

| Lavallette Elementary School | Science Pacing Guide |
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| Content Area: Science Course Title: Science | Grade Level: Second Grade |
| Unit Plan 1 Matter and its Interactions | September - October |
| Unit Plan 2 Ecosystems: Interactions, Energy, and Dynamics | November - December |
| Unit Plan 3 Biological Evolution: Unity and Diversity | January |
| Unit Plan 4 Earth's Place in the Universe | February - March |
| Unit Plan 5 Earth's Systems | April - May |
| Unit Plan 6 Engineering Design | June |
| Updated: October 2018 by Sharon Carroll Aligned to New Jersey Student Learning Standards | Board Approved: October 16, 2018 |

| Lavallette Elementary School Curriculum Unit Overview | |
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| Content Area: Science Unit 1 | Grade Level: Second Grade |
| Domain (Unit Title): 2-PS1 Matter and its Interactions | |
| Unit Summary: In this unit of study, students demonstrate an understanding of observable properties of materials through analysis and classification of different materials. The | |

crosscutting concepts of *patterns, cause and effect, and the influence of engineering, technology, and science on society and the natural world* are called out as organizing concepts for these disciplinary core ideas. Students demonstrate grade-appropriate proficiency in *planning and carrying out investigations* and *analyzing and interpreting data*. Students are also expected to use these practices to demonstrate understanding of the core ideas.

Primary Interdisciplinary Connections: Mathematics, Language Arts Literacy, Science, Social Studies. All of the NJ State Standards may be found on the New Jersey state website.

21 Century Themes:

All students will develop an understanding of the nature and impact of technology, engineering, technological design, and the designed world, as they relate to the individual, global society and the universe.

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| <p>21st Century Life & Career Skills</p> | <p>All students will demonstrate the creative, critical thinking, collaboration, and problem-solving skills needed to function successfully as both global citizens and workers in diverse ethnic and organizational cultures.</p> |
| <p>Personal Financial Literacy</p> | <p>All students will develop skills and strategies that promote personal and financial responsibility related to financial planning, savings, investment, and charitable giving in the global economy.</p> |
| <p>Career Awareness, Exploration, and Preparation</p> | <p>All students will apply knowledge about and engage in the process of career awareness, exploration, and preparation in order to navigate the globally competitive work environment of the information age.</p> |
| <p>Career and Technical Education</p> | <p>All students who complete a career and technical education program will acquire academic and technical skills for careers in emerging and established professions that lead to technical skill proficiency, credentials, certificates, licenses, and/or degrees.</p> |

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UNIT 1:

Standards/Learning Targets

2-PS1-1. Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties. [Clarification Statement: Observations could include color, texture, hardness, and flexibility. Patterns could include the similar properties that different materials share.]

2-PS1-2. Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose.* [Clarification Statement: Examples of properties could include, strength, flexibility, hardness, texture, and absorbency.] [Assessment Boundary: Assessment of quantitative measurements is limited to length.]

2-PS1-3. Make observations to construct an evidence-based account of how an object made of a small set of pieces can be disassembled and made into a new object. [Clarification Statement: Examples of pieces could include blocks, building bricks, or other assorted small objects.]

2-PS1-4. Construct an argument with evidence that some changes caused by heating or cooling can be reversed and some cannot. [Clarification Statement: Examples of reversible changes could include materials such as water and butter at different temperatures. Examples of irreversible changes could include cooking an egg, freezing a plant leaf, and heating paper.]

Performance Expectation

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.

- Plan and conduct an investigation collaboratively to produce data to

Disciplinary Core Ideas

PS1.A: Structure and Properties of Matter

- Different kinds of matter exist and many of them can be either solid or liquid, depending on temperature. Matter can be described and classified by its observable properties. (2-PS1-1)
- Different properties are suited to different purposes. (2PS1-2),

serve as the basis for evidence to answer a question. (2-PS1-1)

Analyzing and Interpreting Data

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

- Analyze data from tests of an object or tool to determine if it works as intended. (2-PS1-2)

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.

- Make observations (firsthand or from media) to construct an evidence-based account for natural phenomena. (2-PS1-3)

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. (2- PS1-4)

Science Models, Laws, Mechanisms, and Theories Explain Natural Phenomena

- Scientists search for cause and effect relationships to explain natural events. (2-PS1-4)

(2-PS1-3)

- A great variety of objects can be built up from a small set of pieces. (2-PS1-3)

PS1.B: Chemical Reactions

- Heating or cooling a substance may cause changes that can be observed. Sometimes these changes are reversible, and sometimes they are not. (2-PS1-4)

Crosscutting Concepts

Patterns

- Patterns in the natural and human designed world can be observed.

Learning Objectives

Students will understand that ...

- Properties include how materials smell, look, taste, feel sound.

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| <p>(2-PS1-1)</p> <p>Cause and Effect</p> <ul style="list-style-type: none"> • Events have causes that generate observable patterns. (2-PS1-4) • Simple tests can be designed to gather evidence to support or refute student ideas about causes. (2-PS1-2) <p>Energy and Matter</p> <ul style="list-style-type: none"> • Objects may break into smaller pieces and be put together into larger pieces, or change shapes. (2-PS1-3) <p>Influence of Engineering, Technology, and Science on Society and the Natural World</p> <ul style="list-style-type: none"> • Every human-made product is designed by applying some knowledge of the natural world and is built using materials derived from the natural world. (2-PS1-2) | <ul style="list-style-type: none"> • Different materials have different properties. • You can tell if materials and substances are different by observing their properties or by testing them. • Properties of mixtures can change when other ingredients are added. • Properties of substances are the same whether you have a small amount or a large amount. • When a substance is heated or cooled, its properties can change. • Some substances change back to the way they were before they were heated or cooled. • If a substance doesn't change back to the way it was, it has become a different substance. • Mixtures may have a combination of the properties of their ingredients. • Mixtures may have some of the properties of their ingredients. • Mixtures can be designed for certain purposes by using ingredients with certain properties. |
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| <p>Lavallette Elementary School Curriculum Unit Overview</p> | |
| <p>Content Area: Science Unit 2</p> | <p>Grade Level: Second Grade</p> |
| <p>Domain (Unit Title): 2-LS2 Ecosystems: Interactions, Energy, and Dynamics</p> | |
| <p>Unit Summary: In this unit of study, students develop an understanding of what plants need to grow and how plants depend on animals for seed dispersal and pollination. Students also compare the diversity of life in different habitats. The crosscutting concepts of <i>cause and effect</i> and <i>structure and function</i> are called out as organizing concepts for these disciplinary core ideas. Students demonstrate grade-appropriate proficiency in <i>planning and carrying out</i></p> | |

investigations and developing and using models. Students are also expected to use these practices to demonstrate understanding of the core ideas.

Primary Interdisciplinary Connections: Mathematics, Language Arts Literacy, Science, Social Studies. All of the NJ State Standards may be found on the New Jersey state website.

21 Century Themes:

All students will develop an understanding of the nature and impact of technology, engineering, technological design, and the designed world, as they relate to the individual, global society and the universe.

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| 21st Century Life & Career Skills | All students will demonstrate the creative, critical thinking, collaboration, and problem-solving skills needed to function successfully as both global citizens and workers in diverse ethnic and organizational cultures. |
| Personal Financial Literacy | All students will develop skills and strategies that promote personal and financial responsibility related to financial planning, savings, investment, and charitable giving in the global economy. |
| Career Awareness, Exploration, and Preparation | All students will apply knowledge about and engage in the process of career awareness, exploration, and preparation in order to navigate the globally competitive work environment of the information age. |
| Career and Technical Education | All students who complete a career and technical education program will acquire academic and technical skills for careers in emerging and established professions that lead to technical skill proficiency, credentials, certificates, licenses, and/or degrees. |

UNIT 2:

Standards/Learning Targets

2-LS2-1. Plan and conduct an investigation to determine if plants need sunlight and water to grow. [Assessment Boundary: Assessment is limited to testing one variable at a time.]

2-LS2-2. Develop a simple model that mimics the function of an animal in dispersing seeds or pollinating plants.*

Performance Expectation

| <u>Science and Engineering Practices</u> | <u>Disciplinary Core Ideas</u> |
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| <p>Developing and Using Models Modeling in K–2 builds on prior experiences and progresses to include using and developing models (i.e., diagram, drawing, physical replica, diorama, dramatization, or storyboard) that represent concrete events or design solutions.</p> <ul style="list-style-type: none">• Develop a simple model based on evidence to represent a proposed object or tool. (2-LS2-2) <p>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.</p> <ul style="list-style-type: none">• Plan and conduct an investigation collaboratively to produce data to serve as the basis for evidence to answer a question. (2-LS2-1) | <p>LS2.A: Interdependent Relationships in Ecosystems</p> <ul style="list-style-type: none">• Plants depend on water and light to grow. (2-LS2-1)• Plants depend on animals for pollination or to move their seeds around. (2-LS2-2) <p>ETS1.B: Developing Possible Solutions</p> <ul style="list-style-type: none">• Designs can be conveyed through sketches, drawings, or physical models. These representations are useful in communicating ideas for a problem’s solutions to other people. (secondary to 2-LS2-2) |

| <u>Crosscutting Concepts</u> | <u>Learning Objectives</u> |
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| Cause and Effect | Students will understand that ... |

- Events have causes that generate observable patterns. (2-LS2-1)

Structure and Function

- The shape and stability of structures of natural and designed objects are related to their function(s). (2-LS2-2)

- Landforms are made of rock.
- Even if geologists can't see a change happening, they can use models to visualize how it may have happened.
- Even though rock is hard, it can change shape.
- The shape of a landform changes when water causes pieces of a rock to break off.
- Water hitting a landform causes tiny pieces of the landform to break off.
- Scientists make diagrams to show their ideas about how the world works, based on evidence from investigations, models, and books.
- Maps show where water and land are and where different landforms are.
- Many small changes that are hard to notice can add up to a bigger change that is easy to notice.
- When many small changes happen over a long time, the whole landform changes.
- Wind and water can erode a landform quickly if the landform is made of loose materials.

**Lavallette Elementary School
Curriculum
Unit Overview**

Content Area: Science Unit 3

Grade Level: Second Grade

Domain (Unit Title): 2-LS4 Biological Evolution: Unity and Diversity

Unit Summary: In this unit of study, students develop an understanding of what plants need to grow and how plants depend on animals for seed dispersal and pollination. Students also compare the diversity of life in different habitats. The crosscutting concepts of *cause and effect* and *structure and function* are called out as organizing concepts for these disciplinary core ideas. Students demonstrate grade-appropriate proficiency in *planning and carrying out investigations* and *developing and using models*. Students are also expected to use these

practices to demonstrate understanding of the core ideas.

Primary Interdisciplinary Connections: Mathematics, Language Arts Literacy, Science, Social Studies. All of the NJ State Standards may be found on the New Jersey state website.

21 Century Themes:

All students will develop an understanding of the nature and impact of technology, engineering, technological design, and the designed world, as they relate to the individual, global society and the universe.

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| 21st Century Life & Career Skills | All students will demonstrate the creative, critical thinking, collaboration, and problem-solving skills needed to function successfully as both global citizens and workers in diverse ethnic and organizational cultures. |
| Personal Financial Literacy | All students will develop skills and strategies that promote personal and financial responsibility related to financial planning, savings, investment, and charitable giving in the global economy. |
| Career Awareness, Exploration, and Preparation | All students will apply knowledge about and engage in the process of career awareness, exploration, and preparation in order to navigate the globally competitive work environment of the information age. |
| Career and Technical Education | All students who complete a career and technical education program will acquire academic and technical skills for careers in emerging and established professions that lead to technical skill proficiency, credentials, certificates, licenses, and/or degrees. |

UNIT 3:

Standards/Learning Targets

2-LS4-1. Make observations of plants and animals to compare the diversity of life in different habitats. [Clarification Statement: Emphasis is on the diversity of living things in each of a variety of different habitats.] [Assessment Boundary: Assessment does not include specific animal and plant names in specific habitats.]

Performance Expectation

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. (2-LS4-1)

Scientific Knowledge is Based on Empirical Evidence

- Scientists look for patterns and order when making observations about the world. (2-LS4-1)

Disciplinary Core Ideas

LS4.D: Biodiversity and Humans

- There are many different kinds of living things in any area, and they exist in different places on land and in water. (2-LS4-1)

Crosscutting Concepts

N/A

Learning Objectives

Students will understand that ...

- One way scientists study habitats is by observing the plants in them over time.
- There are many types of habitats. Each habitat has many different types of plants and animals.
- Plants make seeds that can grow into new plants.

- Only seeds that get enough sunlight and water sprout and grow into full-grown plants.
- Plants have leaves that get sunlight. Plants have roots that get water from the soil.
- Without enough space, plants can't get the sunlight and water they need to grow.
- Leaves need space to get sunlight. Roots need space in the soil to get water.
- Animals sometimes disperse seeds by eating fruit, moving to another place, and leaving droppings with the seeds inside.
- Before they investigate, scientists decide how they will measure the thing they want to learn about.
- Some plants depend on animals to disperse their seeds. These animals depend on the plants for food

Lavallette Elementary School Curriculum Unit Overview

Content Area: Science Unit 4

Grade Level: Second Grade

Domain (Unit Title): 2-ESS1 Earth's Place in the Universe

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

Primary Interdisciplinary Connections: Mathematics, Language Arts Literacy, Science, Social Studies. All of the NJ State Standards may be found on the New Jersey state website.

21 Century Themes:

All students will develop an understanding of the nature and impact of technology, engineering, technological design, and the designed world, as they relate to the individual, global society and the universe.

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| 21st Century Life & Career Skills | All students will demonstrate the creative, critical thinking, collaboration, and problem-solving skills needed to function successfully as both global citizens and workers in diverse ethnic and organizational cultures. |
| Personal Financial Literacy | All students will develop skills and strategies that promote personal and financial responsibility related to financial planning, savings, investment, and charitable giving in the global economy. |
| Career Awareness, Exploration, and Preparation | All students will apply knowledge about and engage in the process of career awareness, exploration, and preparation in order to navigate the globally competitive work environment of the information age. |
| Career and Technical Education | All students who complete a career and technical education program will acquire academic and technical skills for careers in emerging and established professions that lead to technical skill proficiency, credentials, certificates, licenses, and/or degrees. |

UNIT 4:**Standards/Learning Targets**

2-ESS1-1. Use information from several sources to provide evidence that Earth events can occur quickly or slowly. [Clarification Statement: Examples of events and timescales

could include volcanic explosions and earthquakes, which happen quickly and erosion of rocks, which occurs slowly.] [Assessment Boundary: Assessment does not include quantitative measurements of timescales.]

Performance Expectation

Science and Engineering Practices

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.

- Make observations from several sources to construct an evidence-based account for natural phenomena. (2-ESS1-1)

Disciplinary Core Ideas

ESS1.C: The History of Planet Earth

- Some events happen very quickly; others occur very slowly, over a time period much longer than one can observe. (2-ESS1-1)

Crosscutting Concepts

Stability and Change

- Things may change slowly or rapidly. (2-ESS1-1)

Learning Objectives

Students will understand that ...

- Landforms are made of rock.
- Even if geologists can't see a change happening, they can use models to visualize how it may have happened.
- Even though rock is hard, it can change shape.
- The shape of a landform changes when water causes pieces of a rock to break off.
- Water hitting a landform causes tiny pieces of the landform to break off.
- Scientists make diagrams to show their ideas about how the world works, based on evidence from investigations, models, and books.

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| | <ul style="list-style-type: none"> • Maps show where water and land are and where different landforms are. • Many small changes that are hard to notice can add up to a bigger change that is easy to notice. • When many small changes happen over a long time, the whole landform changes. • Wind and water can erode a landform quickly if the landform is made of loose materials.. |
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| Lavallette Elementary School Curriculum Unit Overview | |
| Content Area: Science | Unit 5 |
| Grade Level: Second Grade | |
| Domain (Unit Title): 2-ESS2 Earth's Systems | |
| <p>Unit Summary: In this unit of study, students apply their understanding of the idea that wind and water can change the shape of land to compare design solutions to slow or prevent such change. The crosscutting concepts of <i>stability and change</i>; <i>structure and function</i>; and <i>the influence of engineering, technology, and science on society and the natural world</i> are called out as organizing concepts for these disciplinary core ideas. Students demonstrate grade-appropriate proficiency in <i>asking questions and defining problems</i>, <i>developing and using models</i>, and <i>constructing explanations and designing solutions</i>. Students are also expected to use these practices to demonstrate understanding of the core ideas.</p> | |
| <p>Primary Interdisciplinary Connections: Mathematics, Language Arts Literacy, Science, Social Studies. All of the NJ State Standards may be found on the New Jersey state website.</p> | |
| <p>21 Century Themes: All students will develop an understanding of the nature and impact of technology, engineering, technological design, and the designed world, as they relate to the individual, global society and the universe.</p> | |
| 21st Century Life & Career Skills | All students will demonstrate the |

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| | creative, critical thinking, collaboration, and problem-solving skills needed to function successfully as both global citizens and workers in diverse ethnic and organizational cultures. |
| Personal Financial Literacy | All students will develop skills and strategies that promote personal and financial responsibility related to financial planning, savings, investment, and charitable giving in the global economy. |
| Career Awareness, Exploration, and Preparation | All students will apply knowledge about and engage in the process of career awareness, exploration, and preparation in order to navigate the globally competitive work environment of the information age. |
| Career and Technical Education | All students who complete a career and technical education program will acquire academic and technical skills for careers in emerging and established professions that lead to technical skill proficiency, credentials, certificates, licenses, and/or degrees. |

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| UNIT 5: |
| Standards/Learning Targets |
| <p>2-ESS2-1. Compare multiple solutions designed to slow or prevent wind or water from changing the shape of the land.* [Clarification Statement: Examples of solutions could include different designs of dikes and windbreaks to hold back wind and water, and different designs for using shrubs, grass, and trees to hold back the land.]</p> <p>2-ESS2-2. Develop a model to represent the shapes and kinds of land and bodies of water in an area. [Assessment Boundary: Assessment does not include quantitative scaling in models.]</p> |

2-ESS2-3. Obtain information to identify where water is found on Earth and that it can be solid or liquid.

Performance Expectation

Science and Engineering Practices

Developing and Using Models

Modeling in K–2 builds on prior experiences and progresses to include using and developing models (i.e., diagram, drawing, physical replica, diorama, dramatization, or storyboard) that represent concrete events or design solutions.

- Develop a model to represent patterns in the natural world. (2-ESS2-2)

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.

- Compare multiple solutions to a problem. (2-ESS2-1)

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.

- Obtain information using various texts, text features (e.g., headings, tables of contents, glossaries, electronic menus, icons), and other media that will be useful in answering a scientific question. (2-ESS2-3)

Disciplinary Core Ideas

ESS2.A: Earth Materials and Systems

- Wind and water can change the shape of the land. (2-ESS2-1)

ESS2.B: Plate Tectonics and Large-Scale System Interactions

- Maps show where things are located. One can map the shapes and kinds of land and water in any area. (2-ESS2-2)

ESS2.C: The Roles of Water in Earth's Surface Processes

- Water is found in the ocean, rivers, lakes, and ponds. Water exists as solid ice and in liquid form. (2-ESS2-3)

ETS1.C: Optimizing the Design Solution

- Because there is always more than one possible solution to a problem, it is useful to compare and test designs. (secondary to 2-ESS2-1)

| <u>Crosscutting Concepts</u> | <u>Learning Objectives</u> |
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| <p>Patterns</p> <ul style="list-style-type: none"> Patterns in the natural world can be observed. (2-ESS2-2),(2-ESS2-3) <p>Stability and Change</p> <ul style="list-style-type: none"> Things may change slowly or rapidly. (2-ESS2-1) <p>Influence of Engineering, Technology, and Science on Society and the Natural World</p> <ul style="list-style-type: none"> Developing and using technology has impacts on the natural world. (2-ESS2-1) <p>Science Addresses Questions About the Natural and Material World</p> <ul style="list-style-type: none"> Scientists study the natural and material world. (2-ESS2-1) | <p>Students will understand that...</p> <ul style="list-style-type: none"> Landforms are made of rock. Even if geologists can't see a change happening, they can use models to visualize how it may have happened. Even though rock is hard, it can change shape. The shape of a landform changes when water causes pieces of a rock to break off. Water hitting a landform causes tiny pieces of the landform to break off. Scientists make diagrams to show their ideas about how the world works, based on evidence from investigations, models, and books. Maps show where water and land are and where different landforms are. Many small changes that are hard to notice can add up to a bigger change that is easy to notice. When many small changes happen over a long time, the whole landform changes. Wind and water can erode a landform quickly if the landform is made of loose materials. |

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| Lavallette Elementary School Curriculum Unit Overview | |
| Content Area: Science Unit 6 | Grade Level: Second Grade |
| Domain (Unit Title): K-2-ETS1 Engineering Design | |
| Primary Interdisciplinary Connections: Mathematics, Language Arts Literacy, Science, Social Studies. All of the NJ State Standards may be found on the New Jersey state website. | |

21 Century Themes:

All students will develop an understanding of the nature and impact of technology, engineering, technological design, and the designed world, as they relate to the individual, global society and the universe.

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| 21st Century Life & Career Skills | All students will demonstrate the creative, critical thinking, collaboration, and problem-solving skills needed to function successfully as both global citizens and workers in diverse ethnic and organizational cultures. |
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UNIT 6:**Standards/Learning Targets**

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.

K-2-ETS1-2. Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.

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.

Performance Expectation

Science and Engineering Practices

Asking Questions and Defining Problems

Asking questions and defining problems in K–2 builds on prior experiences and progresses to simple descriptive questions.

- Ask questions based on observations to find more information about the natural and/or designed world(s). (K2-ETS1-1)
- Define a simple problem that can be solved through the development of a new or improved object or tool. (K-2-ETS1-1)

Developing and Using Models

Modeling in K–2 builds on prior experiences and progresses to include using and developing models (i.e., diagram, drawing, physical replica, diorama, dramatization, or storyboard) that represent concrete events or design solutions.

- Develop a simple model based on evidence to represent a proposed object or tool. (K-2-ETS1-2)

Analyzing and Interpreting Data

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

- Analyze data from tests of an object or tool to determine if it works as intended. (K-2-ETS1-3)

Disciplinary Core Ideas

ETS1.A: Defining and Delimiting Engineering Problems

- A situation that people want to change or create can be approached as a problem to be solved through engineering. (K-2-ETS1-1)
- Asking questions, making observations, and gathering information are helpful in thinking about problems. (K-2-ETS1-1)
- Before beginning to design a solution, it is important to clearly understand the problem. (K-2-ETS1-1)

ETS1.B: Developing Possible Solutions

- 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. (K-2-ETS1-2)

ETS1.C: Optimizing the Design Solution

- Because there is always more than one possible solution to a problem, it is useful to compare and test designs. (K-2-ETS1-3)

| <u>Crosscutting Concepts</u> | | <u>Learning Objectives</u> | |
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| <p>Structure and Function</p> <ul style="list-style-type: none"> The shape and stability of structures of natural and designed objects are related to their function(s). (K-2-ETS1-2) | | <p>Students will understand that ...</p> <ul style="list-style-type: none"> Engineers test their designs to find out whether they meet their design goals. The shape and stability of structures of natural and designed objects are related to their function(s). A situation that people want to change or create can be approached as a problem to be solved through engineering. Asking questions, making observations, and gathering information are helpful in thinking about problems. Before beginning to design a solution, it is important to clearly understand the problem. Designs can be conveyed through sketches, drawings, or physical models. These representations are useful in communicating ideas for a problem's solutions to other people. Because there is always more than one possible solution to a problem, it is useful to compare and test designs. | |

| Suggested Accommodations For All Units |
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| <p>Special Education/504 Plans/Students with Disabilities:</p> <ul style="list-style-type: none"> Follow specific IEP/504 accommodations and modifications Extended time Modified assignments Labeled pictures of weather phenomenon Pre-teach concepts |

- Differentiate assignments

Gifted and Talented:

- Differentiate assignments
- Higher level texts
- Homework questions should be open ended to increase higher level thinking
- Differentiate test questions
- Create alternate projects or assignments that challenge thinking
- Reference and possibly apply assessment boundary skills

Students at Risk of Failure:

- Small group instruction
- Frequent breaks
- Model how assignments should look
- Incorporate social/emotional discussions
- Encourage and monitor positive peer collaboration
- Provide academic resources for both school and home use

Economically Disadvantaged:

- Structure the learning around explaining or solving a social or community-based issue.
- Provide opportunities for students to connect with people of similar backgrounds (e.g. conversations via digital tool such as SKYPE, experts from the community helping with a project, journal articles, and biographies).

Culturally Diverse:

- Provide multiple grouping opportunities for students to share their ideas and to encourage work among various backgrounds and cultures (e.g. multiple representation and multimodal experiences).
- Structure lessons around questions that are authentic, relate to students' interests, social/family background and knowledge of their community.
- Provide opportunities for students to connect with people of similar backgrounds (e.g. conversations via digital tool such as SKYPE, experts from the community helping with a project, journal articles, and biographies).