



Park Hill School District

Building Successful Futures • Each Student • Every Day

Third Grade Science Curriculum

Course Description: Third grade students will study three science domains over the course of the year; life science, earth and space science, and physical science. Students will define a simple design problem that can be solved by applying scientific ideas about magnets. For life science, students will study life cycles, plant and animal traits, how animals' habitats help them to survive, and environmental changes to habitats. During earth and space science, students will study seasonal weather conditions, climates of different regions of the world, and the impact of weather-related hazards. In the physical science unit, students will learn about the effects of balanced and unbalanced forces on the motion of an object and analyze patterns to predict future motion. Students will determine cause and effect relationships of electric or magnetic interactions between two objects.

Scope and Sequence:

Quarter	Unit	Timeframe
1 and 2	1. <u>Life Science Part 1</u> • Topic 1: Plant and Animal Life Cycles • Topic 2: Social and Group Behaviors • Topic 3: Inheritance and Variation of Traits	Topic 1: 4 weeks Topic 2 & 3: 4 weeks
3	2. <u>Life Science Part 2</u> • Topic 1: Environmental Traits • Topic 2: Adaptations • Topic 3: Environmental Changes and Effects	6 weeks
4	3. <u>Earth and Space Science</u> • Topic 1: Weather and Climate • Topic 2: Process and Impact of Natural Hazards	5 weeks
4	4. <u>Physical Science</u> • Topic 1: Objects and Motion • Topic 2: Electric and Magnetic Forces	3 weeks

Curriculum Revisions 2020-2021:

- Conversion to 3D version- Added Investigative Phenomena, Graphic Organizers, Picture Vocabulary Strategies, Mission Tasks (to replace PEATs for Engaging Scenarios)

Curriculum Revisions 2022-2023:

- Mealworms will be ordered by the district at the beginning of the year.

Curriculum Revisions 2023-2024:

- Pear Deck links for the STEMscopedia has been added
- Pacing Calendar outlines the Missouri Learning Standards taught and the Disciplinary Core Ideas (NGSS)

Unit 1: Life Science Part 1

Subject: Science

Grade: 3rd

Name of Unit: Life Science

Length of Unit: 4 – 7 weeks, (20-38 days)

Overview of Unit: This unit will cover 3 topics: 1) Life Cycles, and 2) Social and Group Behaviors, 3) Inheritance and Variation of Traits

Materials to prepare for the unit: Mealworms need to be ordered prior to this unit beginning, oatmeal, potatoes to feed mealworms, container to house mealworms.

For Engaging Scenario:

Printed

1 Mission Log (per student or group)

1 Action Plan (per student or group)

Consumable

1 Shoe box or flat piece of cardboard (per student or group)

Construction paper, various colors (per student or group)

Reusable

1 Computer with internet (per student of group)

Various books about specific animals

Possible materials for the diorama include per student or group)

Craft sticks, Glue, Tape, Clay, Paint, Pipe cleaners, Scissors, Small toy plants or animals, Dirt or sand

Topic 1: Life Cycles

Suggested Length of Time: 9-12 days

Essential Question (Student Wondering):

- What do plants and animals have in common?

Enduring Understanding (Learning Objectives)

- The student is expected to develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death.

Standards Addressed

Missouri Learning Standards

- 3.LS1.B.1 Develop a model to compare and contrast observations on the lifecycle of different plants and animals.

Priority: Disciplinary Core Ideas Disciplinary Core Ideas

- 3. LS1.B.1 Reproduction is essential to the continued existence of every kind of organism. Plants and animals have unique and diverse life cycles.
- 3-LS1-1 Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death.

Supporting: Cross Cutting Concepts & Science and Engineering Practices

- Patterns:
 - Predictions - Patterns of change can be used to make predictions.
- Developing and Using Models:
 - Predict Phenomena - Develop and/or use models to describe and/or predict phenomena.

Detailed Description/Instructions:

Standard	5 E Model	Suggestions	Notes
3.LS1.B1 Predictions & Patterning	Engage: Investigative Phenomena- What do plants and animals have in common? APK- In this activity, students read three student statements about the life cycle of an organism and choose the statement they agree with. Graphic Organizer- Choose 4 different life cycles and illustrate the different stages of each life cycle. Hook: You use seeds and an adult plant to help students understand how the life cycle of a plant is a repeating pattern.	1 Day	2 Activities • Inner and Outer Circles • Plants and Seeds-T-Chart Crosscutting Concepts: Patterns -Students will predict the correct life cycle of the Monarch Butterfly. - Students will observe the seed and adult plant and recognize the repeating pattern of the life cycle.
3.LS1.B1 Predictions Predict Phenomena	Explore 1 Activity: Wonders of Plants <i>Students plant a variety of seeds in clear cups to</i>	1 Day -1 day to plant	Materials: • Student Journal-download/print • CER Students plant seeds

	<i>observe their growth and development over time. You grow each seed type in a plastic bag without soil. Each student individually dissects a lima bean seed to observe the inside.</i>	-check in on plants several times to document growth	Soak lima beans overnight Crosscutting Concepts: Prediction - Students will be able to identify parts of a seed and predict the growth rate of the four different seeds.
3.LS1.B1	Explore 2 Activity: Mealworm Life Cycle <i>Students will identify different stages of a mealworm's life cycle by observing a live specimen. The class time used for examination of the mealworms may vary each week. This activity requires several weeks to complete.</i>	1 Day - ongoing to document growth	Materials: • Student Journal - download/print • Butterfly/Mealworms • Butterfly habitat/Plastic container • Hand lens and plastic spoon • Sugar water and leaves/Oatmeal Students will be able to identify the four stages in a mealworm life cycle. What are the similarities and differences between your life cycle and the life cycle of the mealworm?
3.LS1.B1 Predictions	Explore 3: Engineering Solution- Coming to Life! <i>Students will use the scientific knowledge they gained as the 21st Century Skill of collaboration to design and construct a three-dimensional model of a variety of life cycles.</i> 	2-3 Days to research, create, and share	Materials: • Student Journal-download/print Students will be making a 3-D model of a life cycle Crosscutting Concepts: Predictions -Students will predict what will happen to the life cycle of their organism in the future. Use the pattern you see in the data to justify your answer.
3.LS1.B1	Explore 4: Activity- Cycle Hunt! Students go on a “hunt” to answer questions about the life cycles of specific organisms. 	1 Day <i>Optional</i>	Materials: • Make 1 set of Question Posters • Student Journal (Cycle Hunt) download/print • Computers needed for information • Collect life cycle books Students will be able to understand the pattern of growth, development, and reproduction of a life cycle. How

			are these life cycles similar and different from our own life cycles?
3.LS1.B1 Predictions	Explain: STEMscopedia Picture Vocabulary In this activity, students play a game of “Go Fish” to review vocabulary words. NEW-Content Connections Video- Life Cycles	2-3 Days (Could be done in 1 day if it is done through a media like this Pear Deck)	Pick 2-3 activities to extend concept, consider adding voice and choice for students By the end of this lesson, students should be able to answer the essential question. How are life cycles of plants and animals similar?
3.LS1.B.1 3.LS1.1 Predict Predict Phenomena	E: Elaborate	1-2 Days <i>Optional</i>	Math Connections Reading Science Science Today Career Connections Simulation Practice Scientist Spotlight
3.LS1.B1 Predictions Predict Phenomena	E: Evaluate	1 Day (Review could be done the same day as assessment if done through Kagan strategy such as Quiz-Quiz-Trade)	CER, Constructed Response, and Multiple Choice <i>Mission Performance Task requires both Life Cycles and Social and Group Behavior Scopes. Occurs at the end of the unit.</i>

Topic 2: Social and Group Behaviors

Suggested Length of Time: 6 - 8 days

Essential Questions (Student Wondering):

- [How can living in a group help or hurt an animal’s chance of survival?](#)

Enduring Understanding (Learning Objectives):

- The student is expected to construct an argument that some animals form groups that help members survive.

Standards Addressed

Missouri Learning Standards:

- 3.LS3.C.1 Construct an argument with evidence that in a particular ecosystem some organisms --based on structural adaptations or behaviors -- can survive well, some survive less well, and some cannot.
- 3.LS3.B.1 Use evidence to construct an explanation for how the variations in characteristics among individuals of the same species may provide advantages in surviving and finding mates.

Priority: Disciplinary Core Ideas Disciplinary Core Ideas

- 3-LS2.D.1 Social Interactions and Group Behavior: Being part of a group helps animals obtain food, defend themselves, and cope with changes. Groups may serve different functions and vary dramatically in size (Note: Moved from K–2).
- 3-LS2-1 Construct an argument that some animals form groups that help members survive.

Supporting: Cross Cutting Concepts & Science and Engineering Practices

- Cause and Effect - Cause and effect relationships are routinely identified, tested, and used to explain change
- Engaging in Argument from Evidence:
 - Construct and Support - Construct and/or support an argument with evidence, data, and/or a model.

Detailed Description/Instructions:

Standard	5 E Model	Suggestions	Notes
3-LS2 Construct & support	Engage: <i>Investigative Phenomena- How can living in a group help or hurt an animal's chances of survival?</i> APK- <i>In this activity, students read each student statement about a zebra's stripes and choose which statement they agree with.</i> <i>Graphic Organizer- Draw four animal groups and list four benefits of living in a group.</i> Hook: <i>Students observe how animals work together and what happens when they are left alone.</i>	1 Day	2 Activities ● Student journal ● Migration challenge Teacher checks for understanding, prior knowledge, and misconceptions of social and group behavior. How does living in a group help animal survival?
3-LS2.D.1 Construct &	Explore 1: Activity- Collect and Conquer! Students explore the differences	1 Day	Materials: ● Student Journal - download/print

support; Cause & Effect	between hunting in groups and hunting alone.		CER Crosscutting Concepts: Cause and Effect -Students discover what would happen to the most skilled hunter if it were injured. Students will understand how living in a group benefits animals.
3-LS2.D.2 Construct & Support	Explore 2: Activity- Strength in Numbers Students will play the role of predator or prey as they battle to see who will survive.	2 Days -1 day for activity -1 day for discussion and CER	Role play predator vs. prey Students will understand the advantages and disadvantages of hunting in a group versus hunting alone.
3-LS2	Explain: STEMscopedia Picture Vocabulary Strategy Students will write “What am I?” riddles to review vocabulary terms.	1-2 Days (Could be done in 1 day if it is done through a media like this Pear Deck)	Pick 2-3 activities to extend the concept, consider adding voice and choice for students. By the end of this lesson, students should be able to answer the essential question. How can living in a group help or hurt an animal’s chance of survival?
3.LS2.D1 3.LS2.1	Elaborate	1 Day <i>Optional</i>	Math Connections Reading Science Science Today Career Connections Simulation Practice Scientist Spotlight
3-LS2	Evaluate	1 Day (Review could be done the same day as assessment if done through Kagan strategy such as	Materials: - Student Journal-Download/Print - CER

		Quiz-Quiz-Trade)	
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Topic 3: Inheritance and Variation of Traits

Suggested Length of Time: 5-8 Days

Essential Question (Student Wondering):

- Why do offspring look similar to, but not exactly like, their parents?

Enduring Understanding (Learning Objectives)

- The student is expected to analyze and interpret data to provide evidence that plants and animals have traits inherited from parents and that variation of these traits exists in a group of similar organisms.

Standards Addressed

Missouri Learning Standards:

- 3-LS3.A.1 Construct scientific arguments to support claims that some characteristics of organisms are inherited from parents and some are influenced by the environment.

Priority: Disciplinary Core Ideas Disciplinary Core Ideas

- 3-LS3.A.1 Inheritance of Traits: Many characteristics of organisms are inherited from their parents.
- 3-LS3.B.1 Variation of Traits: Different organisms vary in how they look and function because they have different inherited information.
- 3-LS3-1 Analyze and interpret data to provide evidence that plants and animals have traits inherited from parents and that variation of these traits exists in a group of similar organisms.

Supporting: Cross Cutting Concepts & Science and Engineering Practices

- Patterns:
 - Similarities and Differences - Similarities and differences in patterns can be used to sort, classify, communicate, and analyze simple rates of change for natural phenomena and designed products.
- Analyze and Interpret Data - Analyze and interpret data to make sense of phenomena, using logical reasoning, mathematics, and/or computation.

Detailed Description/Instructions:

Standard	5 E Model	Suggestions	Notes
3-LS3.A Analyze and Interpret Data	Engage: Investigative Phenomena- Why do offspring look similar to, but not exactly like, their parents? APK- <i>In this activity, students match the</i>	1 Day	Journal page, match parent to offspring Teacher checks for understanding, prior knowledge, and

	<i>offspring with the parent and discuss the traits found in both parent and offspring.</i> Graphic Organizer- <i>On one chart, list how the traits of the siblings of an organism are similar and different. On the other chart, list how the traits of similar organisms are similar and different. Then write possible combinations of the traits.</i> Hook: Inherited Traits Survey Students survey each other to determine like and different traits.		misconceptions about inherited traits of plants and animals.
3-LS3.A.1 Similarities and differences	Explore 1: Activity- Random Variation Students produce the offspring of two plants by randomly selecting traits from each parent.	1 Day	Materials: Print combination headings, amaryllis cards, traits guide, student journal page, and CER. Crosscutting Concepts: Patterns -Students will identify similarities and differences among the plant offspring. Students will understand that each offspring can inherit different combinations of traits from their parents.
3-LS3.A Analyze and Interpret Data Similarities and differences	Explore 2: Engineering Solution- Puppy Type Students will work in pairs to help others decide which dogs should be bred. Students will describe and illustrate a possible offspring from two of the types of dog breeds available.	1 Day	Materials: 1 set of dog pictures Student journal Print pictures of dog breeds or use a projector to show. Students will understand that the characteristics of

			the offspring depend on the traits of the parents. Crosscutting Concepts: Predictions -Students will identify similarities and differences between adult dogs and their offspring.
	Explore 3: Tuva- Cicadas Students will create a dot-plot map to explore the variations of the wing length and body length of the trabecula species of cicada.	1 Day <i>Optional</i>	
	Explain STEMScopedia Picture Vocabulary Students will use vocabulary words while writing a story with a partner.	1 Day (Could be done in 1 day if it is done through a media like this Pear Deck)	Pick 2-3 activities to extend the concept, consider adding voice and choice for students. By the end of this lesson, students should be able to answer the essential question. Why do offspring look similar to, but not exactly like, their parents?
3.LS3.A.1 2.LS3.B.1 3.LS3.1 Similarities and differences Analyze and interpret data 3.5.3TS1.2	Elaborate	1-2 Days <i>Optional</i>	Math Connections Reading Science Science Today Career Connections Simulation Practice Scientist Spotlight
3-LS3.A Similarities and differences Analyze and interpret data	Evaluate	1 Day (Review could be done the same day as assessment if done through Kagan strategy)	CER, Constructed Response, and Multiple Choice

		such as Quiz-Quiz-Trade)	
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Unit 2: Life Science Part 2

Subject: Science

Grade: 3rd

Name of Unit: Life Science, Part 2

Length of Unit: 3-5 weeks, (15-26 days)

Overview of Unit: This unit will cover 3 topics:

- 1) Environmental Traits
- 2) Adaptations
- 3) Environmental Changes and Effect

Materials for Engaging Scenario:

Printed

- 1 Mission Log (per student or group)
- 1 Action Plan (per student or group)

Reusable

- 1 Pencil (per student or group)
- Props for student plays
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Topic 1: Environmental Traits

Suggested Length of Time: 5-7 Days

Essential Questions (Student Wondering):

- How can the environment affect an organism's traits?

Enduring Understanding (Learning Objectives)

- The student is expected to use evidence to support the explanation that traits can be influenced by the environment.

Standards Addressed

Missouri Learning Standards:

- 3.LS3.A.1 Construct scientific arguments to support claims that some characteristics of organisms are inherited from parents and some are influenced by the environment.

Priority: Disciplinary Core Ideas Disciplinary Core Ideas

- 3-LS3.A.2 Inheritance of Traits: Other characteristics result from individuals' interactions with the environment, which can range from diet to learning. Many characteristics involve both inheritance and environment.
- 3-LS3.B.2 Variation of Traits: The environment also affects the traits that an organism develops.
- 3-LS3-2 Use evidence to support the explanation that traits can be influenced by the environment.

Supporting: Cross Cutting Concepts & Science and Engineering Practices

- Cause and Effect - Cause and effect relationships are routinely identified, tested, and used to explain change
- Constructing Explanations and Designing Solutions:
 - Use Evidence - Use evidence (e.g., measurements, observations, patterns) to construct or support an explanation or design a solution to a problem.

Detailed Description/Instructions:

Standard	5 E Model	Suggestions	Notes
3-LS3.A.2 3-LS3.B.2	Engage: <i>Investigative Phenomena- How can the environment affect an organism's traits?</i> APK- In this activity, students read student statements about environmental traits and choose the statement they agree with. <i>Graphic Organizer- List 4 examples of traits that have been changed due to environmental factors. Give two reasons that could contribute to each change.</i> Hook: Trait Hunt Students observe different traits of their classmates on a trait scavenger hunt.	1 Day	Student Journal page Teacher checks for understanding, prior knowledge, and misconceptions of inherited vs. environmental traits.
3-LS3.A.2 3-LS3.B.2 Cause and Effect	Explore 1 - Activity- Classify the Traits Students read a story and record evidence of various traits of the different characters.	1 Day	Student journal Copy of story, <i>Have a Great Day!</i> or another option for an engaging text is the Reading Science article about dolphins. It can be found under the elaborate tab. Students will understand and identify the differences between inherited and environmental traits. Crosscutting Concepts: Cause and Effect

			-Students will be able to identify the cause and effect relationship between the environment and learned traits when reading about Brutus the Macaw. -Students will be able to identify the cause and effect relationship between inherited traits and the characteristics that are passed from parent to offspring.
3-LS3.A.2 3-LS3.B.2	Explore 2- Activity- Match It! Students take turns trying to find matching pairs of different types of inherited or environmental traits.	1 Day	Student journal page Memory cards Students will understand and identify the differences between inherited and environmental traits.
3-LS3.A.2 3-LS3.B.2 Cause and Effect	Explain: STEMscopedia Picture Vocabulary <i>In this activity, students will play a headband game to review vocabulary terms. This would be a great center or station activity.</i>	1-2 Days (Could be done in 1 day if it is done through a media like this Pear Deck)	Pick 2-3 activities to extend the concept, consider adding voice and choice for students. By the end of this lesson, students should be able to answer the essential question. How can the environment affect an organism's traits?
3.LS3.A.2 3.LS3.B.2 3.LS3.2 Cause and Effect Use evidence 3.5.ETS.1.1	Elaborate	1-2 Days <i>Optional</i>	Math Connections Reading Science Science Today Career Connections Simulation Practice Scientist Spotlight
3-LS3.A.2 3-LS3.B.2 Science and Engineering practice	Evaluate	1 Day (Review could be done the same day as assessment if done through Kagan strategy such as	CER, Constructed Response, and Multiple Choice

		Quiz-Quiz-T rade)	
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Topic 2: Adaptations

Suggested Length of Time: 6-9 Days

Essential Question (Student Wondering):

- Why do plants and animals live in certain places?

Enduring Understanding (Learning Objectives)

- The student is expected to construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all.

Standards Addressed

Missouri Learning Standards:

- 3.LS3.C.1 Construct an argument with evidence that in a particular ecosystem some organisms --based on structural adaptations or behaviors -- can survive well, some survive less well, and some cannot.
- 3.LS3.B.1 Use evidence to construct an explanation for how the variations in characteristics among individuals of the same species may provide advantages in surviving and finding mates.

Priority: Disciplinary Core Ideas Disciplinary Core Ideas

- 3. LS4.C.1 Adaptation: For any particular environment, some kinds of organisms survive well, some survive less well, and some cannot survive at all.
- 3-LS4-3 Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all.

Supporting: Cross Cutting Concepts & Science and Engineering Practices

- Cause and Effect - Cause and effect relationships are routinely identified, tested, and used to explain change.
- Engaging in Argument from Evidence:
 - Construct and Support - Construct and/or support an argument with evidence, data, and/or a model.

Detailed Description/Instructions:

Standard	5 E Model	Suggestions	Notes
3.LS4.C.1 Science and Engineering Cause and Effect	Engage: Investigative Phenomena- Why do plants and animals live in certain places? APK- In this activity, students decide	1 Day *one way to save time is to include	Student Journal Select a few animals to guide through adaptations, needs and survival.

	which student statement about adaptations they agree with most. Graphic Organizer- Write some adaptations plants and animals can have for surviving well in land and water environments. Hook: Students experience how elephants use their ears to survive in their environment.	vocabulary today	Teacher checks for understanding, prior knowledge, and misconceptions of animal adaptations. Crosscutting Concepts: Cause and Effect -Students will be able to identify the cause and effect relationship between the removal of a vital part of their classroom and how they adapt.
3.LS4.C.1 Science and Engineering	Explore 1- Activity- Where Do I Live? Students match animals to the environment where they would most likely survive based on their adaptations.	1 Day	Student journal CER Environmental cards Living things cards Consumables Students will understand that animals adapt to survive in their environment.
3.LS4.C.1 Science and Engineering Cause and Effect	Explore 2: Engineering Solution- Build My Habitat! Students will use the scientific knowledge they gained as well as the 21st Century Skill of collaboration to design and construct a habitat for a new lizard at the zoo.  This Explore is one of two during 3rd grade when the engineering design standard is fully addressed.	2-3 Days to research, create, and share	Student journal Computers Consumables Students will understand that animals' adaptations are affected by the environment. Crosscutting Concepts: Cause and Effect -Students will be able to identify the relationship between an animal's adaptations and its environment.
3.LS4.C.1 Science and Engineering Cause and Effect	Explain: STEMscopedia Picture Vocabulary In this activity, students will write acrostic poems to review vocabulary terms.	1-2 Days (Could be done in 1 day if it is done through a media like	Pick 2-3 activities to extend the concept, consider adding voice and choice for students. By the end of this lesson, students should be able to answer the essential

		this Pear Deck)	question. Why do plants and animals live in certain places?
3.LS4.C.1 3.LS4.3 Cause and Effect Construct and Support 3.5.ETS.1.1	Elaborate	1-2 Days <i>Optional</i>	Math Connections Reading Science Science Today Career Connections Simulation Practice Scientist Spotlight
3.LS4.C.1 Science and Engineering Cause and Effect	Evaluate	1 Day (Review could be done the same day as assessment if done through Kagan strategy such as Quiz-Quiz-Trade)	CER, Constructed Response, and Multiple Choice

Topic 3: Environmental Changes and Effects

Suggested Length of Time: 4-10 days

Essential Question (Student Wondering):

- What happens to plants and animals when their environments change?

Enduring Understanding (Learning Objectives)

- The student is expected to make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change.

Standards Addressed

Missouri Learning Standards:

- 3.LS3.D.1 Make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change.

Priority: Disciplinary Core Ideas Disciplinary Core Ideas

- 3-LS4.D.1 Biodiversity and Humans: Populations live in a variety of habitats, and change in those habitats affects the organisms living there.
- 3-LS4-4 Make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change.

- 3-LS2.C.1 When the environment changes in ways that affect a place's physical characteristics, temperature, or availability of resources, some organisms survive and reproduce, others move to new locations, yet others move into the transformed environment, and some die.

Supporting: Cross Cutting Concepts & Science and Engineering Practices

- Systems and System Models:
 - System Description - A system can be described in terms of its components and their interactions.
- Engaging in Argument from Evidence:
 - Solutions - Make a claim about the merit of a solution to a problem by citing relevant evidence about how it meets the criteria and constraints of the problem.

Detailed Description/Instructions:

Standard	5 E Model	Suggestions	Notes
3-LS4.D.1 3-LS2.C.1	Engage: Investigative Phenomena- What happens to plants and animals when their environments change? APK- In this activity, students read statements about environmental change and its effect on organisms and decide whether the statements are correct, partly correct, or incorrect. Graphic Organizer- List two environmental changes. List two effects the change in environment could have on plants and two effects the change of environment could have on animals. Hook: Students view pictures of environmental changes and discuss how changes could affect the plants and animals that live there.	1 Day	Student journal Posters Brainstorm local events where environmental changes have occurred. Teacher checks for understanding, prior knowledge, and misconceptions of environmental changes and effects.
3-LS2.C.1	Explore 1: Activity- Trouble in Paradise Students engage in a role-playing	1 -2 Days	Student journal CER Game boundary guidelines

3-LS4.D.1	game to discover how environmental changes affect the animals that live in a certain habitat.	-Activity 1 day -Discussion on 2nd day *discussion can be combined with vocabulary to save time	Reusables Students will discover and understand how environmental changes affect the animals that live in a certain habitat.
3-LS2.C.1 3-LS4.D.1 Science and Engineering Systems	Explore 2: Engineering Solution-New Habitat Students will use the scientific knowledge they gained as well as the 21st Century Skill of collaboration to design a solution for maintaining an environmental change. Students must design and construct an action plan for saving the plants and animals that depend on the pond by relocating the ecosystem. 	2-3 Days <i>Optional</i>	Entry document Expert mini-workshop Rubric Consumables Students will design a way to prevent a negative impact on a water ecosystem. Crosscutting Concepts: Systems and System Models -Students will be able to identify that all organisms in an environment depend on each other.
3-LS2.C.1 3-LS4.D.1 Science and Engineering Systems	Explain: STEMscopedia Picture Vocabulary Students will play an I Have . . . Who Has? game.	1-2 Days (Could be done in 1 day if it is done through a media like this Pear Deck)	Pick 2-3 activities to extend the concept, consider adding voice and choice for students. By the end of this lesson, students should be able to answer the essential question. What happens to plants and animals when their environments change?
3.LS4.D.1 3.LS4.4 System Description Solutions 3.LS2.C.1 3.5.ETS.1.1 3.5.ETS.1.2	Elaborate	1-2 Days <i>Optional</i>	Math Connections Reading Science Science Today Career Connections Simulation Practice Scientist Spotlight

3-LS2.C.1 3-LS4.D.1 Science and Engineering Systems	Evaluate	1-2 Day (Review could be done the same day as assessment if done through Kagan strategy such as Quiz-Quiz-Trade)	CER, Constructed Response, and Multiple Choice
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Engaging Scenario

***Optional:* Engaging Scenario: Mission Performance Task**

The students mission is to write and perform a play about an animal family's struggle to survive in a new environment.

Print off a Mission Log and Action Plan for each student.

Unit 3: Earth and Space Science

Subject: Science

Grade: 3rd

Name of Unit: Earth and Space Science

Length of Unit: 5 weeks, April – May (18-25 days)

Overview of Unit: This unit will cover two topics:

- 1) Weather and Climate
- 2) Processes and Impacts of Natural Hazards.

Materials for Engaging Scenario:

- 1 Mission Log (per student or group)
- 1 Action Plan (per student or group)

Consumable

- 1 Paper (per student or group)

Reusable

- 1 Pencil (per student or group)
- 1 Computer with internet access (per student or group)

Topic 1: Weather and Climate

Suggested Length of Time: 10-13 Days

Essential Questions (Student Wondering):

- [How can we make predictions about the weather?](#)

Enduring Understanding (Learning Objectives):

- The student is expected to represent data in tables and graphical displays to describe typical weather conditions expected during a particular season.
- The student is expected to obtain and combine information to describe climates in different regions of the world.

Standards Addressed

Missouri Learning Standards:

- 3.ESS2.D.2 Obtain and combine information to describe climates in different regions of the world.

Priority: Disciplinary Core Ideas Disciplinary Core Ideas

- 3-ESS2.D.1 Scientists record patterns of the weather across different times and areas so that they can make predictions about what kind of weather might happen next.
- 3-ESS2.D.2 Climate describes a range of an area's typical weather conditions and the extent to which those conditions vary over years.

Supporting: Cross Cutting Concepts & Science and Engineering Practices

- 3-ESS2-1 Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season.
- 3-ESS2-2 Obtain and combine information to describe climates in different regions of the world.
- Predictions - Patterns of change can be used to make predictions.
- Analyzing and Interpreting Data:
 - Represent Data - Represent data in tables and/or various graphical displays (bar graphs, pictographs, and/or pie charts) to reveal patterns that indicate relationships.
- Obtaining, Evaluating, and Communicating Information:
 - Phenomena and Solutions - Obtain and combine information from books and/or other reliable media to explain phenomena or solutions to a design problem.

Detailed Description/Instructions:

Standard	5 E Model	Suggestions	Notes
3-ESS2.D.1 3-ESS2.D.2 Predictions	Engage: Investigative Phenomena- How can we make predictions about the weather? APK- In this activity, students choose and support the weather and climate statement they	1 Day *one way to save time is to include vocabulary today	Student Journal Recording of Previous Day's weather report Crosscutting Concepts: Predictions

	agree with. Graphic Organizer- How are weather and climate alike? How are they different? Fill in the Venn diagram with words that describe weather, climate, or both. Hook: Students debate if the local weather predicted for the previous day was accurate or not.		-Students predict patterns of weather after investigating the current weather report in the area in which they live. Teachers will check for understanding, prior knowledge, and misconceptions of weather and climate.
3-ESS2.D.1 3-ESS2.D.2 Predictions	Explore 1: Activity- Conditions in US Cities Students graph average precipitation and average seasonal temperature data from cities located in the United States given a set of color coded maps. Then students compare and contrast conditions for cities located in different regions around the United States.	2 Day -It may be helpful to upload maps onto Schoology to allow students to zoom in. - Strategic partnering may be helpful.	Student Journal Student Handout (color copy) Seasonal Data Handout (color copy) Blank Map of the US Crosscutting Concepts: Predictions -After graphing seasonal and precipitation information of various cities, students discuss and make predictions about the weather in these areas. The student will understand that weather conditions vary from region to region within the United States.
3-ESS2.D.1 3-ESS2.D.2 Predictions	Explore 2: Activity- Weather or Climate? In this activity, students will investigate to find information to help them differentiate between weather and climate. 	3 Days <i>Optional</i>	Printed Material 1 Weather or Climate? (per student) 1 Student CER (per student) 1 Weather Photos (per group) 1 Situation Cards (per student) Reusable 1 Scissors (per student) 1 Pencil or highlighter (per student) Crosscutting Concepts: Predictions Students will analyze various weather data from given cities and predict the best place for their teacher to vacation.

			The student will understand how weather and climate affects cities throughout the world.
	Explore 3: Research- Meteorologist for a Week! Students will gather information from multiple sources to understand weather, climate, and the role and responsibilities of a meteorologist.	NEW 2 - 3 Days - Checking weather could happen during odd pockets of time throughout the day.	Printed Material 1 Meteorologist for a Week! (per student) 1 How to Gather and Present Information from Research (per student) Reusable Suggested Materials 1 Computer, with internet access (per group) Books Printed articles Videos
	Explore 4: Tuva- Climate Students will obtain information to describe the climate in Singapore and Washington, DC.	<i>Optional</i> NEW	Printed Material 1 Climate (per student) Reusable Material 1 Computer (per student or group) 1 Pencil (per student) 1 World map or atlas containing a world map (per class) Consumable Material 1 Yellow colored pencil or marker (per student or group) 1 Blue colored pencil or marker (per student or group)
3-ESS2.D.1 3-ESS2.D.2 Predictions	Explain: STEMscopedia Picture Vocabulary Students will play a game similar to the popular game Guess Who? to review vocabulary terms.	1-2 Days (Could be done in 1 day if it is done through a media like this Pear Deck)	Pick 2 - 3 activities to extend concept, consider adding voice and choice for students. By the end of this lesson, students should be able to answer the essential question. How can we make predictions about the weather?
3-ESS2.D.1 3-ESS2.D.2 Predictions	Elaborate	1-2 Days <i>Optional</i>	Math Connections Reading Science Science Today Career Connections Simulation Practice Scientist Spotlight

3-ESS2.D.1 3-ESS2.D.2 Predictions	Evaluate	2-3 Days (Review could be done the same day as assessment if done through Kagan strategy such as Quiz-Quiz-Trade)	<i>CER, Multiple Choice, Open-Ended Assessment and an Active Assessment</i>
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Topic 2: Processes and Impacts of Natural Hazards

Suggested Length of Time: 7-11 Days

Essential Question (Student Wondering):

- [How do we protect ourselves from hazardous weather?](#)

Enduring Understanding (Learning Objectives):

- The student is expected to make a claim about the merit of a design solution that reduces the impacts of a weather-related hazard.

Standards Addressed

Missouri Learning Standards:

- 3.ESS3.B.1 Make a claim about the merit of an existing design solution (e.g. levies, tornado shelters, sea walls, etc.) that reduces the impacts of a weather-related hazard.

Priority: Disciplinary Core Ideas Disciplinary Core Ideas

- 3-ESS3.B.1 A variety of natural hazards result from natural processes. Humans cannot eliminate natural hazards but can take steps to reduce their impacts.
- 3-ESS3-1 Make a claim about the merit of a design solution that reduces the impacts of a weather-related hazard.

Supporting: Cross Cutting Concepts & Science and Engineering Practices

- Cause and Effect - Cause and effect relationships are routinely identified, tested, and used to explain change.
- Engaging in Argument from Evidence:
 - Solutions - Make a claim about the merit of a solution to a problem by citing relevant evidence about how it meets the criteria and constraints of the problem.

Detailed Description/Instructions:

Standard	5 E Model	Suggestions	Notes
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3-ESS3.B.1 Cause/Effect	Engage: Investigative Phenomena- How do we protect ourselves from hazardous weather? APK- In this activity, students choose the statement they agree with most. Graphic Organizer- What can be done to reduce the impact of natural weather-related hazards? Write steps humans can take to reduce the impact these natural hazards can cause. Hook: Students listen to a version of “The Three Little Pigs” and discuss natural hazards in relation to the story.	1 Day	Student journal page or project on board Three Little Pigs book or find an e-version Teachers will check for understanding, prior knowledge and misconceptions of processes and impacts of natural hazards. Crosscutting Concepts: Cause and Effect -Students identify how natural hazards can affect a structure after reading Three Little Pigs.
3-ESS3.B.1 Cause/Effect Solutions	Explore 1: Activity- A Tale of Two Houses Students compare the effects of natural disasters on two different houses.	1 Day	Student Journal House Articles The student will understand the effects of natural disasters on structures. Crosscutting Concepts: Cause and Effect -Students will discuss how the same natural hazard can affect something differently.
3-ESS3.B.1 Cause/Effect Solutions	Explore 2: Engineering Solutions- Rising Expectations! Students will use the scientific knowledge they gained as well as the 21st Century Skill of collaboration to design and construct a way to effectively protect New Orleans from rising water. This Explore is one of two during 3rd grade when the engineering design standard is fully addressed.	2-3 Days - It might be helpful if having students work in partners or small groups to use a Kagan Consensus Board	Student Journal New Orleans Image Consumables The student will understand that there are ways to reduce the impact of natural disasters Crosscutting Concepts: Cause and Effect -Students will name how a small change in their design can have a big effect on their results.

3-ESS3.B.1 Cause/Effect	Explain: STEMscopedia Picture Vocabulary <i>Students will participate in a conversation using vocabulary words from the scope.</i>	1-2 Days (Could be done in 1 day if it is done through a media like this Pear Deck)	Pick 2 - 3 activities to extend concept, consider adding voice and choice for students. By the end of this lesson, students should be able to answer the essential question. <i>How do we protect ourselves from hazardous weather?</i>
3-ESS3.B.1 Cause/Effect	Elaborate	1-2 Days <i>Optional</i>	Math Connections Reading Science Science Today Career Connections Simulation Practice Scientist Spotlight .
3-ESS3.B.1 Cause/Effect Solutions	Evaluate	2-3 Days (Review could be done the same day as assessment if done through Kagan strategy such as Quiz-Quiz-Trade)	Engaging Scenario: Mission Performance Task (<i>Optional</i>) The students mission is to develop a presentation for the community on how to reduce the impact of the high-risk weather that could occur in their community. Print off Mission Log and Action Plan for each student

Engaging Scenario

***Optional* - Engaging Scenario: Mission Performance Task**

The students mission is to develop a presentation for the community on how to reduce the impact of the high-risk weather that could occur in their community.

Print off Mission Log and Action Plan for each student

Unit 4: Physical Science

Subject: Science

Grade: 3rd

Name of Unit: Physical Science

Length of Unit: 4 weeks, April-May (15 - 21 Days)

Overview of Unit: This unit will cover two topics:

- 1) Objects and Motion
- 2) Electric and Magnetic Forces

Materials to prepare for the unit: Poster board for racetrack, craft magnets.

Topic 1: Objects and Motion

Suggested Length of Time: 9-11 Days

Essential Question (Student Wondering):

- How do balanced and unbalanced forces affect objects?

Enduring Understanding (Learning Objectives):

- The student is expected to plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object.
- The student is expected to make observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predict future motion.

Standards Addressed

Missouri Learning Standards:

- 4.PS2.A.1 Make observations and/or measurement of an object's motion to provide evidence that a pattern can be used to predict future motion.
- 4.PS2.A.2 Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object.
- 4.PS2.B.1 Plan and conduct a fair test to compare and contrast the forces (measured by a spring scale in Newtons) required to overcome friction when an object moves over different surfaces (i.e., rough/smooth).
- 4.PS2.B.2 Predict how changes in either the amount of force applied to an object or the mass of the object affects the motion (speed and direction) of the object.
- 4.PS3.C.1 Use models to explain that simple machines change the amount of effort force and/direction of force.

Priority: Disciplinary Core Ideas Disciplinary Core Ideas

- 3-PS2.A.1 Each force acts on one particular object and has both strength and a direction. An object at rest typically has multiple forces acting on it, but they add to give zero net force on the object. Forces that do not sum to zero can cause changes in the object's speed or direction of motion. (Boundary: Qualitative and conceptual, but not quantitative addition of forces are used at this level.)
- 3-PS2.A.2 The patterns of an object's motion in various situations can be observed and measured; when that past motion exhibits a regular pattern, future motion can be predicted from it. (Boundary: Technical terms, such as magnitude, velocity, momentum, and vector quantity, are not introduced at this level, but the concept that some quantities need both size and direction to be described is developed.)
- 3-PS2.B.1 Objects in contact exert forces on each other.

Supporting: Cross Cutting Concepts & Science and Engineering Practices

- Predictions - Patterns of change can be used to make predictions.
- Cause and Effect - Cause and effect relationships are routinely identified, tested, and used to explain change
- Planning and Carrying Out Investigations:
 - Variables - Plan and conduct an investigation collaboratively to produce data to serve as the basis for evidence, using fair tests in which variables are controlled and the number of trials is considered.
 - Phenomenon Explanations - Make observations and/or measurements to produce data to serve as the basis for evidence for an explanation of a phenomenon or to test a design solution.

Detailed Description/Instructions:

Standard	5 E Model	Suggestions	Notes
3-PS2.A1 3-PS2.A2 3-PS2.B1 Patterns Cause & Effect	Engage: Investigative Phenomena- How do balanced and unbalanced forces affect objects? APK- In this activity, students decide which statement about objects and motion they agree with most. Graphic Organizer- Write characteristics of balanced and unbalanced forces. What are the three words that help us determine the patterns of objects in motion? Hook: Students are introduced to balanced and unbalanced forces and patterns of an object's motion by playing the game tug-of-war.	1 Day *one idea is to use the yarn or a bandana with a partner as tug-of-war	2 Activities - Journal page - download/print - Tug-of-War (physical space required) - Video recording Tug-of-War Crosscutting Concepts: - Students will be able to identify patterns that are occurring during the game. - Students will also be able to identify Cause & Effect Relationships that occur during the game. Teacher will check for understanding, prior knowledge, and misconceptions of objects and motion.
3-PS2.A1 3-PS2.A2 3-PS2.B1 Patterns Cause & Effect Plan & conduct invest.	Explore 1: Activity- Motion Stations Students explore and test force and motion through a variety of learning stations. They record their data and compare the results.	3 Days (2 days for stations, 1 day for discussion and CER)\ - It is recommended that teachers watch the set	Materials: - Journal page - download/print - Computer stations (optional) - CER - Set up 6 stations Crosscutting Concepts: - Students will identify

Represent Data		up videos. - It is helpful to do these as stations.	Patterns when they complete multiple trials. - Students will identify Cause & Effect Relationships during the Motion and Balance Learning Stations - Based on the data you collected from the Motion Stations, ask students what patterns did you notice in the object's motion? Students will understand that balanced forces do not involve motion, unbalanced forces involve motion.
3-PS2.A1 3-PS2.A2 3-PS2.B1 Patterns; Cause & Effect; Plan & Conduct Investigation; Represent Data	Explore 2: Inquiry Investigation- My Motion Investigation Students will work in groups to design and conduct an investigation about the motion of objects caused by balanced and unbalanced forces. 	2 Days - An option is to do this whole class or if your school already does STEM activities that explore balanced and unbalanced forces, this Explore could be skipped.	Description: Students will work in groups to design and conduct an investigation about the motion of objects caused by balanced and unbalanced forces. This inquiry investigation is designed to align with the science and engineering practice associated with this PE: “Planning and Carrying Out Investigations: Plan and conduct an investigation collaboratively to produce data to serve as the basis for evidence, using fair tests in which variables are controlled and the number of trials considered. Materials: - 1 My Motion Investigation (per student or group) - Other materials will depend on what the students choose to investigate. Crosscutting Concepts: Students will be able to identify Patterns and Cause & Effect Relationship when they are building and testing their catapult. Student products can include a presentation. Students will understand how balanced and unbalanced forces

			cause motion.
3-PS2.A1 3-PS2.A2 3-PS2.B1	Explain Required: Picture Vocabulary <i>In this activity, students will play a relay game to win points by reviewing vocabulary terms.</i> STEMscopedia	1-2 Days (Could be done in 1 day if it is done through a media like this Pear Deck)	By the end of this lesson, students should be able to answer the essential question. <i>How do balanced and unbalanced forces affect objects?</i>
3.PS2.1.1 3.PS2.A.2 3.PS2.B.1 3.PS2/1 3.PS2.2 Prediction Cause and Effect Variables Phenomenon Explanation 3.5. ETS.1.1 3.5. ETS.1.3	Elaborate	1-2 Days <i>Optional</i>	Math Connections Reading Science Science Today Career Connections Simulation Practice Scientist Spotlight
3-PS2.A1 3-PS2.A2 3-PS2.B1	Evaluate: Assess	1 Day (Review could be done the same day as assessment if done through Kagan strategy such as Quiz-Quiz-Trade)	CER, Open-ended, or Multiple Choice

Topic 2: Electric and Magnetic Forces

Suggested Length of Time: 6-10 Days

Essential Question (Student Wondering):

- How do magnets interact with each other?

Enduring Understanding (Learning Objectives):

- The student is expected to ask questions to determine cause and effect relationships of electric or magnetic interactions between two objects not in contact with each other.
- The student is expected to define a simple design problem that can be solved by applying scientific ideas about magnets.

Standards Addressed

Missouri Learning Standards:

- 3-PS2.B.1 Plan and conduct investigations to determine the cause and effect relationship of electric or magnetic interactions between two objects not in contact with each other.

Priority: Disciplinary Core Ideas Disciplinary Core Ideas

- 3-PS2.B.2 Electric, and magnetic forces between a pair of objects do not require that the objects be in contact. The sizes of the forces in each situation depend on the properties of the objects and their distances apart and, for forces between two magnets, on their orientation relative to each other.
- 3-PS2-3 Ask questions to determine cause and effect relationships of electric or magnetic interactions between two objects not in contact with each other.
- 3-PS2-4 Define a simple design problem that can be solved by applying scientific ideas about magnets.

Supporting: Cross Cutting Concepts & Science and Engineering Practices

- Cause and Effect - Cause and effect relationships are routinely identified, tested, and used to explain change
- Asking Questions and Defining Problems:
 - Investigate and Predict - Ask questions that can be investigated and predict reasonable outcomes based on patterns such as cause and effect relationships.
 - Solving Problems with Criteria - Define a simple design problem that can be solved through the development of an object, tool, process, or system and includes several criteria for success and constraints on materials, time, or cost.

Detailed Description/Instructions:

Standard	5 E Model	Suggestions	Notes
3-PS2.B.2 Make a Claim; Cause	Engage: Investigative Phenomena- How do magnets interact with	1 Day *one way to	Materials: - Journal page - download/print Activity:

& Effect	each other? APK- In this activity, students choose the statement they agree with most. Graphic Organizer- In each box, write what is needed for an eclectic or magnetic force between objects. Then complete the statement at the bottom of the page. Hook: You make a paper clip “float” by using fishing string and a small magnet.	save time later is to do vocabulary today	- Hook - Floating Paper Clip Teacher will check for understanding, prior knowledge, and misconceptions of electric and magnetic forces. Crosscutting Concepts: Cause and Effect -Students will be able to identify the cause and effect relationship between the paperclip and the magnet.
3-PS2.B.2 Solving Problems with Criteria; Cause & Effect	Explore 1: Activity- Forces in Action Students rotate through six stations where they explore magnetic forces and the force of static electricity.	1 Day	Materials: - Journal page - download/print - CE Crosscutting Concepts: Cause and Effect -Students will be able to explain that static electricity can only attract, not repel through Station 5 and Station 6. -Students will be able to explain that magnets are not attracted to all metals through Station 1 and Station 4. -Students will be able to explain that larger magnets don’t always have the strongest force through Station 2 and Station 3.
3-PS2.B.2 Investigate & Predict; Solving Problems with Criteria; Cause & Effect	Explore 2: Engineering Solutions- Magnetic Racetrack Students will use the scientific knowledge they gained as well as the 21st Century Skill of collaboration to design and construct a toy car racetrack that can move a toy car around the racetrack in 30 seconds or	2 Day <i>Optional</i> (If time allows, this is a great end-of-the year activity to do)	Activity - Create toy car racetrack Materials: - Journal page - download/print - Poster board - Design process 1 day; performance 1 day - Student Rubric & CER Key - Crosscutting Concepts: Cause and

	less using the force of magnetism.		Effect -Students will be able to explain that magnets have fields of magnetism as they move the car around the track without directly touching the magnet to the car. After building the race track, ask students what would happen if you built a steep hill into your racetrack?
3-PS2.B.2	Explain: STEMscopedia Picture Vocabulary In this activity, students will play a game of Vocabulary Baseball.	2-3 Days (Could be done in 1 day if it is done through a media like this Pear Deck)	Pick 2 - 3 activities to extend concept; consider adding voice and choice for students Computer stations (optional) By the end of this lesson, students should be able to answer the essential question. How do magnets interact with each other?
3.PS2.2 3.PS2.3 3.PS2.4 Cause and Effect Investigate and Predict Solving Problems with Criteria 3.5.ETS.1.1	Elaborate:	1-2 Days	Math Connections Reading Science Science Today Career Connections Simulation Practice Scientist Spotlight
3-PS2.B.2 Cause & Effect	Evaluate: Assess	1 Day (Review could be done the same day as assessment if done through Kagan strategy such as Quiz-Quiz-Trade)	CER, Open-ended or Multiple Choice

Engaging Scenario

***Optional - Engaging Scenario:* Student Mission Performance Task**

The students will design a contraption for a new exhibit that will feature a series of balanced, unbalanced, and magnetic forces in order to move an object.

Print off a Mission Log and Action Plan for each student.