Sparta Area School District

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Course Outcome Summary

Course Information: Science

Instruction Level: 3rd Grade

Course Standards:

3-PS2: Motion and Stability: Forces and Interactions

- Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object.
- Make observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predict future motion.
- Ask questions to determine cause and effect relationships of electric or magnetic interactions between two objects not in contact with each other.
- Define a simple design problem that can be solved by applying scientific ideas about magnets.

3-LS1: From Molecules to Organisms: Structures and Processes

- Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death.

3-LS2: Ecosystems: Interactions, Energy, and Dynamics

- Construct an argument that some animals form groups that help members survive.

3-LS3: Heredity: Inheritance and Variation of Traits

- 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.
- Use evidence to support the explanation that traits can be influenced by the environment.

3-LS4: Biological Evolution: Unity and Diversity

- Analyze and interpret data from fossils to provide evidence of the organisms and the environments in which they lived long ago.
- Use evidence to construct an explanation for how the variations in characteristics among individuals of the same species may provide advantages in surviving, finding mates, and reproducing.
- 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.
- 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-ESS2: Earth's Systems

- Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season
- Obtain and combine information to describe climates in different regions of the world.

3-ESS3: Earth and Human Activity

- Make a claim about the merit of a design solution that reduces the impacts of a weather-related hazard.

3-5-ETS: Engineering Design

- Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.
- Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.
- Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

Unit

1. **Simple Machines: Motion & Forces, Invention, Engineering**
2. **Animals: Adaptations and Life Cycles**
3. **Weather: Conditions, Climate, Design Solutions**

Unit Outlines

1. Simple Machines: Motion & Forces, Invention, Engineering
Standards:

- Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object.
- Make observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predict future motion.
- Ask questions to determine cause and effect relationships of electric or magnetic interactions between two objects not in contact with each other.
- Define a simple design problem that can be solved by applying scientific ideas about magnets.
- Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.

- Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.
- Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

Essential Questions:
- What is the relationship between force and motion?

Essential Knowledge:
- Motion and Forces
    - Balanced and unbalanced forces
    - An object's motion can predict future motion
    - Cause and effect between force and motion (electricity and magnets)
- Invention & Engineering
    - Solving simple design problems using magnets
    - Design a solution to a common problem with constraints on material, time, and cost (inventions)

2. **Animals: Adaptations and Life Cycles; Plants: Adaptations**
   Note: This unit will be taught concurrently with the Reader's Workshop Unit 4.
   Standards:

- Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death.
- Construct an argument that some animals form groups that help members survive.
- 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.
- Use evidence to support the explanation that traits can be influenced by the environment.
- Analyze and interpret data from fossils to provide evidence of the organisms and the environments in which they lived long ago.
- Use evidence to construct an explanation for how the variations in characteristics among individuals of the same species may provide advantages in surviving, finding mates, and reproducing.
- 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.
- 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.

Essential Questions:
- How does understanding one animal's life cycle help us understand how animals function?
- What is the role of the environment in understanding a species survival?

Essential Knowledge:

- Adaptations
  - Animals work together to survive
  - Animals inherit traits from parents
  - Plants inherit traits from parents
  - Traits can be influenced by the environment and can differ from similar organisms
    - look at fossils, compare to current living animals
  - Traits provide advantages in surviving, finding mates, and reproducing (cause and effect relationships)
  - Habitats affect an animal's ability to survive
  - Justify and support a solution to how environmental changes affect plants and animals (temperature, food, other organisms)
- Life Cycle
  - Compare and contrast how animals have unique and diverse life cycles (patterns of life cycles)

3. Weather: Conditions, Climate, Design Solutions

Standards:

- Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season
- Obtain and combine information to describe climates in different regions of the world.
- Make a claim about the merit of a design solution that reduces the impacts of a weather-related hazard.

Essential Question:

- What is the connection between a region's weather and climate and the culture of the people who live there?

Essential Knowledge:

- Conditions:
  - Describe weather conditions in each season on graphs and tables
- Climate
  - Describe climates in different regions of the world
- Design Solutions
  - Explain the pros and cons of design solutions to weather-related hazards (lightning rod, wind-resistant roofs)