

Branchburg Township Public Schools

Office of Curriculum and Instruction

Grade 2 Science Curriculum



Adopted by the Board of Education October 2022

This curriculum is aligned with the 2020 New Jersey Student Learning Standards in Science

Curriculum Scope and Sequence

Content Area	Science	Course Title/Grade Level:	Second Grade
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Topic/Unit Name		Suggested Pacing
<u>Topic/Unit #1</u>	Evolution: Unity and Diversity	Mid.Oct.- Mid. Nov.
<u>Topic/Unit #2</u>	Matter and its Interactions	Mid. Nov.- Jan.
<u>Topic/Unit #3</u>	Earth's Place and Systems	March
<u>Topic/Unit #4</u>	Ecosystems: Interactions, Energy, and Dynamics	End of May-June

Topic/Unit 1 Title	Evolution: Unity and Diversity	Approximate Pacing	Mid. Oct.- Mid. Nov.
STANDARDS			
NJSLS Science			
<p style="text-align: center;">Students will be able to...</p> <p>Students who demonstrate understanding can: 2-LS4-1. Make observations of plants and animals to compare the diversity of life in different habitats. <i>Clarification Statement: Emphasis is on the diversity of living things in each of a variety of different habitats.</i></p>	<p style="text-align: center;">Students will know...</p> <p>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)</p>	<p style="text-align: center;">Crosscutting Concepts</p> <p>Patterns Patterns in the natural and human designed world can be observed, used to describe phenomena, and used as evidence.</p> <p>Systems and System Models Systems in the natural and designed world have parts that work together.</p>	
Interdisciplinary Connections:		CS & DT:	
<p>ELA:</p> <ul style="list-style-type: none"> ● W.2.7 Participate in shared research and writing projects (<i>example: read a number of books on a single topic to produce a report; record science observations</i>). ● W2.8 Recall information from experiences or gather information from provided sources to answer a question. (<i>example: Students are asked to make a claim based on the phenomenon</i>) 	<p>8.1.2.NI.1: Model and describe how individuals use computers to connect to other individuals, places, information, and ideas through a network. <i>Example: Students will choose and research a living thing and its habitat through a variety of media. Google Classroom links will be provided.</i></p> <p>8.1.2.DA.1: Collect and present data, including climate change data, in various visual formats.</p> <p>8.1.2.DA.2: Store, copy, search, retrieve, modify, and delete data using a computing device. <i>Example: Students may present their research through a digital platform such as Google Slides or Flip grid.</i></p>		
CLKS:			
<ul style="list-style-type: none"> ● 9.1.2.CR.1: Recognize ways to volunteer in the classroom, school and community. <i>Example: Students learn the rules and procedures of working in a small group toward a common goal. Good citizens participate in a positive way within their community.</i> ● 9.1.2.CAP.1: Make a list of different types of jobs and describe the skills associated with each job. <i>Example: Students visit Lord Stirling park to learn and participate in conversations about the different jobs associated with nature.</i> 			
UNIT/TOPIC ESSENTIAL QUESTIONS AND ENDURING OBJECTIVES/UNDERSTANDINGS			



illustration by Jeff Grader / property of Delta Education

Teacher introduces the Natural Phenomenon Photo: On a spring day near the pond this is what one might see. Observe the picture carefully and ask questions about what you see. “Notice the fish and how it is in the water and the deer is on the land, I am wondering if they could live in opposite places. Could the fish live where the deer does and could the deer live in the water?”

STUDENT LEARNING OBJECTIVES

Key Knowledge

Students will know:

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)

Process/Skills/Procedures/Application of Key Knowledge

Students will be able to:

Make observations of plants and animals to compare the diversity of life in different habitats.

ASSESSMENT OF LEARNING

Summative Assessment (Assessment at the end of the learning period)

Students will develop a model and construct an argument with evidence to explain the science behind the phenomena using the Disciplinary Core Ideas, Cross Cutting Concepts, and Science and Engineering Practices

Formative Assessments (Ongoing assessments during the learning period to inform instruction)	Models, claims, evidence, data and research, planning and carrying out investigations, classroom discussions, anecdotal notes
Alternative Assessments (Any learning activity or assessment that asks students to <i>perform</i> to demonstrate their knowledge, understanding and proficiency)	Discovery Education Board activities, worksheets/activities, PBL (extensions)
Benchmark Assessments (used to establish baseline achievement data and measure progress towards grade level standards; given 2-3 X per year)	2nd Grade Benchmark (given Oct & April)
RESOURCES	
<ul style="list-style-type: none"> ● Core instructional materials: <ul style="list-style-type: none"> ○ Unit 1 Overview ● Teacher Created Units <ul style="list-style-type: none"> ○ Unit 1 Lessons 	
Supplemental materials: <ul style="list-style-type: none"> ● NGSS ● Core Concepts Sheet ● Discovery Education (through classlink) ● BrainPop Jr. 	
Modifications for Learners	
See appendix	

Topic/Unit 2 Title	Matter and its Interactions	Approximate Pacing	Mid. Nov.- Jan.
STANDARDS			
NJSLS Science			
<p style="text-align: center;">Students will be able to..</p> <p>Students who demonstrate understanding can:</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p>	<p style="text-align: center;">Students will know...</p> <p>PS1.A: Structure and Properties of Matter</p> <ul style="list-style-type: none"> • Different kinds of matter exist and many of them can be either solid or liquid, depending on the temperature. Matter can be described and classified by its observable properties. (2-PS1-1) • Different properties are suited to different purposes. (2-PS1-2), (2-PS1-3) • A great variety of objects can be built up from a small set of pieces. (2-PS1-3) <p>PS1.B: Chemical Reactions</p> <ul style="list-style-type: none"> • 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) 	<p style="text-align: center;">Crosscutting Concepts</p> <p>Patterns</p> <ul style="list-style-type: none"> • Patterns in the natural and human designed world can be observed. (2-PS1-1) <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>----- -----<i>Connections to Engineering, Technology, and Applications of Science</i> -----</p> <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) 	

Interdisciplinary Connections:	CS & DT:
<ul style="list-style-type: none"> ● RI. 2.3 Describe the connection between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text. (Students will note the connections between the change in properties - water to ice to water) ● W.2.7 Participate in shared research and writing projects (Students will read a number of sources (digital, print, articles, books) on a single topic to produce a report; record science observations) 	<ul style="list-style-type: none"> ● 8.2.2.ED.2: Collaborate to solve a simple problem, or to illustrate how to build a product using the design process. Engineering design is a creative process for meeting human needs or wants that can result in multiple solutions. <ul style="list-style-type: none"> ○ <i>Example: Students learn that different properties are suited to different purposes. Engineers need to know what materials to use for what purposes when designing homes, bridges, buildings etc.</i> ● 8.2.2.ED.3 Select and use appropriate tools and materials to build a product using the design process. <ul style="list-style-type: none"> ○ <i>Example: Students work to create a solution to the house issue based on what they have learned and discovered about different types of materials. They think about the best materials for different areas to combat weather as well as making choices about sturdy materials.</i>
CLKS:	
<ul style="list-style-type: none"> ● 9.4.2.CT.3: Use a variety of types of thinking to solve problems (e.g., inductive, deductive). <i>Example: Students work to create a solution to the house issue based on what they have learned and discovered about different types of materials. Engineers need to use appropriate tools and materials to build community structures. This is what engineers do. They respond to the needs of the community.</i> ● 9.4.2.CI.2: Demonstrate originality and inventiveness in work (e.g., 1.3A.2CR1a). <i>Example: Students participate in a gallery walk and share their shelters they have created using scientific language. They discuss the materials they used and why they used them.</i> 	
UNIT/TOPIC ESSENTIAL QUESTIONS AND ENDURING OBJECTIVES/UNDERSTANDINGS	
<p>Bend 1: On a cold April morning two water troughs of different sizes were observed. In the smaller trough there was a layer of ice on top of the water; in the larger trough no ice was present. (2-PS1A.1 & 2-PS1B.1)</p>	



Bend 2: [Images of the three little pigs' homes.](#)

<https://docs.google.com/a/branchburg.k12.nj.us/document/d/1F5UhH1SW0zjv6IRrBWYhRkpmD3IJNDkxOt3hfFuqlCM/edit?usp=sharing>

STUDENT LEARNING OBJECTIVES

Key Knowledge

Students will know:

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

- Different properties are suited to different purposes. (2-PS1-2), (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)

Process/Skills/Procedures/Application of Key Knowledge

Students will be able to:

- **Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.**
- **Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for the intended purpose.**
- **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.**
- **Construct an argument with evidence that some changes caused by heating or cooling can be reversed and some cannot.**

ASSESSMENT OF LEARNING

Summative Assessment

(Assessment at the end of the learning period)

Students will develop a model and construct an argument with evidence to explain the science behind the phenomena using the Disciplinary Core Ideas, Cross Cutting Concepts, and Science and Engineering Practices

Formative Assessments (Ongoing assessments during the learning period to inform instruction)	Models, claims, evidence, data and research, planning and carrying out investigations, classroom discussions, anecdotal notes
Alternative Assessments (Any learning activity or assessment that asks students to <i>perform</i> to demonstrate their knowledge, understanding and proficiency)	Discovery Education Board activities, worksheets/activities, PBL (extensions)
Benchmark Assessments (used to establish baseline achievement data and measure progress towards grade level standards; given 2-3 X per year)	2nd Grade Benchmark (given Oct & April)
RESOURCES	
<ul style="list-style-type: none"> ● Core instructional materials: <ul style="list-style-type: none"> ○ Unit 2 Overview ● Teacher Created Units <ul style="list-style-type: none"> ○ Unit 2 Lessons 	
Supplemental materials: <ul style="list-style-type: none"> ● NGSS ● Core Concepts Sheet ● Discovery Education (Through classlink) ● BrainPop Jr. ● Kidwind Mini Wind Turbine 	
Modifications for Learners	
See appendix	

Topic/Unit 3 Title	Earth's Place and Systems	Approximate Pacing	March
STANDARDS			
NJSLS Science			
<p style="text-align: center;">Students will be able to...</p> <p>Students who demonstrate understanding can:</p> <p>2-ESS1-1. Use information from several sources to provide evidence that Earth events can occur quickly or slowly. <i>Clarification Statement: Examples of events and timescales could include volcanic explosions and earthquakes which happen quickly and erosion of rocks, which occurs slowly.</i> <i>Assessment Boundary: Assessment does not include quantitative measurements of timescales.</i></p> <p>2-ESS2-1. Compare multiple solutions designed to slow or prevent wind or water from changing the shape of the land. <i>Clarification Statement: Example 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.</i></p> <p>2-ESS2-2. Develop a model to represent the shapes and kinds of land and bodies of water in an area. <i>Assessment Boundary: Assessment does not include quantitative scaling in models.</i></p> <p>2-ESS2-3. Obtain information to identify where water is found on Earth and that it can be solid or liquid.</p> <p>K-2-ETS1-1. Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.</p> <p>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.</p>	<p style="text-align: center;">Students will know...</p> <p>ESS1.C: The History of Planet Earth</p> <ul style="list-style-type: none"> Some events happen very quickly; others occur very slowly, over a time period much longer than one can observe. (2-ESS1-1) <p>ESS2.A: Earth Materials and Systems</p> <ul style="list-style-type: none"> Wind and water can change the shape of the land. (2-ESS2-1) <p>ESS2.B; Plate Tectonics and Large-Scale System Interactions</p> <ul style="list-style-type: none"> Maps show where things are located. Once can map the shapes and kinds of land and water in any area. (2-ESS2-2) <p>ESS2.C: The Roles of Water in Earth's Surface Processes</p> <ul style="list-style-type: none"> Water is found in the oceans, rivers, lakes, and ponds. Water exists as solid ice and in liquid form. (2-ESS2-3) <p>ETS1.A: Defining and Delimiting Engineering Problems</p> <ul style="list-style-type: none"> 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) <p>ETS1.B: Developing Possible Solutions</p>	<p style="text-align: center;">Crosscutting Concepts</p> <p>Stability and Change</p> <ul style="list-style-type: none"> Things may change slowly or rapidly. (2-ESS1-1), (2-ESS2-1) <p>Patterns</p> <ul style="list-style-type: none"> Patterns in the natural world can be observed. (2-ESS2-2), (2-ESS2-3) <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>-----</p> <p style="text-align: center;"><i>Connections to Engineering, Technology, and Applications of Science</i></p> <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>-----</p> <p style="text-align: center;"><i>Connections to Nature of Science</i></p> <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>K-2-ETS1-3. Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.</p>	<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. (K-2-ETS1-2) <p>ETS1.C: Optimizing the Design Solution</p> <ul style="list-style-type: none"> • 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), (k-2ETS1-3) 	
<p>Interdisciplinary Connections:</p>	<p>CS & DT:</p>	
<p>W.2.2. Write informative/explanatory texts in which they introduce a topic, use evidence-based facts and definitions to develop points, and provide a conclusion. (Students will use information from multiple sources and from their investigations to make a claim with evidence as to why the playground looks different on a sunny day than a rainy one and how to solve the problem so they can have more outdoor recess days)</p> <p>SL1. Prepare for and participate effectively in a range of conversations and collaborations with diverse partners, building on others' ideas and expressing their own clearly and persuasively. (Students will share within their group and upon completion of the project, share as a group with the whole class)</p>	<p>8.2.2.ED.1: Communicate the function of a product or device. 8.2.2.ED.2: Collaborate to solve a simple problem, or to illustrate how to build a product using the design process. 8.2.2.ED.3: Select and use appropriate tools and materials to build a product using the design process. <i>Example: Students come up with a solution to a flooding issue on the playground. They work to design it, building models and test designs.</i></p>	
<p>CLKS:</p>		
<ul style="list-style-type: none"> • 9.4.2.CT.1: Gather information about an issue, such as climate change, and collaboratively brainstorm ways to solve the problem (e.g., K-2-ETS1-1, 6.3.2.GeoGI.2). <i>Example: Students look at and observe photos of the school's playground during different days (sunny, rainy). Students record in their journals and participate in discussions regarding the differences between the playground on a sunny day versus a rainy day.</i> • 9.4.2.CT.2: Identify possible approaches and resources to execute a plan (e.g., 1.2.2.CR1b, 8.2.2.ED.3). 		

Example: Students participate in discussions regarding building a model of the playground to help prevent the land from being changed by weather. Students sketch their model in their journal.

- 9.4.2.CT.3: Use a variety of types of thinking to solve problems (e.g., inductive, deductive).

Example: Students build a model playground and test the effects of wind and water on the Earth. They come up with possible solutions to a flooding issue on the playground. They work to design it, building models and test designs.

UNIT/TOPIC ESSENTIAL QUESTIONS AND ENDURING OBJECTIVES/UNDERSTANDINGS

Scenario: Our playground looks different after a heavy thunderstorm than on a sunny and calm day.



STUDENT LEARNING OBJECTIVES

Key Knowledge

Students will know:

- Some events happen very quickly; others occur very slowly, over a time period much longer than one can observe. (2-ESS1-1)
- Wind and water can change the shape of the land. (2-ESS2-1)

Process/Skills/Procedures/Application of Key Knowledge

Students will be able to:

- **Use information from several sources to provide evidence that Earth events can occur quickly or slowly.**
- **Compare multiple solutions designed to slow or prevent wind or water from changing the shape of the land.**
- **Develop a model to represent the shapes and kinds of land and bodies of water in an area.**

- Maps show where things are located. Once can map the shapes and kinds of land and water in any area. (2-ESS2-2)
- Water is found in the oceans, rivers, lakes, and ponds. Water exists as solid ice and in liquid form. (2-ESS2-3)
- A situation that people want to change or create can be approached as a problem to be solved through engineering. (K-2-ETS1-1)

- **Obtain information to identify where water is found on Earth and that it can be solid or liquid.**
- **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.**
- **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.**
- **Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.**

ASSESSMENT OF LEARNING

Summative Assessment
(Assessment at the end of the learning period)

Students will develop a model and construct an argument with evidence to explain the science behind the phenomena using the Disciplinary Core Ideas, Cross Cutting Concepts, and Science and Engineering Practices

Formative Assessments
(Ongoing assessments during the learning period to inform instruction)

Models, claims, evidence, data and research, planning and carrying out investigations, classroom discussions, anecdotal notes

Alternative Assessments (Any learning activity or assessment that asks students to *perform* to demonstrate their knowledge, understanding and proficiency)

Discovery Education Board activities, worksheets/activities, PBL (extensions)

Benchmark Assessments
(used to establish baseline achievement data and measure progress towards grade level standards; given 2-3 X per year)

[2nd Grade Benchmark](#) (given Oct & April)

RESOURCES

- **Core instructional materials:**
 - [Unit 3 Overview](#)
- **Teacher Created units**
 - [Unit 3 Lessons](#)
 - [Playground Pictures](#)

Supplemental materials:

- [NGSS](#)
- [Unit 3 Extension Lessons](#)

- [Core Concepts Sheet](#)
- Discovery Education (Through classlink)
- [BrainPop Jr.](#)
- [Kidwind Mini Wind Turbine](#)

Modifications for Learners

See [appendix](#)

Topic/Unit 4 Title	Ecosystems: Interactions, Energy, and Dynamics	Approximate Pacing	End of May-June
STANDARDS			
NJSLS Science			
<p style="text-align: center;">Students will be able to...</p> <p>Students who demonstrate understanding can:</p> <p>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.]</p> <p>2-LS2-2. Develop a simple model that mimics the function of an animal in dispersing seeds or pollinating plants.*</p> <p>K-2-ETS1-1. Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.</p> <p>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.</p> <p>K-2-ETS1-3. Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.</p>	<p style="text-align: center;">Students will know...</p> <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.A: Defining and Delimiting Engineering Problems</p> <ul style="list-style-type: none"> 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) <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. (K-2-ETS1-2), (secondary to 2-LS2-2) <p>ETS1.C: Optimizing the Design Solution</p> <ul style="list-style-type: none"> Because there is always more than one possible solution to a problem, it is useful to compare and test designs. (K-2-ETS1-3) 	<p style="text-align: center;">Crosscutting Concepts</p> <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>Cause and Effect</p> <ul style="list-style-type: none"> Events have causes that generate observable patterns. (2-LS2-1) <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). (2-LS2-2) 	
Interdisciplinary Connections:	CS & DT:		

<p>W.2.8 Recall information from experiences or gather information from provided sources to answer a question. (K-2-ETS1-1),(K-2-ETS1-3), (2-LS2-1) <i>Example: Students are researching, watching digital media, reading articles to gather information about bees and how to increase the bee population.</i></p>	<p>8.1.2.CS.1: Select and operate computing devices that perform a variety of tasks accurately and quickly based on user needs and preferences. 8.2.2.ED.2: Collaborate to solve a simple problem, or to illustrate how to build a product using the design process. 8.2.2.ED.3: Select and use appropriate tools and materials to build a product using the design process. 8.2.2.ITH.5: Design a solution to a problem affecting the community in a collaborative team and explain the intended impact of the solution. <i>Example: Students are learning that a situation that people want to change or create can be approached as a problem to be solved through engineering by creating a solution to the decline in the bee population. Students gather information using the internet and various media.</i></p>
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CLKS:

- 9.4.2.CT.2: Identify possible approaches and resources to execute a plan (e.g., 1.2.2.CR1b, 8.2.2.ED.3).
- 9.1.2.CAP.1: Make a list of different types of jobs and describe the skills associated with each job.
Example: Students are using their knowledge to help increase the bee populations- scientists and conservationists use information and try to solve the problems with innovative designs or ideas.
- 9.4.2.CI.1: Demonstrate openness to new ideas and perspectives (e.g., 1.1.2.CR1a, 2.1.2.EH.1, 6.1.2.CivicsCM.2).
Example: Students are learning that a situation that people want to change or create can be approached as a problem to be solved through engineering by creating a solution to the decline in the bee population.

UNIT/TOPIC ESSENTIAL QUESTIONS AND ENDURING OBJECTIVES/UNDERSTANDINGS

Phenomenon
In the last 5 years 30% of the national bee population has disappeared and nearly a third of all bee colonies in the U.S. have died. Without bees, humans will not be able to exist.

STUDENT LEARNING OBJECTIVES

Key Knowledge	Process/Skills/Procedures/Application of Key Knowledge
<p>Students will know: 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>Defining and Delimiting Engineering Problems</p> <ul style="list-style-type: none"> ● A situation that people want to change or create can be approached as a problem to be solved through engineering. (K-2-ETS1-1) 	<p>Students will be able to: Plan and conduct an investigation to determine if plants need sunlight and water to grow. Develop a simple model that mimics the function of an animal in dispersing seeds or pollinating plants. 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. Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.</p>

- 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)

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), (secondary to 2-LS2-2)

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)

ASSESSMENT OF LEARNING

Summative Assessment

(Assessment at the end of the learning period)

Students will develop a model and construct an argument with evidence to explain the science behind the phenomena using the Disciplinary Core Ideas, Cross Cutting Concepts, and Science and Engineering Practices

Formative Assessments

(Ongoing assessments during the learning period to inform instruction)

Models, claims, evidence, data and research, planning and carrying out investigations, classroom discussions, anecdotal notes

Alternative Assessments (Any learning activity or assessment that asks students to *perform* to demonstrate their knowledge, understanding and proficiency)

Discovery Education Board activities, worksheets/activities, PBL (extensions)

Benchmark Assessments

(used to establish baseline achievement data and measure

[2nd Grade Benchmark](#) (given Oct & April)

RESOURCES

progress towards grade level standards; given 2-3 X per year)

Core instructional materials:

- **Teacher Created Units**
 - **Unit 4 Lessons**

Supplemental materials:

- [NGSS](#)
- [Core Concepts Sheet](#)
- [Unit 4 Extension Lessons](#)
- Discovery Education (Through classlink)
- [BrainPop Jr.](#)

Modifications for Learners

See [appendix](#)