

# Mullica Township School District



## Science Curriculum Grade 3

Board approval: 11/28/2018

**MULLICA TOWNSHIP SCHOOL DISTRICT**  
**Science Curriculum**  
**GRADE 3**

**Content Area:** SCIENCE

**Course Title:** Elementary

**Grade Level:** 3

**UNIT 1**

Weather and Climate

20 days

**UNIT 2**

Force and Motion

25 days

**UNIT 3**

Electrical and Magnetic Forces

20 days

**UNIT 4**

Traits

20 days

**UNIT 5**

Continuing The Cycle

20 days

**UNIT 6**

Organisms and the Environment

25 days

**UNIT 7**

Using Evidence to Understand Change In  
Environments

20 days

**Date Created:** 11/15/2018

**Board Approved:**

**Created By:** Barbara Rheault

**MULLICA TOWNSHIP SCHOOL DISTRICT**

**Grade 3 - Unit 1**

**Content Area:** Science

**Unit Title:** Weather and Climate

**Target Course/Grade Level:** Third

**Unit Summary**

In this unit of study, students organize and use data to describe typical weather conditions expected during a particular season. By applying their understanding of weather-related hazards, students are able to make a claim about the merit of a design solution that reduces the impacts of such hazards. 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 *asking questions and defining problems, analyzing and interpreting data, engaging in argument from evidence, 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 3-ESS2-1, 3-ESS2-2, 3-ESS3-1, and 3-5-ETS1-1.

**Primary Interdisciplinary Connections:**

**ELA/Literacy**

**RI.3.1** Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers. (3-ESS2-2)

**RI.3.9** Compare and contrast the most important points and key details presented in two texts on the same topic. (3-ESS2-2)

**W.3.8** Recall information from experiences or gather information from print and digital sources; take brief notes on sources and sort evidence into provided categories. (3-ESS2-2)

**W.5.7** Conduct short research projects that use several sources to build knowledge through investigation of different aspects of a topic. (3-5-ETS1-1)

**W.5.8** Recall relevant information from experiences or gather relevant information from print and digital sources; summarize or paraphrase information in notes and finished work, and provide a list of sources. (3-5-ETS1-1)

**W.5.9** Draw evidence from literary or informational texts to support analysis, reflection, and research. (3-5-ETS1-1)

**Mathematics**

**MP.2** Reason abstractly and quantitatively. (3-ESS2-1),(3-ESS2-2)

**MP.4** Model with mathematics. (3-ESS2-1),(3-ESS2-2)

**MP.5** Use appropriate tools strategically. (3-ESS2-1)

**3.MD.A.2** Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l). Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem. (3-ESS2-1)

**3.MD.B.3** Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step “how many more” and “how many less” problems using information presented in bar graphs. (3-ESS2-1)

**MP.2** Reason abstractly and quantitatively. (3-5-ETS1-1)

**MP.4** Model with mathematics. (3-5-ETS1-1)

**MP.5** Use appropriate tools strategically. (3-5-ETS1-1)  
**3-5.OA** Operations and Algebraic Thinking (3-5-ETS1-1)

**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.
- CRP5.** Consider the environmental, social and economic impacts of decisions.
- 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.
- CRP12.** Work productively in teams while using cultural global competence.
- 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.
- 8.1.5.A.1** Select and use the appropriate digital tools and resources to accomplish a variety of tasks including solving problems
- 8.1.5.F.1** Apply digital tools to collect, organize, and analyze data that support a scientific finding.

**Learning Targets**

**Performance Expectations**

- 3-ESS2-1.** Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season.
- 3-ESS2-2.** Obtain and combine information to describe climates in different regions of the world.
- 3-ESS3-1.** Make a claim about the merit of a design solution that reduces the impacts of a weather-related hazard.
- 3-5-ETS1-1.** Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.

**Essential Questions**

- What weather patterns do we see in the winter?
- Can lightning rods help prevent damage to tall buildings?

**Disciplinary Core Ideas**

- ESS2.D: Weather and Climate**
  - Scientists record patterns of the weather across different times and areas so that they can make predictions about what kind of weather might happen next. (3-ESS2-1)
  - Climate describes a range of an area's typical weather conditions and the extent to which those conditions vary over years. (3-ESS2-2)
- ESS3.B: Natural Hazards**
  - A variety of natural hazards result from natural processes. Humans cannot

	<p>eliminate natural hazards but can take steps to reduce their impacts. (3-ESS3-1)</p> <p><b>ETS1.A: Defining and Delimiting Engineering Problems</b></p> <ul style="list-style-type: none"> <li>• Possible solutions to a problem are limited by available materials and resources (constraints). The success of a designed solution is determined by considering the desired features of a solution (criteria). Different proposals for solutions can be compared on the basis of how well each one meets the specified criteria for success or how well each takes the constraints into account. (3-5- ETS1-1)</li> </ul> <p><b>Influence of Engineering, Technology, and Science on Society and the Natural World</b></p> <ul style="list-style-type: none"> <li>• People’s needs and wants change over time, as do their demands for new and improved technologies. (3-5-ETS1-1)</li> </ul>
<p><b>Science and Engineering Practices</b></p> <p><b>Analyzing and Interpreting Data</b> Analyzing data in 3–5 builds on K–2 experiences and progresses to introducing quantitative approaches to collecting data and conducting multiple trials of qualitative observations. When possible and feasible, digital tools should be used.</p> <ul style="list-style-type: none"> <li>• Represent data in tables and various graphical displays (bar graphs and pictographs) to reveal patterns that indicate relationships. (3-ESS2-1)</li> </ul> <p><b>Obtaining, Evaluating, and Communicating Information</b> Obtaining, evaluating, and communicating information in 3–5 builds on K–2 experiences and progresses to evaluating the merit and accuracy of ideas and methods.</p> <ul style="list-style-type: none"> <li>• Obtain and combine information from books and other reliable media to explain phenomena. (3-ESS2-2)</li> </ul> <p><b>Engaging in Argument from Evidence</b> Engaging in argument from evidence in 3–5 builds on K–2 experiences and progresses to critiquing the scientific explanations or solutions proposed by peers by citing relevant evidence about the natural and designed world(s).</p> <ul style="list-style-type: none"> <li>• Make a claim about the merit of a solution to a problem by citing relevant</li> </ul>	<p><b>Crosscutting Concepts</b></p> <p><b>Patterns</b></p> <ul style="list-style-type: none"> <li>• Patterns of change can be used to make predictions. (3-ESS2-1),(3-ESS2-2)</li> </ul> <p><b>Cause and Effect</b></p> <ul style="list-style-type: none"> <li>• Cause and effect relationships are routinely identified, tested, and used to explain change. (3-ESS3-1)</li> </ul> <p><b>Connections to Engineering, Technology, and Applications of Science</b> Influence of Engineering, Technology, and Science on Society and the Natural World</p> <ul style="list-style-type: none"> <li>• Engineers improve existing technologies or develop new ones to increase their benefits (e.g., better artificial limbs), decrease known risks (e.g., seatbelts in cars), and meet societal demands (e.g., cell phones). (3-ESS3-1)</li> </ul> <p><b>Connections to Nature of Science</b> Science is a Human Endeavor</p> <ul style="list-style-type: none"> <li>• Science affects everyday life. (3-ESS3-1)</li> </ul> <p><b>Influence of Engineering, Technology, and Science on Society and the Natural World</b></p> <ul style="list-style-type: none"> <li>• People’s needs and wants change over time, as do their demands for new and improved technologies. (3-5-ETS1-1)</li> </ul>

evidence about how it meets the criteria and constraints of the problem.  
(3-ESS3-1)

**Asking Questions and Defining Problems**

Asking questions and defining problems in 3–5 builds on grades K–2 experiences and progresses to specifying qualitative relationships.

- Define a simple design problem that can be solved through the development of an object, tool, process, or system and includes several criteria for success and constraints on materials, time, or cost.  
(3-5-ETS1-1)

## Evidence of Learning

### Formative Assessments

- Activity: Hook
- Activity: Investigate
- Activity w/report: Engineering Design
- Activity w/report: Science/Literacy
- 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
- Assessment 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 Resources:

#### STEMScopes -

- Weather and Climate
- Processes and Impacts of Natural Hazards

#### Materials

#### Equipment

- Smartboard and Projector
- Chromebooks

## MULLICA TOWNSHIP SCHOOL DISTRICT

### Grade 3 - Unit 2

**Content Area:** Science

**Unit Title:** Force and Motion

**Target Course/Grade Level:** Third

#### Unit Summary

In this unit of study, students determine the effects of balanced and unbalanced forces on the motion of an object. The crosscutting concepts of *patterns and cause and effect* are called out as organizing concepts for these disciplinary core ideas. Students are expected to demonstrate grade-appropriate proficiency in *planning and carrying out investigations*. Students are also



expected to use these practices to demonstrate understanding of the core ideas.

This unit is based on 3-PS2-1 and 3-PS2-2.

**Primary Interdisciplinary Connections:**

**ELA/Literacy**

**RI.3.1** Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers. (3-PS2-1)

**W.3.7** Conduct short research projects that build knowledge about a topic. (3-PS2-1),(3-PS2-2)

**W.3.8** Recall information from experiences or gather information from print and digital sources; take brief notes on sources and sort evidence into provided categories. (3-PS2-1), (3-PS2-2)

**Mathematics**

**MP.2** Reason abstractly and quantitatively. (3-PS2-1)

**MP.5** Use appropriate tools strategically. (3-PS2-1)

**3.MD.A.2** Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l). Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem. (3-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.

**CRP5.** Consider the environmental, social and economic impacts of decisions.

**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.

**CRP12.** Work productively in teams while using cultural global competence.

**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.

**8.1.5.A.1** Select and use the appropriate digital tools and resources to accomplish a variety of tasks including solving problems

**8.1.5.F.1** Apply digital tools to collect, organize, and analyze data that support a scientific finding.

**Learning Targets**

**Performance Expectations**

**3-PS2-1.** Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object.

**3-PS2-2** Make observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predict future motion.

<p style="text-align: center;"><b>Essential Questions</b></p> <ul style="list-style-type: none"> <li>● Why do bowling pins fall down?</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>● Each force acts on one particular object and has both strength and a direction. An object at rest typically has multiple forces acting on it, but they add to give zero net force on the object. Forces that do not sum to zero can cause changes in the object's speed or direction of motion. (3-PS2-1)</li> <li>● The patterns of an object's motion in various situations can be observed and measured; when that past motion exhibits a regular pattern, future motion can be predicted from it. (Boundary: Technical terms, such as magnitude, velocity, momentum, and vector quantity, are not introduced at this level, but the concept that some quantities need both size and direction to be described is developed.) (3-PS2-2)</li> </ul> <p><b>PS2.B: Types of Interactions</b></p> <ul style="list-style-type: none"> <li>● Objects in contact exert forces on each other. (3-PS2-1)</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 3–5 builds on K–2 experiences and progresses to include investigations that control variables and provide evidence to support explanations or design solutions.</p> <ul style="list-style-type: none"> <li>● Plan and conduct an investigation collaboratively to produce data to serve as the basis for evidence, using fair tests in which variables are controlled and the number of trials considered. (3-PS2-1)</li> <li>● Make observations and/or measurements to produce data to serve as the basis for evidence for an explanation of a phenomenon or test a design solution. (3-PS2-2)</li> </ul> <p style="text-align: center;"><b>Connections to Nature of Science</b></p> <p><b>Science Knowledge is Based on Empirical Evidence</b></p>	<p style="text-align: center;"><b>Crosscutting Concepts</b></p> <p><b>Patterns</b></p> <ul style="list-style-type: none"> <li>● Patterns of change can be used to make predictions. (3-PS2-2)</li> </ul> <p><b>Cause and Effect</b></p> <ul style="list-style-type: none"> <li>● Cause and effect relationships are routinely identified. (3-PS2-1)</li> </ul>

- Science findings are based on recognizing patterns. (3-PS2-2)

**Scientific Investigations Use a Variety of Methods**

- Science investigations use a variety of methods, tools, and techniques. (3-PS2-1)

## Evidence of Learning

### Formative Assessments

- Activity: Hook
- Activity: Investigate
- Activity w/report: Engineering Design
- Activity w/report: Science/Literacy
- Quiz/STEMScopedia Activity - Vocabulary Quiz
- Quiz/Activity: Concept Review Game
- STEM Talk: View and discuss Content Connections Interactive Video(s):.
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### 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.
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- 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 Resources:

#### STEMScopes

- Objects and Motion

#### Materials

#### Equipment

- Smartboard and Projector
- Chromebooks

## MULLICA TOWNSHIP SCHOOL DISTRICT

### Grade 3 - Unit 3

**Content Area:** Science

**Unit Title:** Electrical and Magnetic Forces

**Target Course/Grade Level:** Third

#### Unit Summary

In this unit of study, students determine the effects of balanced and unbalanced forces on the motion of an object and the cause-and-effect relationships of electrical or magnetic interactions to define a simple design problem that can be solved with magnets. The crosscutting concept of *cause and effect*, and the *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 these disciplinary core ideas. Students are expected to demonstrate grade-appropriate proficiency in *asking questions and defining problems*. Students are also expected to use these practices to demonstrate understanding of the core ideas.

This unit is based on 3-PS2-3, 3-PS2-4, and 3-5-ETS1-1.

### **Primary Interdisciplinary Connections:**

#### **ELA/Literacy**

**RI.3.1** Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers. (3-PS2-3)

**RI.3.3** Describe the relationship between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text, using language that pertains to time, sequence, and cause/effect. (3-PS2-3)

**RI.3.8** Describe the logical connection between particular sentences and paragraphs in a text (e.g., comparison, cause/effect, first/second/third in a sequence). (3-PS2-3)

**SL.3.3** Ask and answer questions about information from a speaker, offering appropriate elaboration and detail. (3-PS2-3)

#### **Mathematics**

None

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

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

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

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

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**CRP12.** Work productively in teams while using cultural global competence.

**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.

**8.1.5.A.1** Select and use the appropriate digital tools and resources to accomplish a variety of tasks including solving problems

**8.1.5.F.1** Apply digital tools to collect, organize, and analyze data that support a scientific finding.

### **Learning Targets**

#### **Performance Expectations**

**3-PS2-3.** Ask questions to determine cause and effect relationships of electric or magnetic interactions between two objects not in contact with each other.

**3-PS2-4** Define a simple design problem that can be solved by applying scientific ideas about magnets

**3-5-ETS1-1.** Define a simple design problem reflecting a need or a want that includes specified

criteria for success and constraints on materials, time, or cost.

### Essential Questions

- Why does a balloon cause my hair to stick up?

### Disciplinary Core Ideas

#### PS2.B: Types of Interactions

- Electric and magnetic forces between a pair of objects do not require that the objects be in contact. The sizes of the forces in each situation depend on the properties of the objects and their distances apart and, for forces between two magnets, on their orientation relative to each other.  
(3-PS2-3),(3-PS2-4)

#### TS1.A: Defining and Delimiting Engineering Problems

- Possible solutions to a problem are limited by available materials and resources (constraints). The success of a designed solution is determined by considering the desired features of a solution (criteria). Different proposals for solutions can be compared on the basis of how well each one meets the specified criteria for success or how well each takes the constraints into account.  
(3-5- ETS1-1)

### Science and Engineering Practices

#### Asking Questions and Defining Problems

Asking questions and defining problems in grades 3–5 builds on grades K–2 experiences and progresses to specifying qualitative relationships.

- Ask questions that can be investigated based on patterns such as cause and effect relationships. (3-PS2-3)
- Define a simple problem that can be solved through the development of a new or improved object or tool.  
(3-PS2-4)
- Define a simple design problem that can be solved through the development of an object, tool, process, or system and includes several criteria for success and constraints on materials, time, or cost.  
(3-5-ETS1-1)

### Crosscutting Concepts

#### Cause and Effect

- Cause and effect relationships are routinely identified, tested, and used to explain change. (3-PS2-3)

#### Connections to Engineering, Technology, and Applications of Science

#### Interdependence of Science, Engineering, and Technology

- Scientific discoveries about the natural world can often lead to new and improved technologies, which are developed through the engineering design process. (3-PS2-4)

#### Influence of Engineering, Technology, and Science on Society and the Natural World

- People's needs and wants change over time, as do their demands for new and improved technologies. (3-5-ETS1-1)





## Evidence of Learning

### Formative Assessments

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**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.
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- Reorganize and reinforce information.
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- Provide Instructional Strategies and Techniques that Address Learning Style
- Utilize Techniques and Activities to Support Personal-Social Development
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#### Gifted and Talented

- Accelerate or enrich content.
- Reduce regular classroom work
- Providing alternate assignments
- Schedule opportunities to work individually through independent study
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- 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 Resources:**

**STEMScopes**

- Electric and Magnetic Forces

**Materials**

**Equipment**

- Smartboard and Projector
- Chromebooks

**MULLICA TOWNSHIP SCHOOL DISTRICT**

**Grade 3 - Unit 4**

**Content Area:** Science

**Unit Title:** Traits

**Target Course/Grade Level:** Third

**Unit Summary**

In this unit of study, students acquire an understanding that organisms have different inherited traits and that the environment can also affect the traits that an organism develops. The crosscutting concepts of *patterns* and *cause and effect* are called out as organizing concepts for these disciplinary core ideas. Students are expected to demonstrate grade-appropriate proficiency *in analyzing and interpreting data, constructing explanations, and designing solutions*. Students are also expected to use these practices to demonstrate understanding of

the core ideas.

This unit is based on 3-LS3-1 and 3-LS3-2.

**Primary Interdisciplinary Connections:**

**ELA/Literacy**

**RI.3.1** Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers. (3-LS3-1),(3-LS3-2)

**RI.3.2** Determine the main idea of a text; recount the key details and explain how they support the main idea. (3-LS3-1),(3-LS3-2)

**RI.3.3** Describe the relationship between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text, using language that pertains to time, sequence, and cause/effect. (3-LS3-1),(3-LS3-2)

**W.3.2** Write informative/explanatory texts to examine a topic and convey ideas and information clearly. (3-LS3-1),(3-LS3-2)

**SL.3.4** Report on a topic or text, tell a story, or recount an experience with appropriate facts and relevant, descriptive details, speaking clearly at an understandable pace. (3-LS3-1),(3-LS3-2)

**Mathematics**

**MP.2** Reason abstractly and quantitatively. (3-LS3-1),(3-LS3-2)

**MP.4** Model with mathematics. (3-LS3-1),(3-LS3-2)

**3.MD.B.4** Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units—whole numbers, halves, or quarters. (3-LS3-1),(3-LS3-2)

**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.

**CRP5.** Consider the environmental, social and economic impacts of decisions.

**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.

**CRP12.** Work productively in teams while using cultural global competence.

**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.

**8.1.5.A.1** Select and use the appropriate digital tools and resources to accomplish a variety of tasks including solving problems

**8.1.5.F.1** Apply digital tools to collect, organize, and analyze data that support a scientific finding.

**Learning Targets**

**Performance Expectations**

**3-LS3-1.** Analyze and interpret data to provide evidence that plants and animals have traits inherited from parents and that variation of these traits exists in a group of similar organisms.

**3-LS3-2.** Use evidence to support the explanation that traits can be influenced by the environment.

### Essential Questions

- If they all have the same parents, why don't the puppies in a litter look exactly alike?

### Disciplinary Core Ideas

#### LS3.A: Inheritance of Traits

- Many characteristics of organisms are inherited from their parents. (3-LS3-1)
- Other characteristics result from individuals' interactions with the environment, which can range from diet to learning. Many characteristics involve both inheritance and environment. (3-LS3-2)

#### LS3.B: Variation of Traits

- Different organisms vary in how they look and function because they have different inherited information. (3-LS3-1)
- The environment also affects the traits that an organism develops. (3-LS3-2)

### Science and Engineering Practices

#### Analyzing and Interpreting Data

Analyzing data in 3–5 builds on K–2 experiences and progresses to introducing quantitative approaches to collecting data and conducting multiple trials of qualitative observations.

When possible and feasible, digital tools should be used.

- Analyze and interpret data to make sense of phenomena using logical reasoning. (3-LS3-1)

#### Constructing Explanations and Designing Solutions

Constructing explanations and designing solutions in 3–5 builds on K–2 experiences and progresses to the use of evidence in constructing explanations that specify variables that describe and predict phenomena and in designing multiple solutions to design problems.

- Use evidence (e.g., observations, patterns) to support an explanation. (3-LS3-2)

### Crosscutting Concepts

#### Patterns

- Similarities and differences in patterns can be used to sort and classify natural phenomena. (3-LS3-1)

#### Cause and Effect

- Cause and effect relationships are routinely identified and used to explain change. (3-LS3-2)

## Evidence of Learning

### Formative Assessments

- Activity: Hook
- Activity: Investigate
- Activity w/report: Engineering Design
- Activity w/report: Science/Literacy
- 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
- Assessment 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 Resources:**

**STEMScopes**

- Inheritance and Variation of Traits
- Environmental Traits

**Materials**

**Equipment**

- Smartboard and Projector
- Chromebooks

**MULLICA TOWNSHIP SCHOOL DISTRICT**  
**Grade 3 - Unit 5**

**Content Area:** Science

**Unit Title:** Continuing The Cycle

**Target Course/Grade Level:** Third

**Unit Summary**

In this unit of study, students develop an understanding of the similarities and differences in organisms' life cycles. In addition, students use evidence to construct an explanation for how the variations in characteristics among individuals of the same species may provide advantages in surviving, finding mates, and reproducing. The crosscutting concepts of *patterns* and *cause and effect* are called out as organizing concepts for these disciplinary core ideas. Students

demonstrate grade-appropriate proficiency in *developing and using models and constructing explanations and designing solutions*. Students are also expected to use these practices to demonstrate understanding of the core ideas.

This unit is based on 3-LS1-1 and 3-LS4-2.

### **Primary Interdisciplinary Connections:**

#### **ELA/Literacy**

**RI.3.7** Use information gained from illustrations (e.g., maps, photographs) and the words in a text to demonstrate understanding of the text (e.g., where, when, why, and how key events occur). (3-LS1-1)

**SL.3.5** Create engaging audio recordings of stories or poems that demonstrate fluid reading at an understandable pace; add visual displays when appropriate to emphasize or enhance certain facts or details. (3-LS1-1)

**RI.3.1** Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers. (3-LS4-2)

**RI.3.2** Determine the main idea of a text; recount the key details and explain how they support the main idea. (3-LS4-2)

**RI.3.3** Describe the relationship between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text, using language that pertains to time, sequence, and cause/effect.(3-LS4-2)

**W.3.2** Write informative/explanatory texts to examine a topic and convey ideas and information clearly. (3-LS4-2)

**SL.3.4** Report on a topic or text, tell a story, or recount an experience with appropriate facts and relevant, descriptive details, speaking clearly at an understandable pace. (3-LS4- 2)

#### **Mathematics**

**MP.4** Model with mathematics. (3-LS1-1)

**3.NBT** Number and Operations in Base Ten (3-LS1-1)

**3.NF** Number and Operations—Fractions (3-LS1-1)

**MP.2** Reason abstractly and quantitatively. (3-LS4-2),

**MP.4** Model with mathematics. (3-LS4-2),

**3.MD.B.3** Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step “how many more” and “how many less” problems using information presented in scaled bar graphs. (3-LS4-2)

### **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.

**CRP5.** Consider the environmental, social and economic impacts of decisions.

**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.

**CRP12.** Work productively in teams while using cultural global competence.

**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.

**8.1.5.A.1** Select and use the appropriate digital tools and resources to accomplish a variety of tasks including solving problems

**8.1.5.F.1** Apply digital tools to collect, organize, and analyze data that support a scientific finding.

### Learning Targets

#### Performance Expectations

**3-LS1-1.** Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death.

**3-LS4-2.** Use evidence to construct an explanation for how the variations in characteristics among individuals of the same species may provide advantages in surviving, finding mates, and reproducing.

#### Essential Questions

- If they all have the same parents, why don't the puppies in a litter look exactly alike?
- How does a chameleon's changing skin help it to survive?

#### Disciplinary Core Ideas

##### **S1.B:** Growth and Development of Organisms

- Reproduction is essential to the continued existence of every kind of organism. Plants and animals have unique and diverse life cycles. (3-LS1-1)

##### **LS4.B:** Natural Selection

- Sometimes the differences in characteristics between individuals of the same species provide advantages in surviving, finding mates, and reproducing. (3-LS4-2)

#### Science and Engineering Practices

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

Modeling in 3–5 builds on K–2 experiences and progresses to building and revising simple models and using models to represent events and design solutions.

- Develop models to describe phenomena. (3-LS1-1)

##### **Connections to Nature of Science**

##### **Scientific Knowledge is Based on Empirical Evidence**

- Science findings are based on recognizing patterns. (3-LS1-1)

##### **Constructing Explanations and Designing Solutions**

Constructing explanations and designing solutions in 3–5 builds on K–2 experiences and progresses to the use of evidence in constructing explanations that specify

#### Crosscutting Concepts

##### **Patterns**

- Patterns of change can be used to make predictions. (3-LS1-1)

##### **Cause and Effect**

- Cause and effect relationships are routinely identified and used to explain change. (3-LS4-2)



variables that describe and predict phenomena and in designing multiple solutions to design problems.

- Use evidence (e.g., observations, patterns) to construct an explanation. (3-LS4-2)

## Evidence of Learning

### Formative Assessments

- Activity: Hook
- Activity: Investigate
- Activity w/report: Engineering Design
- Activity w/report: Science/Literacy
- 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
- Assessment 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 Resources:**

**STEMScopes**

- Life Cycles
- Survival of the Fittest

**Materials**

**Equipment**

- Smartboard and Projector
- Chromebooks

**MULLICA TOWNSHIP SCHOOL DISTRICT**

**Grade 3 - Unit 6**

**Content Area:** Science

**Unit Title:** Organisms and the Environment

**Target Course/Grade Level:** Third

**Unit Summary**

In this unit of study, students develop an understanding of the idea that when the environment changes, some organisms survive and reproduce, some move to new locations, some move into the transformed environment, and some die. The crosscutting concepts of *cause and effect* and the *interdependence of science, engineering, and technology* are called out as organizing concepts for these disciplinary core ideas. Students demonstrate grade-appropriate proficiency

in *engaging in argument from evidence*. Students are also expected to use this practice to demonstrate understanding of the core ideas.

This unit is based on 3-LS2-1 and 3-LS4-3.

### **Primary Interdisciplinary Connections:**

**RI.3.1** Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers. (3-LS2-1)

**RI.3.3** Describe the relationship between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text, using language that pertains to time, sequence, and cause/effect. (3-LS2-1)

**W.3.1** Write opinion pieces on topics or texts, supporting a point of view with reasons. (3-LS2-1)

**RI.3.1** Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers. (3-LS4-3)

**RI.3.2** Determine the main idea of a text; recount the key details and explain how they support the main idea. (3-LS4-3)

**RI.3.3** Describe the relationship between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text, using language that pertains to time, sequence, and cause/effect. (3-LS4-3)

**RI.3.3** Write opinion pieces on topics or texts, supporting a point of view with reasons. (3-LS4-3)

**W.3.2** Write informative/explanatory texts to examine a topic and convey ideas and information clearly. (3-LS4-3)

**SL.3.4** Report on a topic or text, tell a story, or recount an experience with appropriate facts and relevant, descriptive details, speaking clearly at an understandable pace. (3-LS4-3)

### **Mathematics**

**MP.4** Model with mathematics. (3-LS2-1)

**3.NBT** Number and Operations in Base Ten (3-LS2-1)

**MP.2** Reason abstractly and quantitatively. (3-LS4-3)

**MP.4** Model with mathematics. (3-LS4-3)

**3.MD.B.3** Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step “how many more” and “how many less” problems using information presented in scaled bar graphs. (3-LS4-3)

### **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.

**CRP5.** Consider the environmental, social and economic impacts of decisions.

**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.

**CRP12.** Work productively in teams while using cultural global competence.

**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.

**8.1.5.A.1** Select and use the appropriate digital tools and resources to accomplish a variety of tasks including solving problems

**8.1.5.F.1** Apply digital tools to collect, organize, and analyze data that support a scientific finding.

## Learning Targets

### Performance Expectations

**3-LS2-1.** Construct an argument that some animals form groups that help members survive

**3-LS4-3.** Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all.

### Essential Questions

- How can living in a group help or hurt animals' survival?
- Why can a cactus survive in a desert, but other plants cannot?

### Disciplinary Core Ideas

#### **LS2.D: Social Interactions and Group Behavior**

- Being part of a group helps animals obtain food, defend themselves, and cope with changes. Groups may serve different functions and vary dramatically in size (Note: Moved from K–2). (3-LS2-1)

#### **LS4.C: Adaptation**

- For any particular environment, some kinds of organisms survive well, some survive less well, and some cannot survive at all. (3-LS4-3)

### Science and Engineering Practices

#### **Engaging in Argument from Evidence**

Engaging in argument from evidence in 3–5 builds on K–2 experiences and progresses to critiquing the scientific explanations or solutions proposed by peers by citing relevant evidence about the natural and designed world(s).

- Construct an argument with evidence. (3-LS2-1)(3-LS4-3)

### Crosscutting Concepts

#### **Cause and Effect**

- Cause and effect relationships are routinely identified and used to explain change. (3-LS2- 1), (3-LS4-3)

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## Evidence of Learning

### Formative Assessments

- Activity: Hook
- Activity: Investigate
- Activity w/report: Engineering Design
- Activity w/report: Science/Literacy
- Quiz/STEMScopedia Activity - Vocabulary Quiz
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- Assessment 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 Resources:**

**STEMScopes**

- Social and Group Behavior
- Adaptations

**Materials**

**Equipment**

- Smartboard and Projector
- Chromebooks

**MULLICA TOWNSHIP SCHOOL DISTRICT**

**Third Grade - Unit 7**

**Content Area:** Science

**Unit Title:** Using Evidence to Understand Change in Environments

**Target Course/Grade Level:** Third

**Unit Summary**

In this unit of study, students develop an understanding of the types of organisms that lived long ago and also about the nature of their environments. Students develop an understanding of the idea that when the environment changes, some organisms survive and reproduce, some move to new locations, some move into the transformed environment, and some die. The crosscutting concepts of systems and system models; scale, proportion, and quantity; 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 are expected to demonstrate grade-appropriate proficiency in asking questions and defining problems, 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 3-LS4-1, 3-LS4-4, and 3-5-ETS1-1.

### **Primary Interdisciplinary Connections:**

#### **ELA/Literacy**

**RI.3.1** Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers. (3-LS4-4)

**RI.3.2** Determine the main idea of a text; recount the key details and explain how they support the main idea. (3-LS4-1),(3LS4-4)

**RI.3.3** Describe the relationship between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text, using language that pertains to time, sequence, and cause/effect. (3-LS4-1),,(3-LS4-4)

**W.3.1** Write opinion pieces on topics or texts, supporting a point of view with reasons. (3-LS4-1)(3-LS4-4)

**W.3.2** Write informative/explanatory texts to examine a topic and convey ideas and information clearly. (3-LS4-1),(3-LS4-4)

**W.3.8** Recall information from experiences or gather information from print and digital sources; take brief notes on sources and sort evidence into provided categories. (3-LS4-1)

**SL.3.4** Report on a topic or text, tell a story, or recount an experience with appropriate facts and relevant, descriptive details, speaking clearly at an understandable pace. (3-LS4-4)

#### **Mathematics**

**MP.2** Reason abstractly and quantitatively. (3-LS4-1),(3-LS4-4)

**MP.4** Model with mathematics. (3-LS4-1),(3-LS4-4)

**MP.5** Use appropriate tools strategically. (3-LS4-1)

**3.MD.B.4** Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units—whole numbers, halves, or quarters. (3-LS4-1)

### **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.

**CRP5.** Consider the environmental, social and economic impacts of decisions.

**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.

**CRP12.** Work productively in teams while using cultural global competence.

**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.

**8.1.5.A.1** Select and use the appropriate digital tools and resources to accomplish a variety of tasks including solving problems

**8.1.5.F.1** Apply digital tools to collect, organize, and analyze data that support a scientific finding.

**Learning Targets**

**Performance Expectations**

**3-LS4-1** Analyze and interpret data from fossils to provide evidence of the organisms and the environments in which they lived long ago.

**3-LS4-4.** Make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change

**Essential Questions**

- Why do organisms become extinct?
- Why are seashell and crab fossils found in modern deserts?
- How do you choose what kind of tree to plant in your local environment?

**Disciplinary Core Ideas**

**LS2.C: Ecosystem Dynamics, Functioning, and Resilience**

- When the environment changes in ways that affect a place’s physical characteristics, temperature, or availability of resources, some organisms survive and reproduce, others move to new locations, yet others move into the transformed environment, and some die. (secondary to 3-LS4-4)

**LS4.D: Biodiversity and Humans**

- Populations live in a variety of habitats, and change in those habitats affects the organisms living there. (3-LS4-4)

**Science and Engineering Practices**

**Analyzing and Interpreting Data**

Analyzing data in 3–5 builds on K–2 experiences and progresses to introducing quantitative approaches to collecting data and conducting multiple trials of qualitative observations. When possible and feasible, digital tools should be used.

- Analyze and interpret data to make sense of phenomena using logical reasoning. (3-LS4-1)

**Engaging in Argument from Evidence**

Engaging in argument from evidence in 3–5 builds on K–2 experiences and progresses to critiquing the scientific explanations or solutions proposed by peers by citing relevant evidence about the natural and designed world(s).

- Construct an argument with evidence.

**Crosscutting Concepts**

**Scale, Proportion, and Quantity**

- Observable phenomena exist from very short to very long time periods. (3-LS4-1)

**Systems and System Models**

- A system can be described in terms of its components and their interactions. (3-LS4-4)

**Connections to Engineering, Technology, and Applications of Science**

**Interdependence of Science, Engineering, and Technology**

- Knowledge of relevant scientific concepts and research findings is important in engineering. (3-LS4-4)

**Connections to Nature of Science**

(3-LS4-3)

- Make a claim about the merit of a solution to a problem by citing relevant evidence about how it meets the criteria and constraints of the problem. (3-LS4-4)

**Scientific Knowledge Assumes an Order and Consistency in Natural Systems**

- Science assumes consistent patterns in natural systems. (3-LS4-1)

**Influence of Engineering, Technology, and Science on Society and the Natural World**

- People's needs and wants change over time, as do their demands for new and improved technologies. (3-5-ETS1-1)

## Evidence of Learning

### Formative Assessments

- Activity: Hook
- Activity: Investigate
- Activity w/report: Engineering Design
- Activity w/report: Science/Literacy
- 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
- Assessment 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 Resources:****STEMScopes**

- Plant and Animal Extinction
- Fossils
- Environmental Changes and Effects

**Materials****Equipment**

- Smartboard and Projector
- Chromebooks