PLANNED INSTRUCTION

A PLANNED COURSE FOR:

STEELS: Science, Technology and Engineering,
Environmental Literacy and Sustainability

Curriculum writing committee:

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Grade Level:Second Grade

Date of Board Approval: _____June 2025_____

Curriculum Map

Overview: The following is the district's plan for implementation of key instruction of PA STEELS Standards for Second Grade. The focus is on material properties, earth's surface/erosion, animal biodiversity, and plant adaptations.

Time for the Course: One full year

Goals:

1. Marking Period One: Over a 45 period of time, students will aim to understand:

   Unit 1: Material Magic (Page 8)

   Everything around us is a type of matter.

   All forms of matter exist as a result of the combination or rearrangement of atoms.

   Different matter is best for different purposes.

   Matter can change properties.

2. Marking Period Two: Over a 45-day period of time, students will aim to understand:

   Unit 2: Earth's Surface and Erosion (Page 20)

   The Earth's land and water structures have changed over time.

   Some changes are slow and some are fast.

   Humans try to control wind and water from changing the Earth.

   Land and water are shaped differently in different areas.

3. Marking Period Three: Over a 45-day period of time, students will aim to understand:

   Unit 3 - Animal Biodiversity (Page 32)

   There are many different kinds of living things in any area, and they exist in different places on land and in water.

   Different plants and animals live in different habitats.

4. Marking Period Four: Over a 42-day period of time, students will aim to understand:

   Unit 3 - Plant Adaptations (Page 45)

   Biodiversity—plants and animals perform actions to continue pollination in nature

   Different plants and animals live in different habitats.

Curriculum Plan

Unit Overview
How do we design better products? The idea that matter can be described and classified by its observable properties connects to the idea that different properties of matter are suited to different purposes. The engineering design idea that a situation that people want to change or create can be approached as a problem to be solved through engineering could connect to multiple science concepts such as that different properties are suited to different purposes and that matter can be described and classified by its observable properties. The first connection could be made by challenging students to define a problem caused by using an unsuitable material. The second connection could be made by having students first identify a situation related to the properties of materials that people want to change, and then write about how they would approach that situation as a problem that can be solved through engineering.

Unit 1: Matter and Materials Curriculum Map

Standards	Big Idea	Essential Questions
Science: 3.2.2.A Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties. (2-PS1-1) 3.2.2.B Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose. (2-PS1-2) 3.2.2.C 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. (2-PS1-3)	Everything around us is a type of matter. All forms of matter exist as a result of the combination or rearrangement of atoms. Different matter is best for different purposes. Matter can change properties.	How do types of matter differ? How do you use different types of matter? How do particles combine to form the variety of matter one observes? How does matter change properties?

Technology & Engineering: 3.5.K-2.A Identify and use everyday symbols. 3.5.K-2.B Describe qualities of everyday products. 3.5.K-2.C Explain ways that technology helps with everyday tasks. 3.5.K-2.D Select ways to reduce, reuse, and recycle resources in daily life. 3.5.K-2.E Illustrate helpful and harmful effects of technology. 3.5.K-2.F Investigate the use of technologies in the home and community. 3.5.K-2.G Explain the tools and techniques that people use to help them do things. 3.5.K-2.H Explain the needs and wants of individuals and societies. 3.5.K-2.J Design new technologies that could improve their daily lives 3.5.K-2.K Safely use tools to complete tasks. 3.5.K-2.L Explore how technologies are developed to meet individual and societal needs and wants. 3.5.K-2.M Demonstrate essential skills of the engineering design process. 3.5.K-2.N Analyze how things work. 3.5.K-2.O Illustrate that there are different solutions to a design and that none are perfect. 3.5.K-2.P Discuss that all designs have different characteristics that can be described. 3.5.K-2.S Apply design concepts, principles, and processes through play and exploration 3.5.K-2.T Demonstrate that designs have requirements.		

3.5.K-2.U Explain that design is a response to wants and needs 3.5.K-2.V Explain that materials are selected for use because they possess desirable properties and characteristics. 3.5.K-2.W Apply concepts and skills from technology and engineering activities that reinforce concepts and skills across multiple areas. 3.5.K-2.X Develop a plan in order to complete a task. 3.5.K-2.AA Demonstrate that creating can be done by anyone. 3.5.K-2.CC Discuss the roles of scientists, engineers, technologists, and others who work with technology. 3.5.K-2.DD Collaborate effectively as a member of a team **Environmental Literacy & Sustainability:** 3.5.k-2.C Explain ways that places differ in their physical characteristics, their meaning, and their value, and/or importance 3.5.K-3.D Plan and carry out an investigation to address an issue in the local environment or community.		

Textbook and Supplemental Resources

Mystery Science *Epic* *IXL* *Readworks*

Unit 1: Matter and Materials Curriculum Plan

Learning Objectives/DOK Levels:

Students will know…. (DCI)	**Students will be able to… (SEP)**	**Students will apply…(CCC)**	**DOK Level(s)**
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. Different properties are suited to different purposes. A great variety of objects can be built up from a small set of pieces.	Plan and conduct an investigation collaboratively to produce data to serve as the basis for evidence to answer a question. Analyze data from tests of an object or tool to determine if it works as intended. Make observations (firsthand or from media) to construct an evidence-based account for natural phenomena.	Patterns in the natural and human designed world can be observed. Simple tests can be designed to gather evidence to support or refute student ideas about causes. Objects may break into smaller pieces and be put together into larger pieces or change shapes.	DOK Level 3 (Strategic Thinking): Planning and conducting investigations collaboratively requires critical thinking, collaboration, and systematic collection of data to provide evidence, which involves more complex reasoning and problem-solving. DOK Level 4 (Extended Thinking): Analyzing test data to evaluate the effectiveness of a tool or object requires extended thinking, as it involves critical evaluation, synthesis of information, and drawing conclusions from data.

Core Activities and Corresponding Instructional Methods

Mystery Science Unit(s)	Core Activities	Corresponding Instructional Methods	Extensions	Correctives	Time/Days
Material Properties Unit (Material Magic) 45 days	Driving Question Board- "See Think Wonder" from Mystery Science Make a model *After each lesson return to See, Think, Wonder and add to model. Lesson 0: Anchor Phenomenon: Melting Metals -Phenomenon:Foundries are places where people melt solid metal into a liquid that can be	• Asking Questions and Defining Problems • Planning and Carrying Out Investigations • Constructing Explanations and Designing Solutions • Analyzing and Interpreting Data • Developing and Using Models	-Epic reading and videos -Scholastic News reading and videos -Read Works articles, videos, activities, mini lessons and assessments from Mystery Science extensions -Science of Wonder -OpenSciEd	-Epic videos -IXL science	~120 minutes per lesson: 30 min. introduction 1 hour investigation 30 min. reflection and assessment adjusted as needed for a total of 120 minutes per week.

	poured into new shapes. Foundries can be dangerous places to work, so how do people that work in foundries stay safe? -Background Knowledge Teacher Guide page 4 -Phenomenon: Melting Metal Teacher Guide page 5 ● Generate observations and questions about the phenomenon and create an initial ● conceptual model to explain the phenomenon. ● Gather clues during and after each lesson in this unit to help them improve their explanations.				

	Lesson 1: Material Properties & Engineering -Teacher Guide pages 6-7 ● Explore the different properties of materials used for clothing, such as texture, flexibility, and absorbency. ● Conduct Mad Hatter activity, students use this information to design and build a hat that protects them from the Sun. ● Revisit Anchor Phenomena and Revise See Think Wonder Chart. Connecting Storyline Question: What other properties do different	Lesson 1: SEPS Asking Questions and Defining Problems Planning and Carrying Out Investigations Constructing Explanations and Designing Solutions	Lesson 1 Extension: "Inventions Help Us" by Julie Ellis on Epic Mystery Science Extend this Lesson Video: Song about Materials	Lesson 1 Correctives: "Matter Comes in All Shapes" on Epic Scholastic News "The Scoop on Ice Cream" Mystery Science Mini-Lesson - How do erasers erase?	

	types of protective clothing need to have? Lesson 2: Classify Materials: Insulators -Teacher Guide pages 8-9 ● Consider the insulating and conducting properties of different materials. ● Conduct activity (Feel the Heat) where students test different materials and determine which would make the best oven mitts. ● Revisit Anchor Phenomena and Revise See Think Wonder Chart. Connecting Storyline	Lesson 2 SEPS Planning and Carrying Out Investigations Analyzing and Interpreting Data	Lesson 2 Extension: "Does it Absorb or repel liquid?" by Susan Hughes on Epic Mystery Science Extend this Lesson Video: How polar bears stay warm in icy water	Lesson 2 Corrective: IXL: Classify objects by Materials IXL: Describe objects Mystery Science Extend this Lesson Activity: Exploring Mittens	

	Question: Can protective clothing melt? Lesson 3: Heating, Cooling, & States of Matter -Teacher Guide pages 10-11 ● Investigate melting, the solid and liquid states of matter, and then discover why plastic was invented. ● Conduct an investigation (Candy Melt) to determine which types of candy melt in hot water. Using their observations, they decide which candy is the best choice to bring to a hot summer camp.	Lesson 3 SEPs Planning and Carrying Out Investigations Analyzing and Interpreting Data	Lesson 3 Extension: Insulator "Animals that Solve Weather-Related Problems" Readworks article Mystery Science Mini Lesson "How were Lego Bricks invented?	Lesson 3 Corrective: IXL Hot and Cold IXL Changes caused by heating and cooling	

	• Revisit Anchor Phenomena and Revise See Think Wonder Chart. Connecting Storyline question: How do the people working in foundries see what they are doing while their face is covered? Lesson 4: Inventions & Engineering -Teacher guide page 12 • Explore how new materials are invented. • Students create ideas for inventions that use an exciting futuristic material: glass that bounces and stretches like rubber in	Lesson 4 SEPs Constructing Explanations and Designing Solutions	Lesson 4 Extension: Read selected examples from the book "Odd Inventions" by Virginia Loh-Nagan on Epic Mystery Science: Extend the Lesson Videos *Trampoline *Ear Muffs *Surprise!	Lesson 4 Correctives: IXL Design a sunshade "Making Crayons" on Scholastic News	

	"Bouncy Glass Inventions." ● Revisit Anchor Phenomena and Revise See Think Wonder Chart. Connecting Storyline question: How do people make things out of metal in foundries? Lesson 5: Materials, Properties, & Engineering -Teacher Guide pages 13-14 ● Examine how large structures like houses are built from smaller pieces. ● Design their own structures using an unconventional building material in	Lesson 5 SEPs Constructing Explanations and Designing Solutions Developing and Using Models	Lesson 5 Extension: "Metal" by Andrea Rivera on Epic Mystery Science Extend this Lesson Activity Paper Engineering: Fold Your Own Hat!	Lesson 5 Correctives: IXL Sort objects by texture Mystery Science Mini-Lesson How do they turn wood into paper?	

	"Paper Towers" activity. ● Revisit Anchor Phenomena and Revise See Think Wonder Chart. Connecting Storyline question: Can we make buildings with different materials? Lesson 6: Soil Properties -Teache rGuide pages 15-16 ● Explore the properties of mud depends on the properties of the soil it's made from. ● Use models of sand and clay soils to investigate how the properties of soils can differ. ● Use their observations as	Lesson 6 SEPs Planning and Carrying Out Investigations Analyzing and Interpreting Data	Lesson 6 Extension: "Houses from Around the World" article on Readworks Mystery Science Extend this Lesson Activity: Traditional Brick Making Method	Lesson 6 Correctives: IXL Types of soils Mystery Science Extend this Lesson Activity Your state's Special Soil	

	evidence to classify each soil model based on whether or not it would make mud that's good for building. ● Revisit Anchor Phenomena and Revise See Think Wonder Chart. Connecting Storyline question:Can foundries help us reuse things? Lesson 7: Performance Task: Materials & Properties -Phenomenon:Foundries are places where people melt solid metal into a liquid that can be poured into new shapes. Foundries can be dangerous places to work, so how do people that work in foundries stay safe?	Lesson 7 SEPs Obtaining, Evaluating, and Communicating Information Defining Problems and Designing Solutions Engaging in Argument from Evidence	Lesson 7 Extension: "Take Care of Our Planet": article on Readworks IXL: Human impacts Reduce, reuse, recycle (grade 2) Mystery Science Extend this Lesson Video "Make your own recycled paper"	Lesson 7 Correctives IXL Reduce, reuse, recycle (grade 1) "Follow that Bottle!" on Scholastic News Mystery Science mini lesson "What do garbage trucks do with all the garbage?"	

	-Teacher Guide pages 17-18 ● Observe how fire can be used to recycle some materials, but not others. Some changes caused by fire, such as melting, are reversible. Other changes, such as burning, are not reversible. ● Record observations of the changes that metal and paper experience when they are exposed to fire. ● Use observations of these changes to construct an argument about whether or not fire can be used to recycle each of those materials.				

Assessments:

Diagnostic	Formative	Summative
-See, Think, Wonder for Material Properties (Material Magic) -class participation	Material Magic Lesson 1: Mad Hatter's recording sheet Material Magic Lesson 2: Feel the Heat recording sheet Material Magic Lesson3: Testing Candy for Camp Way Too Hot recording sheet Material Magic Lesson 4: My Invention poster Material Magic Lesson 5: Paper Towers recording sheet Material Magic Lesson 6: How do you build a city out of mud? recording sheet	Recycle with Fire Performance Task Winter Boots: Evidence and Claim Statement Beat the Heat: Completed Model

Unit 2: Changes to the Land Curriculum Map

Unit Overview
The idea that maps show where things are located and the shapes and kinds of land and water in any area can connect to the idea that wind and water can change the shape of the land. The idea that the shape of the land can change connects to the concept that some events happen very quickly and others occur very slowly, over a time period much longer than one can observe. The engineering design idea that because there is always more than one possible solution to a problem, it is useful to compare and test designs can connect to multiple science ideas, such as that wind and water can change the shape of the land and that some events happen very quickly; others occur very slowly, over a time period much longer than one can observe. The first connection could be made by having students compare a variety of designs that are intended to prevent wind erosion of soil. The second connection could be made by having students compare designs intended to prevent danger from a rock slide.

Standards	Big Idea	Essential Questions
Science: 3.3.2.A Use information from several sources to provide evidence that Earth events can occur quickly or slowly. (2-ESS1-1) 3.3.2.B Compare multiple solutions designed to slow or prevent wind or water from changing the shape of the land. (2-ESS2-1) 3.3.2.C Develop a model to represent the shapes and kinds of land and bodies of water in an area. (2-ESS2-2) **Technology & Engineering:** 3.5.K-2.A Identify and use everyday symbols 3.5.K-2.C Explain ways that technology helps with everyday tasks.	The Earth's land and water structures have changed over time. Some changes are slow and some are fast. Humans try to control wind and water from changing the Earth. Land and water are shaped differently in different areas.	What can cause slow change to the Earth? What can cause rapid change? Why do humans try to control air and water? How can one show the shape of land and water in an area?

4.5.K-2.E Illustrate helpful and harmful effects of technology. 3.5.K-2.F Investigate the use of technologies in the home and community. 3.5.K-2.H Explain the needs and wants of individuals and society. 3.5.K-2.I Compare simple technologies to evaluate their impacts.. 3.f.K-2.1 Design new technologies that could improve their daily lives. 3.5.K-2.K Safely use tools to complete tasks. 3.5.K-2.I Explore how technologies are developed to meet individual and societal needs and wants. **Environmental Literacy & Sustainability:** Agricultural Systems 3.4.k-2.A Categorize ways people harvest, redistribute, and use natural resources Environment and Society 3.4.K-12.B Examine how people from different cultures, communities, including one's own, interact and express their beliefs about nature. Environmental Experiences		

3.4.K-2.C Explain ways that places differ in their physical characteristics, their meaning and their value and or importance Environmental Sustainability 3.4.k-2.D: Plan and carry out an investigation to address an issue in the local environment and community.		

Textbook and Supplemental Resources

Mystery Science *Epic* *IXL* *Readworks*

Unit 2: Changes to the Land Curriculum Plan

Learning Objectives/DOK Levels:

Students will know…. (DCI)	**Students will be able to… (SEP)**	**Students will apply…(CCC)**	**DOK Level(s)**
Some events happen very quickly; others occur very slowly, over a time period much longer than one can observe.	Make observations from several sources to construct an evidence based account for natural phenomena. Compare multiple solutions to a problem.	Things may change slowly or rapidly. Patterns in the natural world can be observed.	DOK Level 3 (Strategic Thinking): Constructing an evidence-based account from multiple observations involves synthesizing information, analyzing data, and drawing conclusions, which

Wind and water can change the shape of the land. Maps show where things are located. One can map the shapes and kinds of land and water in any area. Plate tectonics is the unifying theory that explains the past and current movements of the rocks at Earth's surface and provides a coherent account of its geological history.	Develop a model to represent patterns in the natural world.		requires deeper reasoning and strategic thinking. DOK Level 2 (Skills/Concepts): Comparing solutions involves understanding and applying criteria to evaluate and contrast different approaches, requiring analysis and reasoning but not extensive problem-solving. DOK Level 3 (Strategic Thinking): Developing a model to represent patterns requires the ability to analyze data, recognize patterns, and apply knowledge to create a representation, which involves strategic thinking and application of concepts.

Core Activities and Corresponding Instructional Methods

Mystery Science Unit(s)	Core Activities	Corresponding Instructional Methods	Extensions	Correctives	Time/Days
Erosion & Earth's Surface (Work of Water) 45 days	Driving Question Board- "See Think Wonder" from Mystery Science Make a model : Lesson 0: Anchor Phenomenon: Strange River -Phenomenon:A pair of rivers that flow together but look very, very different from one another. Students explore what causes rivers to have such different colors. -Background Teacher Guide page:4 -Phenomenon: Strange River Mapping Earth's Surface Features and Erosion Teacher Guide page 6 ● Generate observations	• Developing and Using Models • Planning and Carrying Out Investigations • Constructing Explanations and Designing Solutions	-Epic reading and videos -Scholastic News reading and videos -Read Works articles, videos, activities, mini lessons and assessments from Mystery Science extensions -Science of Wonder	-Epic videos -IXL science	~120 minutes per lesson: 30 min. introduction 1 hour investigation 30 min. reflection and assessment adjusted as needed for a total of 120 minutes per week.

	and questions about the phenomenon and create an initial conceptual model to explain the phenomenon. ● Gather clues during and after each lesson in this unit to help them improve their explanations. Lesson 1: Mapping & Earthś Surfaces and Features. - Teacher Guide pages 6-7 ● Students develop a model of the earthś surface and use it to discover an important principle and how rivers work. ● Students observe patterns	Lesson 1: SEPs "Developing and Using Models Planning and Carrying Out Investigations"	Lesson 1 Extensions Mystery Science Extend This Lesson Reading Bodies of Water	Lesson 1 Correctives Discovery Ed “Bodies of Water preK-2”	

	of how water and rivers flow ● Revisit Anchor Phenomena and Revise See Think Wonder Chart. Connecting Storyline Question:Is the Strange River brown all the way up at its source, or does it change color downstream? Lesson 2: Rocks, Sand, & Erosion -Teacher Guide pages 8-9 ● Students investigate the effects of rocks tumbling towards the river. ● Students develop a model of rocks traveling down a river	Lesson 2 SEPs "Planning and Carrying Out Investigations Developing and Using Models "	Lesson 2 Extension IXL Bodies of water	Lesson 2 Corrective -Discovery Ed Rocks K-2 -IXL Classify Rocks and Minerals	

	• Revisit Anchor Phenomena and Revise See Think Wonder Chart. Connecting Storyline Question:What is causing the Strange River to change color? Lesson 3: Mapping and Severe Weather -Teacher Guide page 10 . • Students explore the phenomenon of flash floods and create an explanation of why these severe weather events are more or less likely in different regions. • Revisit Anchor Phenomena and Revise See Think Wonder Chart.	Lesson 3 SEPs Developing and Using Models	Lesson 3 Extensions Mystery Science Mapping and Severe Weather Activity	Lesson 3 Corrective IXL Severe Weather	

	Connecting Storyline Question:There is not an anchor connection to follow this lesson currently. Lesson 4: Erosion, Earth's Surface, & Landforms -Teacher Guide page 12 ● Students make hypotheses and investigate the causes of canyons. ● Students create a model landform using cornmeal. ● Revisit Anchor Phenomena and Revise See Think Wonder Chart. Connecting Storyline Question:How can we stop erosion? Lesson 5: Erosion & Engineering-Phenomen	Lesson 4 SEPs "Planning and Carrying Out Investigations Constructing Explanations and Designing Solutions"	Lesson 4 Extensions Cornmeal Lands activity	Lesson 4 Corrective Discovery Ed Landforms K-2	

	on:A pair of rivers that flow together but look very, very different from one another. Students explore what causes rivers to have such different colors. -Teacher Guide pages 13-14 ● Students compare multiple solutions for preventing erosion ● Revisit Anchor Phenomena and Revise See Think Wonder Chart. Connecting Storyline Question:What other rivers flow into the Missouri River? Lesson 6: Performance Task: Erosion & Earth's Surface -Phenomenon:A pair of rivers that flow together but look very,	Lesson 5 SEPs "Asking Questions and Defining Problems Constructing Explanations and Designing Solutions" Lesson 6 SEPs "Developing and Using Models	Lesson 5 Extension Mystery Science Activity "How a rock can be broken down in a stream?" Lesson 6 Extensions Discovery Ed Reading passage	Lesson 5 Corrective Discovery Education "Weathering and Erosion k-2" Lesson 6 Correctives Mystery Science Mini Lesson "Why don't	

	very different from one another. Students explore what causes rivers to have such different colors. -Teacher Guide page 15 ● Students explore the difficulty of measuring the length of a river. Figuring out which river is the shortest river is difficult to do if you can't decide where a river starts or ends. ● Students will learn about two rivers that are each possibly the shortest rivers in the United States. Then, they map those rivers out and attempt to determine which river is the shortest.	Analyzing and Interpreting Data Obtaining, Evaluating, and Communicating Information"	"What is Earth like?"	islands float away?"	

Assessments:

Diagnostic	Formative	Summative
-See, Think, Wonder for Erosion and Earth's Surface (Work of Water) -class participation	Water of Water Lesson 1: If you floated down a river, where would you end up? Lesson Assessment Works of Water Lesson 2: Draw the river rocks model Works of Water Lesson 3: Flash Flood Finding recording sheet Works of Water Lesson 4: How did water change your land? recording sheet Works of Water Lesson 5: Save the Hills recording sheet	Strange River: Completed model Shortest River Performance Task and Claim/evidence statement

Unit 3: Habitats Curriculum Map

Unit Overview
The concept that plants depend on animals for pollination or to move their seeds around connects to the concept that plants depend on water and light to grow as both ideas are about plant needs. This relationship between organisms and water can also connect to the concept that there are many different kinds of living things in any area, and they exist in different places on land and in water. The engineering design idea that designs can be conveyed through sketches, drawings, or physical models can be connected to multiple science concepts, such as that plants depend on animals for pollination or to move their seeds around and there are many different kinds of living things in any area, and they exist in different places on land and in water. The first connection could be made through challenging students to design and then sketch a way to increase pollination of flowers after a decrease in the bee population. The second connection could be made by having students design two different plant habitats that each meet the needs of the many different kinds of plants that will be in each habitat. In either case, student sketches should be detailed enough to communicate their design fully.

Standards	Big Idea	Essential Questions
Science: 3.1.2.A Plan and conduct an investigation to determine if plants need sunlight and water to grow. (2-LS2-1) 3.1.2.B Develop a simple model that mimics the function of an animal in dispersing seeds or pollinating plants. (2-LS2-2) 3.1.2.C Make observations of plants and animals to compare the diversity of life in different habitats. (2-LS4-1)	Biodiversity—plants and animals perform actions to continue pollination in nature Different plants and animals live in different habitats. The Earth is made of more water than land.	How do organisms interact with the environment to obtain matter and energy? What is biodiversity, how do humans affect it, and how does it affect humans? Why are the plants and animals different in different habitats? Where is water found on the Earth?

3.3.2.D Obtain information to identify where water is found on Earth and that it can be solid or liquid. (2-ESS2-3) **Technology & Engineering:** 3.5.K-2.A Identify and use everyday symbols. 3.5.K-2.C Explain ways that technology helps with everyday tasks. 3.5.K-2.E Illustrate helpful and harmful effects of technology. 3.5.K-2.J Compare simple technologies to evaluate their impacts. 3.5.K-2.J Design new technologies that could improve their daily lives 3.5.K-2.K Safely use tools to complete tasks. 3.5.K-2.1 Explore how technologies are developed to meet individual and societal needs and wants. 3.5.K-2.R Draw connections between technology and human experience. 3.5.K-2.V Explain that materials are selected for use because they possess desirable properties and characteristics		

3.5.K-2.K Safely use tools to complete tasks. 3.5.K-2.L Explore how technologies are developed to meet individual and societal needs and wants. 3.5.K-2.M Demonstrate essential skills of the engineering design process. 3.5.K-2.N Analyze how things work. 3.5.K-2.O Illustrate that there are different solutions to a design and that none are perfect. 3.5.K-2.P Discuss that all designs have different characteristics that can be described. 3.5.K-2.S Apply design concepts, principles, and processes through play and exploration 3.5.K-2.T Demonstrate that designs have requirements. 3.5.K-2.U Explain that design is a response to wants and needs 3.5.K-2.V Explain that materials are selected for use because they possess desirable properties and characteristics. 3.5.K-2.W Apply concepts and skills from technology and engineering activities that reinforce concepts and skills across multiple areas. 3.5.K-2.X Develop a plan in order to complete a task. 3.5.K-2.AA Demonstrate that creating can be done by anyone. 3.5.K-2.CC Discuss the roles of scientists, engineers, technologists, and others who work with technology.		

3.5.K-2.DD Collaborate effectively as a member of a team **Environmental Literacy & Sustainability:** 3.5.k-2.C Explain ways that places differ in their physical characteristics, their meaning, and their value, and/or importance 3.5.K-3.D Plan and carry out an investigation to address an issue in the local environment or community.		

Textbook and Supplemental Resources

Mystery Science *Epic* *IXL* *Readworks*

Unit 3: Habitats Curriculum Plan

Learning Objectives/DOK Levels:

Students will know…. (DCI)	**Students will be able to… (SEP)**	**Students will apply…(CCC)**	**DOK Level(s)**
Plants depend on water and light to grow.	Plan and conduct an investigation collaboratively to produce data to serve as the basis for evidence to answer a question.	Events have causes that generate observable patterns. Events have causes that generate observable patterns.	DOK Level 3 (Strategic Thinking): Planning and conducting investigations collaboratively requires critical thinking, collaboration, and systematic collection of data to provide evidence,

Plants depend on animals for pollination or to move their seeds around. There are many different kinds of living things in any area, and they exist in different places on land and in water.	Analyze data from tests of an object or tool to determine if it works as intended. Make observations (firsthand or from media) to construct an evidence-based account for natural phenomena. Develop a simple model based on evidence to represent a proposed object or tool. 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.	The shape and stability of structures of natural and designed objects are related to their function(s). Patterns in the natural world can be observed, used to describe phenomena, and used as evidence	which involves more complex reasoning and problem-solving. DOK Level 4 (Extended Thinking): Analyzing test data to evaluate the effectiveness of a tool or object requires extended thinking, as it involves critical evaluation, synthesis of information, and drawing conclusions from data.

Core Activities and Corresponding Instructional Methods

Mystery Science Unit(s)	Core Activities	Corresponding Instructional Methods	Extensions	Correctives	Time/Days
Animal Biodiversity (Animal Adventures) 45 days	Driving Question Board- "See Think Wonder" from Mystery Science Make a model *After each lesson return to See, Think, Wonder and add to model. Lesson 0: Life Underground Anchor Phenomenon -Phenomenon:A cave north of San Antonio Texas that has an animal covering the cave floor. -Background Teacher Guide page 3 -Phenomenon: Life Underground Teacher Guide page 4 ● Generate observations and questions	• Asking Questions and Defining Problems • Planning and Carrying Out Investigations • Constructing Explanations and Designing Solutions • Analyzing and Interpreting Data • Developing and Using Models	-Epic reading and videos -Scholastic News reading and videos -Read Works articles, videos, activities, mini lessons and assessments from Mystery Science extensions	-Epic videos -IXL science	~120 minutes per week: 30 min. introduction 1 hour investigation 30 min. reflection and assessment per lesson adjusted as needed for a total of 120 minutes per week.

	about the phenomenon and create an initial conceptual model to explain the phenomenon. ● Gather clues during and after each lesson in this unit to help them improve their explanations. Lesson 1: How many different kinds of animals are there? -Phenomenon:A cave north of San Antonio Texas that has an animal covering the cave floor. -Teacher Guide pages 5-6 ● Examine how scientists organize animals into groups based on their characteristics.	Lesson 1 SEPs: Obtaining, Evaluating, and Communicating Information	Lesson 1 Extensions: Mystery Science Extension Videos: Baby Sloths and Snapping Turtles	Lesson 1: Correctives Mystery Science: Which animal has the biggest heart?	

	• In “Animals Sorting Game”, students study animal traits and use • these traits to sort animal cards into mammals, birds, reptiles, and invertebrates. Make decisions about animals that don’t fall neatly into any of those categories • Revisit Anchor Phenomena and Revise See Think Wonder Chart. Connecting Storyline Question: Do the animals in the cave always stay in the cave, or do they go to other places?	Lesson 2 SEPs	Lesson 2 Extensions:	Lesson 2: Correctives	

	.Lesson 2: Why would a wild animal visit a playground? -Teacher Guide pages 7-8 ● Investigate why a group of wild bighorn sheep would leave their usual desert habitat to visit a second, very different habitat: a local playground. ● In "Habitat Scavenger Hunt", students record observations of the diversity of life found in the desert and the playground, as well as the physical characteristics of each location. Combine these observations to create an	"Analyzing and Interpreting Data Planning and Carrying Out Investigations	Mystery Science Activity: Habitats Scavenger Hunt	Mystery Science Mini-Lesson: How do Scientists learn about animals?	

	understanding of how the living and nonliving parts of a habitat support the animals that live there. ● Revisit Anchor Phenomena and Revise See Think Wonder Chart. Connecting: Storyline Question: What type of small mammal lives in the cave? Lesson 3: Why do frogs say “ribbit”? -Phenomenon:A cave north of San Antonio Texas that has an animal covering the cave floor. -Teacher Guide page 8 ● Listen to recordings of frogs and create words that will	Lesson 3: SEPs "Analyzing and Interpreting Data Engaging in Argument from Evidence"	Lesson 3: Extensions Mystery Science Reading “Can a Shark live near a volcano?” Discovery Ed Lesson: k-2 Amphibians	Lessons 3: Correctives Mystery Science Art Project	

	remind them of the sounds. ● Use those words to identify frog sounds in different environments. ● Revisit Anchor Phenomena and Revise See Think Wonder Chart. Connecting Storyline Question: How can we use sound to discover what is in the cave? Lesson 4: How could you get more birds to visit a bird feeder? -Phenomenon:A cave north of San Antonio Texas that has an animal covering the cave floor. -Teacher Guide pages 9-10 ● Investigate which kinds of	Lesson 4 SEPs "Asking Questions and Defining Problems Constructing Explanations and Designing Solutions Developing and Using Models"	Lesson 4: Extensions IXL: Read about animals (second grade)	Lesson 4: Correctives IXL: Read about animals (kindergarten or first grade)	

	birds are likely to visit a bird feeder based on what they eat. ● In "Design a Bird Feeder, "students first draw their own bird feeder design to attract a specific type of bird. Then they build a prototype of their bird feeder using available materials. ● Revisit Anchor Phenomena and Revise See Think Wonder Chart. Connecting Storyline Question: What food source can be found in the cave? Lesson 5: Performance Task: Where else do bats live?	Lesson 5 SEPs Obtaining, Evaluating, and Communicating Information			

Plant Adaptations (Plant Adventures) 42 days	-Phenomenon:A cave north of San Antonio Texas that has an animal covering the cave floor. -Teacher Guide page 11 ● Explore and compare two very different places that Mexican free-tailed bats live. ● Investigate a new location where a different colony of bats lives. ● Compare and contrast the physical environment and the other living things that can be found in each place. Driving Question Board- “See Think Wonder” from Mystery Science	Defining Problems and Designing Solutions			

	Make a model *After each lesson return to See, Think, Wonder and add to model. Lesson 0: Anchor Phenomenon: Plant Growth & Habitat -Phenomenon:A burst of life in a place called Death Valley. How can huge fields of flowers suddenly grow in one of the hottest, driest places on Earth. - Background Teacher Guide page 3 -Phenomenon Teacher Guide page 4 ● Generate observations and questions about the phenomenon and create an initial conceptual model to explain the phenomenon.	Unit SEPs: "Developing and Using Models Constructing Explanations Obtaining, Evaluating, and Communicating Information "			~120 minutes per week: 30 min. introduction 1 hour investigation 30 min. reflection and assessment per lesson adjusted as needed for a total of 120 minutes per week.

	• Gather clues during and after each lesson in this unit to help them improve their explanations. Lesson 1: Seed Dispersal -Phenomenon:A burst of life in a place called Death Valley. How can huge fields of flowers suddenly grow in one of the hottest, driest places on Earth. -Teacher Guide pages 5-6 • Investigate the mystery of the koa tree, a type of tree that grows in only two places—islands halfway across the world from one another. • Develop three different physical models	Lesson 1: SEPs Developing and Using Models Planning and Carrying Out Investigations	Lesson 1 Extensions: IXL: Where do water lilies and saguaros live? (kindergarten or first grade)	Lesson 1: Correctives IXL: Identify Plant Parts (kindergarten or first grade)	

	of seed structures. ● Observe how structure affects the seed's function in dispersing away from the tree. ● Use these observations to evaluate whether koa seeds are likely dispersed by wind, water, or animals. ● Revisit Anchor Phenomena and Revise See Think Wonder Chart. Connecting Storyline Question: Why do the seeds sit for so long without growing? Lesson 2: Animal Seed Dispersal	Lesson 2 SEPs: Developing and Using Models	Lesson 2 Extensions: Mystery Science Extension Videos: Seeds in Flight	Lesson 2: Correctives IXL: Identify What Plant Parts Do	

	-Phenomenon:A burst of life in a place called Death Valley. How can huge fields of flowers suddenly grow in one of the hottest, driest places on Earth. -Teacher Guide pages 7-8 ● Investigate how the structures of seeds enable them to disperse, with a focus on seeds that utilize animal structures to aid in their dispersal. ● In “Seed Travelers”, students develop a model of a furry animal ● (“fluffadoo”) and then use it to test how far seed models with different			(kindergarten or first grade)	

	structures can travel. ● Revisit Anchor Phenomena and Revise See Think Wonder Chart. Connecting Storyline Question: What else do the plants need to be able to grow? Lesson 3: Water, Sunlight, & Plant Growth -Phenomenon:A burst of life in a place called Death Valley. How can huge fields of flowers suddenly grow in one of the hottest, driest places on Earth. -Teacher Guide pages 9-10 ● Investigate how plants need water and sunlight to grow.	Lesson 3 SEPs: Planning and Carrying Out Investigations Analyzing and Interpreting Data	Lesson 3 Extensions: IXL: Where do bearberries and powdery strap air plants live? (kindergarten or first grade)	Lesson 3 Correctives: IXL: Plant Needs (kindergarten or first grade)	

	• In "Seeds — Light and Dark", students experiment with growing radish seeds in light and dark conditions. • Plant and compare the seedlings and watch what happens when all are placed in sunlight. • Revisit Anchor Phenomena and Revise See Think Wonder Chart. Connecting Storyline Question: Why do the flowers eventually dry up and disappear? Lesson 4: Plant Needs and Habitats -Phenomenon:A burst of life in a place called	Lesson 4 SEPs: Planning and Carrying Out Investigations	Lesson 4 Extensions: IXL Where do turtle grass and giant sequoias live?(kindergarten or first grade)	Lesson 4 Correctives: IXL: Match Plants to their Parents (kindergarten or first grade)	

	Death Valley. How can huge fields of flowers suddenly grow in one of the hottest, driest places on Earth. -Teacher Guide page 11-12 ● Investigate how different plants grow best under very different conditions, ranging from deserts to tropical rainforests. ● In “Puzzling Plants,” students plan and conduct virtual experiments in order to determine how much ● water and sunlight a set of mystery plants need to grow and stay healthy.				

	• Revisit Anchor Phenomena and Revise See Think Wonder Chart. Connecting Storyline Question: What other living things need water in Death Valley? Lesson 5: Performance Task: Water, Plants, Animals, & Habitats -Phenomenon:A burst of life in a place called Death Valley. How can huge fields of flowers suddenly grow in one of the hottest, driest places on Earth. -Teacher Guide page 13 • Virtually travel to different locations in Death Valley to make observations about how the water at each	Lesson 5: SEPs Developing and Using Models Constructing Explanations Obtaining, Evaluating, and Communicating Information			

	location supports a wide variety of incredible living things, ranging from one of the oldest living things on Earth to one of the rarest.				

Assessments:

Diagnostic	Formative	Summative
-See, Think, Wonder for Animal Adaptations (Animal Adventures) Class participation	Animal Adventures Lesson 1: How many different kinds of animals are there? Lesson Assessment Animal Adventures Lesson 2: The Mystery of the Bighorn Sheep in the Park recording sheet Animal Adventures Lesson 3: How Many Kinds of Frogs? recording sheet Animal Adventures Lesson 4: My Bird Feeder recording sheet	Claim-Evidence Reasoning bird feeder recording sheet Completed Bracken Cave Model

- See Think Wonder for Plant Adaptations (Plant Adventures) -class participation	Animal Adventures Lesson 5: Bat Rest Stop recording sheet Plant Adventures Lesson 1: How did a tree travel halfway around the world? lesson assessment Plant Adventures Lesson 2:Fluffadoo Seed Travel recording sheet Plant Adventures Lesson 3: Draw the Radishes recording sheet Plant Adventures Lesson 4: Build your Own Experiment recording sheet	Claim-Evidence Reasoning Sunlight Experiment/Water Experiment Completed Super Bloom Model

Checklist to Complete and Submit:
(Scan and email)

_____ **Copy of the curriculum using the template entitled "Planned Instruction," available on the district website.**

_____ **The primary textbook form(s).**

_____ **The appropriate payment form, in compliance with the maximum curriculum writing hours noted on the first page of this document.**

Each principal and/or department chair has a schedule of First and Second Readers/Reviewers. Each Reader/Reviewer must sign & date below.

First Reader/Reviewer Printed Name_____

First Reader/Reviewer Signature_____ **Date**_____

Second Reader/Reviewer Printed Name_____

Second Reader/Reviewer Signature _____ **Date**_____

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