

<b>Bay Head School</b>	
<b>Content Area:</b> Science <b>Course Title:</b> Science	<b>Grade Level:</b> First Grade
<b>Unit Plan 1</b> Waves and their Applications in Technologies for Information Transfer	40 days
<b>Unit Plan 2</b> From Molecules to Organisms: Structures and Processes	30 days
<b>Unit Plan 3</b> Heredity: Inheritance and Variation of Traits	40 days
<b>Unit Plan 4</b> Earth's Place in the Universe	40 days
<b>Unit Plan 5</b> Engineering Design	30 days
Updated: October 2018 by Sharon Carroll Aligned to New Jersey Student Learning Standards	Board Approved:

<b>Bay Head School SCIENCE CURRICULUM Unit Overview</b>	
<b>Content Area:</b> Science Unit 1	<b>Grade Level:</b> First Grade
<b>Domain (Unit Title):</b> 1-PS4 Waves and their Applications in Technologies for Information Transfer	
<b>Unit Summary:</b> In this unit of study, students develop an understanding of the relationship between sound and vibrating materials as well as between the availability of light and the ability to see objects. The idea that light travels from place to place can be understood by students at this level by placing objects made with different materials in the path of a beam of	

light and determining the effect of the different materials. The crosscutting concept of *cause and effect* is called out as an organizing concept for the disciplinary core ideas. Students are expected to demonstrate grade-appropriate proficiency in *planning and carrying out investigations, constructing explanations, and designing solutions*. 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.

<p><b>21st Century Life &amp; Career Skills</b></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><b>Personal Financial Literacy</b></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><b>Career Awareness, Exploration, and Preparation</b></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><b>Career and Technical Education</b></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>

# UNIT 1

## Standards/Learning Targets

**1-PS4-1. Plan and conduct investigations to provide evidence that vibrating materials can make sound and that sound can make materials vibrate.** [Clarification Statement: Examples of vibrating materials that make sound could include tuning forks and plucking a stretched string. Examples of how sound can make matter vibrate could include holding a piece of paper near a speaker making sound and holding an object near a vibrating tuning fork.]

**1-PS4-2. Make observations to construct an evidence-based account that objects can be seen only when illuminated.** [Clarification Statement: Examples of observations could include those made in a completely dark room, a pinhole box, and a video of a cave explorer with a flashlight. Illumination could be from an external light source or by an object giving off its own light.]

**1-PS4-3. Plan and conduct an investigation to determine the effect of placing objects made with different materials in the path of a beam of light.** [Clarification Statement: Examples of materials could include those that are transparent (such as clear plastic), translucent (such as wax paper), opaque (such as cardboard), and reflective (such as a mirror).] [Assessment Boundary: Assessment does not include the speed of light.]

**1-PS4-4. Use tools and materials to design and build a device that uses light or sound to solve the problem of communicating over a distance.\*** [Clarification Statement: Examples of devices could include a light source to send signals, paper cup and string “telephones,” and a pattern of drum beats.] [Assessment Boundary: Assessment does not include technological details for how communication devices work.]

## 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 investigations

### Disciplinary Core Ideas

#### **PS4.A: Wave Properties**

- Sound can make matter vibrate, and vibrating matter can make sound. (1-PS4-1)

#### **PS4.B: Electromagnetic Radiation**

- Objects can be seen if light is available to illuminate them or if they give off their own light. (1-PS4-2)

collaboratively to produce data to serve as the basis for evidence to answer a question.

(1-PS4-1),(1-PS4-3)

### **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. (1- PS4-2)
- Use tools and materials provided to design a device that solves a specific problem. (1-PS4-4)

### **Scientific Investigations Use a Variety of Methods**

- Science investigations begin with a question. (1-PS4-1)
- Scientists use different ways to study the world. (1-PS4-1)

- Some materials allow light to pass through them, others allow only some light through and others block all the light and create a dark shadow on any surface beyond them, where the light cannot reach. Mirrors can be used to redirect a light beam. (Boundary: The idea that light travels from place to place is developed through experiences with light sources, mirrors, and shadows, but no attempt is made to discuss the speed of light.) (1- PS4-3)

### **PS4.C: Information Technologies and Instrumentation**

- People also use a variety of devices to communicate (send and receive information) over long distances. (1- PS4-4)

### **Crosscutting Concepts**

#### **Cause and Effect**

- Simple tests can be designed to gather evidence to support or refute student ideas about causes. (1-PS4-1),(1-PS4-2),(1-PS4-3)

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

- People depend on various technologies in their lives; human life would be very different without technology. (1-PS4-4)

### **Learning Objectives**

Students will understand that ...

- Light makes things look bright.
- You need some light to see.
- All light comes from a source.
- When light from a source gets to a surface, the surface looks bright.
- When light is blocked by an object, the surface behind the object looks dark, and we call this a shadow.
- When light is blocked by a material, the surface behind the material looks dark, and we call this a shadow.
- When all light passes through a material, the surface behind the material looks bright.

- When some light passes through a material, the surface behind the material looks medium bright.
- All sound comes from a source.
- A source makes a sound because part of it is vibrating

**Bay Head School  
SCIENCE CURRICULUM  
Unit Overview**

**Content Area:** Science Unit 2

**Grade Level:** First Grade

**Domain (Unit Title):** 1-LS1 From Molecules to Organisms: Structures and Processes

**Unit Summary:** In this unit of study, students develop an understanding of how plants and animals use their parts to help them survive, grow, and meet their needs. Students also need opportunities to *develop possible solutions*. As students develop possible solutions, one challenge will be to keep them from immediately implementing the first solution they think of and to instead think through the problem carefully before acting. Having students sketch their ideas or make a physical model is a good way to engage them in shaping their ideas to meet the requirements of the problem. The crosscutting concept of *structure and function* is called out as an organizing concept for the disciplinary core ideas. Students are expected to demonstrate grade-appropriate proficiency in *constructing explanations*, *designing solutions*, and in *developing and using models*. Students are 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.

**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.
<b>Personal Financial Literacy</b>	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.
<b>Career Awareness, Exploration, and Preparation</b>	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.
<b>Career and Technical Education</b>	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

**1-LS1-1. Use materials to design a solution to a human problem by mimicking how plants and/or animals use their external parts to help them survive, grow, and meet their needs.\*** [Clarification Statement: Examples of human problems that can be solved by mimicking plant or animal solutions could include designing clothing or equipment to protect bicyclists by mimicking turtle shells, acorn shells, and animal scales; stabilizing structures by mimicking animal tails and roots on plants; keeping out intruders by mimicking thorns on branches and animal quills; and, detecting intruders by mimicking eyes and ears.]

**1-LS1-2. Read texts and use media to determine patterns in behavior of parents and**

**offspring that help offspring survive.** [Clarification Statement: Examples of patterns of behaviors could include the signals that offspring make (such as crying, cheeping, and other vocalizations) and the responses of the parents (such as feeding, comforting, and protecting the offspring).]

**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.

- Use materials to design a device that solves a specific problem or a solution to a specific problem. (1-LS1-1)

**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.

- Read grade-appropriate texts and use media to obtain scientific information to determine patterns in the natural world. (1-LS1-2)

**Scientific Knowledge is Based on Empirical Evidence**

- Scientists look for patterns and order when making observations about the world. (1-LS1-2)

**Disciplinary Core Ideas**

**LS1.A: Structure and Function**

- All organisms have external parts. Different animals use their body parts in different ways to see, hear, grasp objects, protect themselves, move from place to place, and seek, find, and take in food, water and air. Plants also have different parts (roots, stems, leaves, flowers, fruits) that help them survive and grow. (1-LS1-1)

**LS1.B: Growth and Development of Organisms**

- Adult plants and animals can have young. In many kinds of animals, parents and the offspring themselves engage in behaviors that help the offspring to survive. (1-LS1-2)

**LS1.D: Information Processing**

- Animals have body parts that capture and convey different kinds of information needed for growth and survival. Animals respond to these inputs with behaviors that help them survive. Plants also respond to some external inputs. (1-LS1-1)

**Crosscutting Concepts**

**Learning Objectives**

<p><b>Patterns</b></p> <ul style="list-style-type: none"> <li>• Patterns in the natural world can be observed, used to describe phenomena, and used as evidence. (1-LS1-2)</li> </ul> <p><b>Structure and Function</b></p> <ul style="list-style-type: none"> <li>• The shape and stability of structures of natural and designed objects are related to their function(s). (1-LS1-1)</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>• Every human-made product is designed by applying some knowledge of the natural world and is built using materials derived from the natural world. (1-LS1-1)</li> </ul>	<p>Students will understand that ...</p> <ul style="list-style-type: none"> <li>• To survive, animals and plants need to get water, air, and food.</li> <li>• Animals and plants have structures that help them do what they need to do to survive.</li> <li>• To survive, animals and plants need to get water, air, and food, and to not be eaten.</li> <li>• Many animals use their sharp structures to make animals and plants easier to eat.</li> <li>• Animals and plants have defenses, structures that keep other animals from eating them.</li> <li>• Scientists can make things that copy animal or plant structures to solve human problems.</li> <li>• When plant and animal offspring grow up, they defend themselves in the same way as their parents. (3.3)</li> <li>• Some kinds of young offspring get help from their parents and other kinds of young offspring survive on their own.</li> </ul>
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**Bay Head School  
SCIENCE CURRICULUM  
Unit Overview**

**Content Area:** Science Unit 3 **Grade Level:** First Grade

**Domain (Unit Title):** 1-LS3 Heredity: Inheritance and Variation of Traits

**Unit Summary:** In this unit of study, students develop an understanding of how plants and animals use their external parts to help them survive, grow, and meet their needs, as well as how the behaviors of parents and offspring help offspring survive. The understanding that



young plants and animals are like, but not exactly the same as, their parents is developed. The crosscutting concept of *patterns* is called out as an organizing concept for the disciplinary core ideas. Students are expected to demonstrate grade-appropriate proficiency in *obtaining, evaluating, and communicating information* and *constructing explanations*. 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.

<p><b>21st Century Life &amp; Career Skills</b></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><b>Personal Financial Literacy</b></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><b>Career Awareness, Exploration, and Preparation</b></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><b>Career and Technical Education</b></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>

## UNIT 3

### Standards/Learning Targets

**1-LS3-1. Make observations to construct an evidence-based account that young plants and animals are like, but not exactly like, their parents.** [Clarification Statement: Examples of patterns could include features plants or animals share. Examples of observations could include leaves from the same kind of plant are the same shape but can differ in size; and, a particular breed of dog looks like its parents but is not exactly the same.] [Assessment Boundary: Assessment does not include inheritance or animals that undergo metamorphosis or hybrids.]

### 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 (firsthand or from media) to construct an evidence-based account for natural phenomena. (1-LS3-1)

#### Disciplinary Core Ideas

##### **LS3.A: Inheritance of Traits**

- Young animals are very much, but not exactly like, their parents. Plants also are very much, but not exactly, like their parents. (1-LS3-1)

##### **LS3.B: Variation of Traits**

- Individuals of the same kind of plant or animal are recognizable as similar but can also vary in many ways. (1-LS3-1)

#### Crosscutting Concepts

##### **Patterns**

- Patterns in the natural world can be observed, used to describe phenomena, and used as evidence. (1-LS3-1)

#### Learning Objectives

Students will ...

- To survive, animals and plants need to get water, air, and food.
- Animals and plants have structures that help them do what they need to do to survive.

- To survive, animals and plants need to get water, air, and food, and to not be eaten.
- Many animals use their sharp structures to make animals and plants easier to eat.
- Animals and plants have defenses, structures that keep other animals from eating them.
- Scientists can make things that copy animal or plant structures to solve human problems.
- When plant and animal offspring grow up, they defend themselves in the same way as their parents. (3.3)
- Some kinds of young offspring get help from their parents and other kinds of young offspring survive on their own.

**Bay Head School  
SCIENCE CURRICULUM  
Unit Overview**

**Content Area:** Science    Unit 4

**Grade Level:** First Grade

**Domain (Unit Title):** 1-ESS1-1 Earth's Place in the Universe

**Unit Summary:** In this unit of study, students observe, describe, and predict some patterns in the movement of objects in the sky. The crosscutting concept of *patterns* is called out as an organizing concept for the disciplinary core ideas. Students are expected to demonstrate grade-appropriate proficiency in *planning and carrying out investigations* and *analyzing and interpreting data*. Students are also expected to use these practices to demonstrate understanding of the core ideas.

**Primary Interdisciplinary Connections:** 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.

<b>21st Century Life &amp; Career Skills</b>	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.
<b>Personal Financial Literacy</b>	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.
<b>Career Awareness, Exploration, and Preparation</b>	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.
<b>Career and Technical Education</b>	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**

**1-ESS1-1. Use observations of the sun, moon, and stars to describe patterns that can be predicted.** [Clarification Statement: Examples of patterns could include that the sun and moon appear to rise in one part of the sky, move across the sky, and set; and stars other than our sun are visible at night but not during the day.] [Assessment Boundary: Assessment of star patterns is limited to stars being seen at night and not during the day.]

**1-ESS1-2. Make observations at different times of year to relate the amount of daylight to the time of year.** [Clarification Statement: Emphasis is on relative comparisons of the amount of daylight in the winter to the amount in the spring or fall.] [Assessment Boundary: Assessment is limited to relative amounts of daylight, not quantifying the hours or time of daylight]

**Performance Expectation**

<u>Science and Engineering Practices</u>	<u>Disciplinary Core Ideas</u>
<p><b>Planning and Carrying Out Investigations</b>            Planning and carrying out investigations to answer questions or test solutions to problems in K–2 builds on prior experiences and progresses to simple investigations, based on fair tests, which provide data to support explanations or design solutions.</p> <ul style="list-style-type: none"> <li>• Make observations (firsthand or from media) to collect data that can be used to make comparisons. (1-ESS1- 2)</li> </ul> <p><b>Analyzing and Interpreting Data</b>            Analyzing data in K–2 builds on prior experiences and progresses to collecting, recording, and sharing observations.</p> <ul style="list-style-type: none"> <li>• Use observations (firsthand or from media) to describe patterns in the natural world in order to answer scientific questions. (1-ESS1-1)</li> </ul>	<p><b>ESS1.A: The Universe and its Stars</b></p> <ul style="list-style-type: none"> <li>• Patterns of the motion of the sun, moon, and stars in the sky can be observed, described, and predicted. (1-ESS1-1)</li> </ul> <p><b>ESS1.B: Earth and the Solar System</b></p> <ul style="list-style-type: none"> <li>• Seasonal patterns of sunrise and sunset can be observed, described, and predicted. (1- ESS1-2)</li> </ul>

<u>Crosscutting Concepts</u>	<u>Learning Objectives</u>
<p><b>Patterns</b></p> <ul style="list-style-type: none"> <li>• Patterns in the natural world can be</li> </ul>	<p>Students will understand that ...</p>

<p>observed, used to describe phenomena, and used as evidence. (1-ESS1-1),(1- ESS1-2)</p> <p><b>Scientific Knowledge Assumes an Order and Consistency in Natural Systems</b></p> <ul style="list-style-type: none"> <li>• Science assumes natural events happen today as they happened in the past. (1- ESS1-1)</li> <li>• Many events are repeated. (1-ESS1-1)</li> </ul>	<ul style="list-style-type: none"> <li>• We can see the sun in the sky during the daytime and the stars in the sky during the nighttime.</li> <li>• Right now, the sky looks different to people in different places on Earth.</li> <li>• Earth is round like a ball.</li> <li>• It is daytime for people in places on Earth that are facing the sun.</li> <li>• It is nighttime for people in places on Earth that are not facing the sun.</li> <li>• The sun looks like it is in different places in the sky at different times.</li> <li>• As Earth spins, we face different directions, so the sky looks different to us.</li> <li>• Daytime is shorter and nighttime is longer in winter than in other seasons.</li> </ul>
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<p><b>Bay Head School SCIENCE CURRICULUM Unit Overview</b></p>	
<p><b>Content Area:</b> Science Unit 5</p>	<p><b>Grade Level:</b> First Grade</p>
<p><b>Domain (Unit Title):</b> K-2-ETS1 Engineering Design</p>	
<p><b>Primary Interdisciplinary Connections:</b> Mathematics, Language Arts Literacy, Science, Social Studies. All of the NJ State Standards may be found on the New Jersey state website.</p>	
<p><b>21 Century Themes:</b> 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>	

<b>21st Century Life &amp; Career Skills</b>	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.
<b>Personal Financial Literacy</b>	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.
<b>Career Awareness, Exploration, and Preparation</b>	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.
<b>Career and Technical Education</b>	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 5**

**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)

### Crosscutting Concepts

**Structure and Function**

### Learning Objectives

Students will understand that ...



- The shape and stability of structures of natural and designed objects are related to their function(s). (K-2-ETS1-2)

- Asking questions, making observations, and gathering information are helpful in thinking about problems.
- The shape and stability of structures of natural and designed objects are related to their function(s).
- 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

## Suggested Accommodation For All Units

### Special Education/504 Plans/Students with Disabilities:

- 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).