Second Grade

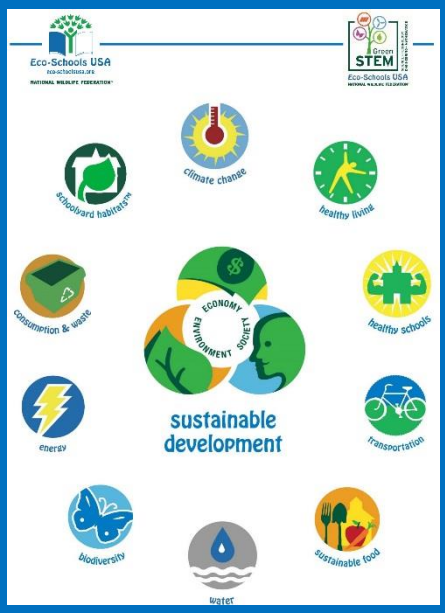
The performance expectations in second grade help students formulate answers to questions such as: "How does land change and what are some things that cause it to change? What are the different kinds of land and bodies of water? How are materials similar and different from one another, and how do the properties of the materials relate to their use? What do plants need to grow? How many types of living things live in a place?" Second grade performance expectations include PS1, LS2, LS4, ESS1, ESS2, and ETS1 Disciplinary Core Ideas from the NRC Framework.

Students are expected to develop an understanding of what plants need to grow and how plants depend on animals for seed dispersal and pollination. Students are also expected to compare the diversity of life in different habitats. An understanding of observable properties of materials is developed by students at this level through analysis and classification of different materials. Students are able to apply their understanding of the idea that wind and water can change the shape of the land to compare design solutions to slow or prevent such change. Students are able to 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 concepts of patterns; cause and effect; energy and matter; structure and function; stability and change; and influence of engineering, technology, and science on society and the natural world are called out as organizing concepts for these disciplinary core ideas.

In the second grade performance expectations, students are expected to demonstrate grade-appropriate proficiency in developing and using models, planning and carrying out investigations, analyzing and interpreting data, constructing explanations and designing solutions, engaging in argument from evidence, and obtaining, evaluating, and communicating information. Students are expected to use these practices to demonstrate understanding of the core ideas.

Eco-Schools USA Pathway Alignment

The National Wildlife Federation's Eco-Schools USA program has aligned their program pathways of sustainability to the NGSS. As a part of the Eco-Schools 7-Step Framework, linking to the curriculum, is a priority. This alignment is designed to highlight the natural connections between our national standards document and the Eco-Schools USA program.



Our program icons are used to denote pathway connections to the NGSS Performance Expectations. Not every topic, with its set of Performance Expectations are a fit with the Eco-Schools USA program and in that case an alignment will not be present.

Green STEM is an initiative of the National Wildlife Federation's Eco-Schools USA program and is focused on identifying best practice in the STEM fields as it relates to environment-based learning. These elements include:

- Problem-based learning
- Utilizing the school, both inside and out, as a learning laboratory
- The incorporation of two or more STEM disciplines within a single lesson, whole curricula, a set of standards, etc.
- A Maker mentality – design/create/solve
- A commitment to service learning
- An inclusive culture – where all students can learn and all students can participate

2-PS1 Matter and its Interactions

2-PS1 Matter and its Interactions

Students who demonstrate understanding can:

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.]

The performance expectations above were developed using the following elements from the NRC document A Framework for K-12 Science Education:

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 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)

Connections to Nature of Science

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

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

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. (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)

Crosscutting Concepts

Patterns

- Patterns in the natural and human designed world can be observed. (2-PS1-1)

Cause and Effect

- 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)

Energy and Matter

- Objects may break into smaller pieces and be put together into larger pieces, or change shapes. (2-PS1-3)

Connections to Engineering, Technology, and Applications of Science

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

- Every human-made product is designed by applying some knowledge of the natural world and is built by using natural materials. (2-PS1-2)

ECO-SCHOOLS USA PATHWAY ALIGNMENT

2-PS1-1, 2-PS1-2, 2-PS1-3, 2-PS1-4

While students are exploring solutions to reduce and improve their consumption and waste habits, this is an opportunity to use the reusable items for students to explore the various properties of matter and use these same items to assemble and disassemble objects for different purposes based on the properties of that matter. There are multiple opportunities to collect and record observable and measurable data.

Connections to other DCIs in second grade: N/A

Articulation of DCIs across grade-bands: **4.ESS2.A** (2-PS1-3); **5.PS1.A** (2-PS1-1),(2-PS1-2),(2-PS1-3); **5.PS1.B** (2-PS1-4); **5.LS2.A** (2-PS1-3)

Common Core State Standards Connections:

ELA/Literacy –

RI.2.1 Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text. (2-PS1-4)

RI.2.3 Describe the connection between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text. (2-PS1-4)

RI.2.8 Describe how reasons support specific points the author makes in a text. (2-PS1-2),(2-PS1-4)

W.2.1 Write opinion pieces in which they introduce the topic or book they are writing about, state an opinion, supply reasons that support the opinion, use linking words (e.g., because, and, also) to connect opinion and reasons, and provide a concluding statement or section. (2-PS1-4)

W.2.7 Participate in shared research and writing projects (e.g., read a number of books on a single topic to produce a report; record science observations). (2-PS1-1),(2-PS1-2),(2-PS1-3)

W.2.8 Recall information from experiences or gather information from provided sources to answer a question. (2-PS1-1),(2-PS1-2),(2-PS1-3)

Mathematics –

MP.2 Reason abstractly and quantitatively. (2-PS1-2)

MP.4 Model with mathematics. (2-PS1-1),(2-PS1-2)

MP.5 Use appropriate tools strategically. (2-PS1-2)

2.MD.D.10 Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems using information presented in a bar graph. (2-PS1-1),(2-PS1-2)

*The performance expectations marked with an asterisk integrate traditional science content with engineering through a Practice or Disciplinary Core Idea.

2-LS2 Ecosystems: Interactions, Energy, and Dynamics

2-LS2 Ecosystems: Interactions, Energy, and Dynamics

Students who demonstrate understanding can:

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.*

The performance expectations above were developed using the following elements from the NRC document A Framework for K-12 Science Education:

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 simple model based on evidence to represent a proposed object or tool. (2-LS2-2)

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 serve as the basis for evidence to answer a question. (2-LS2-1)

Disciplinary Core Ideas

LS2.A: Interdependent Relationships in Ecosystems

- 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)

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. (secondary to 2-LS2-2)

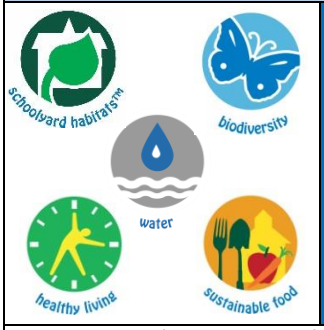
Crosscutting Concepts

Cause and Effect

- 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)



ECO-SCHOOLS USA PATHWAY ALIGNMENT

2-LS2-1 and 2-LS2-2

Both of the Performance Expectations lend themselves to high student engagement when performed outdoors. Whether using your certified Schoolyard Habitat™ vegetable garden or sustainable food garden to investigate plant needs for sunlight and water. Through this process students will also be caring for their gardens which includes learning about water conservation and collecting and recording observable and measurable data related to growth and weather.

As students work to address the Biodiversity pathway this would be a logical time to design and create models that mimic the function of animals dispersing and or pollinating plants.

Connections to other DCIs in second grade: N/A

Articulation of DCIs across grade-bands: **K.LS1.C** (2-LS2-1); **K-ESS3.A** (2-LS2-1); **K.ETS1.A** (2-LS2-2); **5.LS1.C** (2-LS2-1); **5.LS2.A** (2-LS2-2)

Common Core State Standards Connections:

ELA/Literacy –

W.2.7 Participate in shared research and writing projects (e.g., read a number of books on a single topic to produce a report; record science observations). (2-LS2-1)

W.2.8 Recall information from experiences or gather information from provided sources to answer a question. (2-LS2-1)

SL.2.5 Create audio recordings of stories or poems; add drawings or other visual displays to stories or recounts of experiences when appropriate to clarify ideas, thoughts, and feelings. (2-LS2-2)

Mathematics –

MP.2 Reason abstractly and quantitatively. (2-LS2-1)

MP.4 Model with mathematics. (2-LS2-1),(2-LS2-2)

MP.5 Use appropriate tools strategically. (2-LS2-1)

2.MD.D.10 Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems. (2-LS2-2)

*The performance expectations marked with an asterisk integrate traditional science content with engineering through a Practice or Disciplinary Core Idea.

2-LS4 Biological Evolution: Unity and Diversity

2-LS4 Biological Evolution: Unity and Diversity

Students who demonstrate understanding can:

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.]

The performance expectations above were developed using the following elements from the NRC document A Framework for K-12 Science Education:

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 which can be used to make comparisons. (2-LS4-1)

Connections to Nature of Science

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

ECO-SCHOOLS USA PATHWAY ALIGNMENT

2-LS4-1

As students begin to grasp the similarities and differences between varieties of plants and animals use the school grounds to explore the concept of biodiversity. What level of biodiversity exists? Do the students have a biodiverse school yard to observe? Students need multiple exposures to concepts in order for that content to make it into long term memory, thus allowing students to learn outside and experience the concept first hand is another tool for you to use.

Connections to other DCIs in second grade: N/A

Articulation of DCIs across grade-bands: **3.LS4.C** (2-LS4-1); **3.LS4.D** (2-LS4-1); **5.LS2.A** (2-LS4-1)

Common Core State Standards Connections:

ELA/Literacy –

W.2.7 Participate in shared research and writing projects (e.g., read a number of books on a single topic to produce a report; record science observations). (2-LS4-1)

W.2.8 Recall information from experiences or gather information from provided sources to answer a question. (2-LS4-1)

Mathematics –

MP.2 Reason abstractly and quantitatively. (2-LS4-1)

MP.4 Model with mathematics. (2-LS4-1)

2.MD.D.10 Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems. (2-LS4-1)

*The performance expectations marked with an asterisk integrate traditional science content with engineering through a Practice or Disciplinary Core Idea.

2-ESS1 Earth's Place in the Universe

2-ESS1 Earth's Place in the Universe

Students who demonstrate understanding can:

2-ESS1-1. Make observations from media to construct an evidence-based account 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.]

The performance expectations above were developed using the following elements from the NRC document A Framework for K-12 Science Education:

Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts
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-ESS1-1)	**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)	**Stability and Change** ▪ Things may change slowly or rapidly. (2-ESS1-1)

Connections to other DCIs in second grade: N/A

Articulation of DCIs across grade-bands: **3.LS2.C** (2-ESS1-1); **4.ESS1.C** (2-ESS1-1); **4.ESS2.A** (2-ESS1-1)

Common Core State Standards Connections:

ELA/Literacy –

RI.2.1 Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text. (2-ESS1-1)
RI.2.3 Describe the connection between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text. (2-ESS1-1)
W.2.6 With guidance and support from adults, use a variety of digital tools to produce and publish writing, including in collaboration with peers. (2-ESS1-1)
W.2.7 Participate in shared research and writing projects (e.g., read a number of books on a single topic to produce a report; record science observations). (2-ESS1-1)
W.2.8 Recall information from experiences or gather information from provided sources to answer a question. (2-ESS1-1)
SL.2.2 Recount or describe key ideas or details from a text read aloud or information presented orally or through other media. (2-ESS1-1)

Mathematics –

MP.2 Reason abstractly and quantitatively. (2-ESS1-1)
MP.4 Model with mathematics. (2-ESS1-1)
2.NBT.A Understand place value. (2-ESS1-1)

*The performance expectations marked with an asterisk integrate traditional science content with engineering through a Practice or Disciplinary Core Idea.

2-ESS2 Earth's Systems

2-ESS2 Earth's Systems

Students who demonstrate understanding can:

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.]

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.]

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

The performance expectations above were developed using the following elements from the NRC document A Framework for K-12 Science Education:

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)

Crosscutting Concepts

Patterns
- Patterns in the natural world can be observed. (2-ESS2-2),(2-ESS2-3)

Stability and Change
- Things may change slowly or rapidly. (2-ESS2-1)

Connections to Engineering, Technology, and Applications of Science

Influence of Engineering, Technology, and Science on Society and the Natural World
- Developing and using technology has impacts on the natural world. (2-ESS2-1)

Connections to Nature of Science

Science Addresses Questions About the Natural and Material World
- Scientists study the natural and material world. (2-ESS2-1)

ECO-SCHOOLS USA PATHWAY ALIGNMENT

2-ESS2-1

How can students prevent their Schoolyard Habitats™ or Sustainable Food gardens from the impacts associated with water and wind? By collecting and recording data about water levels at various points in the school yard or garden area(s) and observing the effects of strong winds on these same areas, students can begin to work together to create a design solution for those wind and water impacts.

As always providing students an opportunity to experience the Performance Expectation along with more traditional forms of instruction will increase student engagement and strengthen student understanding.

Connections to other DCIs in second grade: **2.PS1.A** (2-ESS2-3)

Articulation of DCIs across grade-bands: **K.ETS1.A** (2-ESS2-1); **4.ESS2.A** (2-ESS2-1); **4.ESS2.B** (2-ESS2-2); **4.ETS1.A** (2-ESS2-1); **4.ETS1.B** (2-ESS2-1); **4.ETS1.C** (2-ESS2-1); **5.ESS2.A** (2-ESS2-1); **5.ESS2.C** (2-ESS2-2),(2-ESS2-3)

Common Core State Standards Connections:

ELA/Literacy –

RI.2.3	Describe the connection between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text. (2-ESS2-1)
RI.2.9	Compare and contrast the most important points presented by two texts on the same topic. (2-ESS2-1)
W.2.6	With guidance and support from adults, use a variety of digital tools to produce and publish writing, including in collaboration with peers. (2-ESS2-3)
W.2.8	Recall information from experiences or gather information from provided sources to answer a question. (2-ESS2-3)
SL.2.5	Create audio recordings of stories or poems; add drawings or other visual displays to stories or recounts of experiences when appropriate to clarify ideas, thoughts, and feelings. (2-ESS2-2)

Mathematics –

MP.2	Reason abstractly and quantitatively. (2-ESS2-1),(2-ESS2-2)
MP.4	Model with mathematics. (2-ESS2-1),(2-ESS2-2)
MP.5	Use appropriate tools strategically. (2-ESS2-1)
2.NBT.A.3	Read and write numbers to 1000 using base-ten numerals, number names, and expanded form. (2-ESS2-2)
2.MD.B.5	Use addition and subtraction within 100 to solve word problems involving lengths that are given in the same units, e.g., by using drawings (such as drawings of rulers) and equations with a symbol for the unknown number to represent the problem. (2-ESS2-1)

*The performance expectations marked with an asterisk integrate traditional science content with engineering through a Practice or Disciplinary Core Idea.

K-2-ETS1 Engineering Design

K-2-ETS1 Engineering Design

Students who demonstrate understanding can:

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.**

The performance expectations above were developed using the following elements from the NRC document A Framework for K-12 Science Education:

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). (K-2-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

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

ECO-SCHOOLS USA PATHWAY ALIGNMENT

K-2-ETS1-1, K-2-ETS1-2, K-2-ETS1-3

While all the Eco-Schools USA pathways lend themselves to engineering design, these pathways have been chosen because they are found in many of the other Performance Expectations for second grade. To strengthen the concepts that students have been learning, it is logical to allow them opportunities to design solutions to real world issues that affect the issues of sustainability they have been working to address. Design solutions could include:

- Methods of water distribution that conserve water for the school gardens
- Wind blocks
- Garden designs that reduce changes to the land via weathering and erosion

Connections to other DCIs in this grade-band:

Connections to K-2-ETS1.A: Defining and Delimiting Engineering Problems include:
Kindergarten: K-PS2-2, K-ESS3-2

Connections to K-2-ETS1.B: Developing Possible Solutions Problems include:
Kindergarten: K-ESS3-3, **First Grade:** 1-PS4-4, **Second Grade:** 2-LS2-2

Connections to K-2-ETS1.C: Optimizing the Design Solution include:
Second Grade: 2-ESS2-1

Articulation of DCIs across grade-bands: **3-5.ETS1.A** (K-2-ETS1-1),(K-2-ETS1-2),(K-2-ETS1-3); **3-5.ETS1.B** (K-2-ETS1-2); **3-5.ETS1.C** (K-2-ETS1-1),(K-2-ETS1-2),(K-2-ETS1-3)

Common Core State Standards Connections:

ELA/Literacy –

RI.2.1 Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text. (2-ESS1-1)
W.2.6 With guidance and support from adults, use a variety of digital tools to produce and publish writing, including in collaboration with peers. (K-2-ETS1-1),(K-2-ETS1-3)
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)
SL.2.5 Create audio recordings of stories or poems; add drawings or other visual displays to stories or recounts of experiences when appropriate to clarify ideas, thoughts, and feelings. (K-2-ETS1-2)

Mathematics –

MP.2 Reason abstractly and quantitatively. (K-2-ETS1-1),(K-2-ETS1-3)
MP.4 Model with mathematics. (K-2-ETS1-1),(K-2-ETS1-3)
MP.5 Use appropriate tools strategically. (K-2-ETS1-1),(K-2-ETS1-3)
2.MD.D.10 Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems using information presented in a bar graph. (K-2-ETS1-1),(K-2-ETS1-3)