

UNIT 1: RELATIONSHIPS IN HABITATS		Instructional days: 15			
<p>Essential questions: What do plants need to grow? How many types of living things live in a place?</p> <p>Unit abstract In this unit of study, 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. The crosscutting concepts of cause and effect and structure and function 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 planning and carrying out investigations and developing and using models. Students are expected to use these practices to demonstrate understanding of the core ideas.</p>					
Performance Expectations	Learning Goals			Connections to the CCSS – ELA	Connections to the CCSS – Mathematics
	Disciplinary Core Ideas	Science and Engineering Practices	Crosscutting Concepts		
2-LS4-1 I can 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.] [Assessment Boundary: Assessment does not include specific animal and plant names in specific habitats.]</i>	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)	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)	N/A	W2.7 W2.8	MP.2 MP.4 2MD.D.10

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<p>2-LS2-1</p> <p>I can plan and conduct an investigation to determine if plants need sunlight and water to grow. <i>[Assessment Boundary: Assessment is limited to testing one variable at a time.]</i></p>	<p>LS2.A: Interdependent Relationships in Ecosystems Plants depend on water and light to grow. (2-LS2-1)</p>	<p>Planning and Carrying Out Investigations Planning and carrying out investigations to answer questions or test solutions to problems in K–2 builds on prior experiences and progresses to simple investigations, based on fair tests, which provide data to support explanations or design solutions. Plan and conduct an investigation collaboratively to produce data to serve as the basis for evidence to answer a question. (2-LS2-1)</p>	<p>Cause and Effect Events have causes that generate observable patterns. (2-LS2-1)</p>	<p>W2.7 W2.8</p>	<p>MP.2 MP.4 MP.5</p>
<p>2-LS2-2*</p> <p>I can develop a simple model that mimics the function of an animal in dispersing seeds or pollinating plants.*</p>	<p>LS2.A: Interdependent Relationships in Ecosystems Plants depend on animals for pollination or to move their seeds around. (2-LS2-2)</p> <p>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. <i>(secondary to 2-LS2-2)</i></p>	<p>Developing and Using Models Modeling in K–2 builds on prior experiences and progresses to include using and developing models (i.e., diagram, drawing, physical replica, diorama, dramatization, or storyboard) that represent concrete events or design solutions. Develop a simple model based on evidence to represent a proposed object or tool. (2-LS2-2)</p>	<p>Structure and Function The shape and stability of structures of natural and designed objects are related to their function(s). (2-LS2-2)</p>	<p>SL2.5</p>	<p>MP.4 2MD.D.10</p>
<p>K-2-ETS1-2</p> <p>I can 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>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)</p>	<p>Developing and Using Models Modeling in K–2 builds on prior experiences and progresses to include using and developing models (i.e., diagram, drawing, physical replica, diorama, dramatization, or storyboard) that represent concrete events or design solutions. Develop a simple model based on evidence to represent a proposed object or tool. (K-2-ETS1-2)</p>	<p>Structure and Function The shape and stability of structures of natural and designed objects are related to their function(s). (K-2-ETS1-2)</p>	<p>SL2.5</p>	<p>N/A</p>

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Kentucky Core Academic 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),(2-LS4-1)
- W.2.8** Recall information from experiences or gather information from provided sources to answer a question. (2-LS2-1),(2-LS4-1)
- 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) (K-2-ETS1-2)

Mathematics –

- MP.2** Reason abstractly and quantitatively. (2-LS2-1),(2-LS4-1)
- MP.4** Model with mathematics. (2-LS2-1),(2-LS2-2),(2-LS4-1)
- 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),(2-LS4-1)

UNIT 2: PROPERTIES OF MATTER		Instructional days: 20			
<p>Essential questions: How are materials similar and different from one another? How do the properties of materials relate to their use?</p>					
<p>Unit abstract In this unit of study, students are expected to demonstrate an understanding of observable properties of materials through analysis and classification of different materials. The crosscutting concepts of patterns, cause and effect, 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 planning and carrying out investigations and analyzing and interpreting data. Students are expected to use these practices to demonstrate understanding of the core ideas.</p>					
Performance Expectations	Learning Goals			Connections to the CCSS – ELA	Connections to the CCSS – Mathematics
	Disciplinary Core Ideas	Science and Engineering Practices	Crosscutting Concepts		
<p>2-PS1-1 I can 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>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)</p>	<p>Planning and Carrying Out Investigations Planning and carrying out investigations to answer questions or test solutions to problems in K–2 builds on prior experiences and progresses to simple investigations, based on fair tests, which provide data to support explanations or design solutions. Plan and conduct an investigation collaboratively to produce data to serve as the basis for evidence to answer a question. (2-PS1-1)</p>	<p>Patterns Patterns in the natural and human designed world can be observed. (2- PS1-1)</p>	<p>W2.7 W2.8</p>	<p>MP.4 2.MD.D.10</p>
<p>2-PS1-2 I can 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>PS1.A: Structure and Properties of Matter Different properties are suited to different purposes. (2-PS1-2)</p>	<p>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)</p>	<p>Cause and Effect Simple tests can be designed to gather evidence to support or refute student ideas about causes. (2-PS1- 2)</p>	<p>RI2.8 W2.7 W2.8</p>	<p>MP.2 MP.4 MP.5 2.MD.D.10</p>

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<p>K-2-ETS1-3 I can 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>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)</p>	<p>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)</p>		<p>W2.6 W2.8</p>	<p>MP.2 MP.4 MP.5 2.MD.D.10</p>
<p><i>Kentucky Core Academic Standards Connections:</i></p> <p><i>ELA/Literacy–</i></p> <p>RI.2.8 Describe how reasons support specific points the author makes in a text. (2-PS1-2)</p> <p>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-ETS1-3)</p> <p>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)</p> <p>W.2.8 Recall information from experiences or gather information from provided sources to answer a question. (2-PS1-1),(2-PS1-2), (K-2-ETS1-3)</p> <p><i>Mathematics–</i></p> <p>MP.2 Reason abstractly and quantitatively. (2-PS1-2)</p> <p>MP.4 Model with mathematics. (2-PS1-1),(2-PS1-2)</p> <p>MP.5 Use appropriate tools strategically. (2-PS1-2)</p> <p>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), (K-2-ETS1-3)</p>					

UNIT 3: CHANGES TO MATTER		Instructional days: 15			
Essential questions: How are materials similar to and different from one another? How do the properties of the materials relate to their use?					
Unit abstract In this unit of study, students continue to develop an understanding of observable properties of materials through analysis and classification of different materials. The crosscutting concepts of cause and effect and energy and matter 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 constructing explanations, designing solutions, and engaging in argument from evidence. Students are expected to use these practices to demonstrate understanding of the core ideas.					
Performance Expectations	Learning Goals			Connections to the CCSS – ELA	Connections to the CCSS – Mathematics
	Disciplinary Core Ideas	Science and Engineering Practices	Crosscutting Concepts		
2-PS1-3 I can 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.]	PS1.A: Structure and Properties of Matter Different properties are suited to different purposes. (2- PS1-3) A great variety of objects can be built up from a small set of pieces. (2-PS1-3)	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. (2-PS1-3)	Energy and Matter Objects may break into smaller pieces and be put together into larger pieces, or change shapes. (2- PS1-3)	W.2.7 W.2.8	
2-PS1-4 I can 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.]	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)	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)	Cause and Effect Events have causes that generate observable patterns. (2-PS1-4)	RI.2.1 RI.2.3 RI.2.8 W.2.1	

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Kentucky Core Academic 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-PS1-4)

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-PS1-3)

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

UNIT 4: THE EARTH'S LAND AND WATER				Instructional days: 20	
Essential question: What are the different kinds of land and bodies of water?					
Unit abstract In this unit of study, 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 concept of patterns is called out as an organizing concept for these disciplinary core ideas. In the second grade performance expectations, students are expected to demonstrate grade-appropriate proficiency in developing and using models and obtaining, evaluating, and communicating information. Students are expected to use these practices to demonstrate understanding of the core ideas.					
Performance Expectations	Learning Goals			Connections to the CCSS – ELA	Connections to the CCSS – Mathematics
	Disciplinary Core Ideas	Science and Engineering Practices	Crosscutting Concepts		
2-ESS2-3 I can obtain information to identify where water is found on Earth and that it can be solid or liquid.	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)	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)	Patterns Patterns in the natural world can be observed. (2-ESS2-3)	W2.6 W2.8	

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2-ESS2-2	<p>I can 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>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)</p>	<p>Developing and Using Models Modeling in K–2 builds on prior experiences and progresses to include using and developing models (i.e., diagram, drawing, physical replica, diorama, dramatization, or storyboard) that represent concrete events or design solutions. Develop a model to represent patterns in the natural world. (2-ESS2-2)</p>	<p>Patterns Patterns in the natural world can be observed. (2-ESS2-2)</p>	SL2.5	MP.2 MP.4 2.NBT.A.3
<p><i>Kentucky Core Academic Standards Connections:</i></p> <p><i>ELA/Literacy –</i></p> <p>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)</p> <p>W.2.8 Recall information from experiences or gather information from provided sources to answer a question. (2-ESS2-3)</p> <p>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)</p> <p><i>Mathematics –</i></p> <p>MP.2 Reason abstractly and quantitatively. (2-ESS2-2)</p> <p>MP.4 Model with mathematics. (2-ESS2-2)</p> <p>2.NBT.A.3 Read and write numbers to 1000 using base-ten numerals, number names, and expanded form. (2-ESS2-2)</p>						

UNIT 5: CHANGES TO EARTH’S LAND				Instructional days: 30	
Essential question: How does land change and what are some things that cause it to change?					
Unit abstract In this unit of study, students are able to apply their understanding of the idea that wind and water can change the shape of land to compare design solutions to slow or prevent such change. The crosscutting concepts of stability and change; structure and function; 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 appropriate proficiency in asking questions and defining problems, developing and using models, and constructing explanations and designing solutions. Students are expected to use these practices to demonstrate understanding of the core ideas.					
Performance Expectations	Learning Goals			Connections to the CCSS – ELA	Connections to the CCSS – Mathematics
	Disciplinary Core Ideas	Science and Engineering Practices	Crosscutting Concepts		
2-ESS1-1 I can use information from several sources to provide evidence that Earth events can occur quickly or slowly. [Clarification Statement: Examples of events and timescales could include volcanic explosions and earthquakes, which happen quickly and erosion of rocks, which occurs slowly.] [Assessment Boundary: Assessment does not include quantitative measurements of timescales.]	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)	Constructing Explanations and Designing Solutions Constructing explanations and designing solutions in K–2 builds on prior experiences and progresses to the use of evidence and ideas in constructing evidence-based accounts of natural phenomena and designing solutions. Make observations from several sources to construct an evidence-based account for natural phenomena. (2-ESS1-1)	Stability and Change Things may change slowly or rapidly. (2-ESS1-1)	RI.2.1 RI.2.3 W.2.6 W.2.7 W.2.8 SL.2.2	MP.4 2.NBT.A

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<p>2-ESS2-1*</p> <p>I can compare multiple solutions designed to slow or prevent wind or water from changing the shape of the land.* [Clarification Statement: Examples of solutions could include different designs of dikes and windbreaks to hold back wind and water, and different designs for using shrubs, grass, and trees to hold back the land.]</p>	<p>ESS2.A: Earth Materials and Systems Wind and water can change the shape of the land. (2-ESS2-1)</p> <p>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)</p>	<p>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)</p>	<p>Stability and Change Things may change slowly or rapidly. (2-ESS2-1)</p>	<p>RI.2.3 RI.2.9</p>	<p>MP.2 MP.4 MP.5 2.MD.B.5</p>
<p>K-2-ETS1-1</p> <p>I can 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>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)</p>	<p>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. (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)</p>		<p>RI.2.1 W.2.6 W.2.8</p>	<p>MP.2 MP.4 MP.5 2.MD.D.10</p>
<p>K-2-ETS1-2</p> <p>I can develop a simple sketch, drawing, or physical model to illustrate how the shape of an object problem.</p>	<p>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)</p>	<p>Developing and Using Models Modeling in K–2 builds on prior experiences and progresses to include using and developing models (i.e., diagram, drawing, physical replica, diorama, dramatization, or storyboard) that represent concrete events or design solutions. Develop a simple model based on evidence to represent a proposed object or tool. (K-2-ETS1-2)</p>	<p>Structure and Function The shape and stability of structures of natural and designed objects are related to their function(s). (K-2-ETS1-2)</p>	<p>SL.2.5</p>	

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Kentucky Core Academic 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), (K-2ETS1-1)*
- 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), (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-ESS1-1) (K-2-ETS1-1)*
- 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), (K-2ETS1-1)*
- 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)*
- 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. *(2-ESS2-1)*
- MP.4** Model with mathematics. *(2-ESS1-1), (2-ESS2-1)*
- MP.5** Use appropriate tools strategically. *(2-ESS2-1)*
- 2.NBT.A** Understand place value. *(2-ESS1-1)*
- 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)*
- 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)*

