.

### Essential Questions

- Can a zookeeper feed all the animals the same food?
- What do I need to do to keep a plant alive?
- Why do fish live in water and dogs live on land?
- How does a beaver change the environment?
- I buy my shirt at a store, but where does the store get the shirt?

### Disciplinary Core Ideas

#### **LS1.C:** Organization for Matter and Energy Flow in Organisms

- All animals need food in order to live and grow. They obtain their food from plants or from other animals. Plants need water and light to live and grow. (K-LS1-1)

#### **ESS3.A:** Natural Resources

- Living things need water, air, and resources from the land, and they live in places that have the things they need. Humans use natural resources for everything they do. (K-ESS3-1)

#### **ESS2.E:** Biogeology

- Plants and animals can change their environment. (K-ESS2-2)

#### **ESS3.C:** Human Impacts on Earth Systems

- Things that people do to live comfortably can affect the world around them. But they can make choices that reduce their impacts on the land, water, air, and other living things. (secondary to K-ESS2-2)

### Science and Engineering Practices

#### **Analyzing and Interpreting Data**

Analyzing data in K–2 builds on prior experiences and progresses to collecting, recording, and sharing observations. Use observations (firsthand or from media) to describe patterns in the natural world in order to answer scientific questions. (K-LS1-1)

#### **Developing and Using Models**

Modeling in K–2 builds on prior experiences and progresses to include using and developing models (i.e., diagram, drawing,

### Crosscutting Concepts

#### **Patterns**

- Patterns in the natural and human designed world can be observed and used as evidence. (K-LS1-1)

#### **Systems and System Models**

- Systems in the natural and designed world have parts that work together. (K-ESS3-1)

#### **Systems and System Models**

- Systems in the natural and designed



physical replica, diorama, dramatization, storyboard) that represent concrete events or design solutions. Use a model to represent relationships in the natural world. (K-ESS3-1)

**Engaging in Argument from Evidence**

Engaging in argument from evidence in K–2 builds on prior experiences and progresses to comparing ideas and representations about the natural and designed world(s). Construct an argument with evidence to support a claim. (K-ESS2-2)

world have parts that work together. (K-ESS2-2)

## Evidence of Learning

### Formative Assessments

- Activity: Hook(s) - Growing Up; Simon Says; Why Do You Live Here?; I'm Home!; Where Did It Come From?
- Activity: Investigate - Picky Eaters; Water Me; Shine a Light On Me; Times Change
- Activity w/report: Engineering Design - Dinner Time!; Flowers, Leaves, Stems, Roots; Build My Habitat; Save Our Supplies; Beaver Solution
- Activity w/report: Science/Literacy - Home Sweet Homes; Natural Resources Chains; What Is It Made Of?
- Quiz/STEMScopedia Activity - Vocabulary Quiz
- Quiz/Activity: Concept Review Game
- STEM Talk: View and discuss Content Connections Interactive Video(s):.
- Communicate/Drama Activity: Students use Science Rock "Movement" musical/video software platform where students sing standards-based science songs and dance to the tune.
- Quiz/Activity: Math Connections interactive practice/quiz that uses grade-level appropriate math activities to address the concept.
- STEM Talk: View and discuss Teacher-Guided Read Aloud
- Review: View and interact with "Science Today - Watch It!" by Associated Press

### Summative Assessments

**Argue: Claim-Evidence-Reasoning:** student writes a scientific explanation to show their understanding of a science in a way that uses evidence.

**Open-Ended Response:** a short-answer and essay assessment to evaluate student mastery of the concept.

**Multiple-Choice Assessment:** a standards-based assessment designed to gauge students' understanding of the science concept using their selections of the best possible answers from a list of choices

### Modifications (ELLs, Special Education, Gifted and Talented)

#### ELL

- Learn the backgrounds of LEP students
- Plan lessons that are both culturally and linguistically appropriate.
- Group students flexibly, in small groups based on individual or group interests as well as instructional need or ability.
- Give clear, simple directions
- Ask them to retell or restate, in their own words, the task.
- Reiterate, in the student's native language or in simplified English, the key concepts learned in content areas.
- Paraphrase information and main ideas.
- Reorganize and reinforce information.
- Provide bilingual classroom resources, such as bilingual dictionaries, picture books and dictionaries, and English language encyclopedias for LEP students.

#### Special Education

- Provide Instructional Strategies and Techniques that Address Learning Style
- Utilize Techniques and Activities to Support Personal-Social Development
- Modify the Presentation of Materials
- Modify the Learning Environment
- Modify Assessments
- Modify Grading
- Facilitate Appropriate Behavior

- Limit/Reduce/Modify/Permit Alternate Class Work Curricular Procedures
- Provide Alternative Homework
- Provide Access to Special Equipment and Instructional Materials

### **Gifted and Talented**

- Accelerate or enrich content.
- Reduce regular classroom work
- Providing alternate assignments
- Schedule opportunities to work individually through independent study
- Schedule opportunities to work in homogeneous groupings with peers of similar ability and interests
- Schedule opportunities to participate heterogeneous groupings of mixed-ability students.
- Stimulate higher order thinking skills and give students opportunities to consider and express personal opinions by asking open-ended questions.
- Scaffold investigations and reports to require thinking skills such as comparison, synthesis, insight, judgment, hypothesis, conjecture, and assimilation.
- Curriculum compact to allow student to skip standard assignments in order to acquire time to pursue alternate assignments or independent projects.
- Compact curriculum in areas that represent student strengths
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- Incorporate written independent study contracts to research topics of interest to become “resident experts.”
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- Provide complex, critical thinking tasks.

### **Curriculum Development Resources/Instructional Materials/Equipment Needed/ Resources:**

#### **STEMScopes - Kindergarten**

- Animal Needs
- Plant Needs
- Habitats
- Organisms’ Impact On Environment
- Uses of Natural Resources

#### **Materials**

- scope printables
- graduated cylinders
- clear cups
- lima beans
- potting soil
- linking cubes
- desk lamp
- elodea plants
- small net
- fish
- aquarium gravel
- bucket
- clay
- sand

## Equipment

- Smartboard/projector

## MULLICA TOWNSHIP SCHOOL DISTRICT

### Kindergarten - Unit 5

**Content Area:** Science

**Unit Title:** Basic Needs of Humans

**Target Course/Grade Level:** Kindergarten

#### Unit Summary

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.

#### Primary Interdisciplinary Connections:

##### ELA/Literacy

**W.K.2** Use a combination of drawing, dictating, and writing to compose informative/explanatory texts in which they name what they are writing about and supply some information about the topic. (K-ESS3-3)

#### 21<sup>st</sup> Century Themes:

##### Career Ready Practices and Financial Literacy

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

**CRP2.** Apply appropriate academic and technical skills.

**CRP4.** Communicate clearly and effectively and with reason.

**CRP6.** Demonstrate creativity and innovation.

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

**9.2.4.A.4** Explain why knowledge and skills acquired in the elementary grades lay the foundation for future academic and career success.

##### Technology Integration

**8.1.2.E.1** Use digital tools and online resources to explore a problem or issue.

## Learning Targets

## Performance Expectations

**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.

**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.

<p style="text-align: center;"><b>Essential Questions</b></p> <ul style="list-style-type: none"><li>• How do my choices impact the environment?</li></ul>	<p style="text-align: center;"><b>Disciplinary Core Ideas</b></p> <p><b>ESS3.C: Human Impacts on Earth Systems</b></p> <ul style="list-style-type: none"><li>• Things that people do to live comfortably can affect the world around them. But they can make choices that reduce their impacts on the land, water, air, and other living things. (K-ESS3- 3)</li></ul> <p><b>ETS1.B: Developing Possible Solutions</b></p> <ul style="list-style-type: none"><li>• Designs can be conveyed through sketches, drawings, or physical models. These representations are useful in communicating ideas for a problem’s solutions to other people. (secondary to K-ESS3-3)</li></ul>
<p style="text-align: center;"><b>Science and Engineering Practices</b></p> <p><b>Obtaining, Evaluating, and Communicating Information</b></p> <ul style="list-style-type: none"><li>• Communicate solutions with others in oral and/or written forms using models and/or drawings that provide detail about scientific ideas. (K-ESS3-3)</li></ul>	<p style="text-align: center;"><b>Crosscutting Concepts</b></p> <p><b>Cause and Effect</b></p> <ul style="list-style-type: none"><li>• Events have causes that generate observable patterns. (K-ESS3-2),(KESS3-3)</li></ul>

## Evidence of Learning

### Formative Assessments

- Activity: Hook - Recycling Relay Races
- Activity w/report: Engineering Design - New Home
- Activity w/report: Science/Literacy - Pollution Sort
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- Quiz/Activity: Concept Review Game
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**Curriculum Development Resources/Instructional Materials/Equipment Needed/  
Resources:**

**STEMScopes -**

- Reducing Human Impact

**Materials**

- student journals
- toolkits
- printables
- recycling material
- videoclip - recycling center
- toothpicks (three colors)
- aluminum trays
- sand

**Equipment**

- Smartboard/projector