Mississippi Science

Grade Two

Life Science L

1 Hierarchical Organization L.2.1

Conceptual Understanding: Animals have unique physical and behavioral characteristics that enable them to survive in their environment. Animals can be classified based on physical characteristics.

A Students will demonstrate an understanding of the classification of animals based on physical characteristics. L.2.1A

1 Compare and sort groups of animals with backbones (vertebrates) from groups of animals without backbones (invertebrates). L.2.1A.1

2 Classify vertebrates (mammals, fish, birds, amphibians, and reptiles) based on their physical characteristics. L.2.1A.2

3 Compare and contrast physical characteristics that distinguish between classes of vertebrates (i.e., reptiles compared to amphibians). L.2.1A.3

4 Construct a scientific argument for classifying vertebrates that have unusual characteristics, such as bats, penguins, snakes, salamanders, dolphins, and duck-billed platypuses (i.e., bats have wings, yet they are mammals). L.2.1A.4

2 Reproduction and Heredity L.2.2

Conceptual Understanding: Plants and animals experience different life cycles as they grow and develop. Plants and animals exhibit predictable characteristics at each developmental stage throughout the life cycle.

A Students will demonstrate an understanding of how living things change in form as they go through the general stages of a life cycle. L.2.2A

1 Use observations through informational texts and other media to observe the different stages of the life cycle of trees (i.e., pines, oaks) to construct explanations and compare how trees change and grow over time. L.2.2A.1

2 Construct explanations using first-hand observations or other media to describe the life cycle of an amphibian (birth, growth/development, reproduction, and death). Communicate findings. L.2.2A.2

3 Ecology and Interdependence L.2.3

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Conceptual Understanding: Animals thrive in environments where their needs (air, water, food, and shelter) are met. The environment where plants and animals live sometimes changes slowly and sometimes changes rapidly. If living things are unable to adapt to changes in the environment, they may not survive.

A Students will demonstrate an understanding of the interdependence of living things and the environment in which they live. L.2.3A

1 Evaluate and communicate findings from informational text or other media to describe how animals change and respond to rapid or slow changes in their environment (fire, pollution, changes in tide, availability of food/water). L.2.3A.1

2 Construct scientific arguments to explain how animals can make major changes (e.g., beaver dams obstruct streams, or large deer populations destroying crops) and minor changes to their environments (e.g., ant hills, crawfish burrows, mole tunnels). Communicate findings. L.2.3A.2

Conceptual Understanding: All animals and plants need food to provide energy for activity and raw materials for growth. Animals and plants have physical features and behaviors that help them survive in their environment. All living things in an environment interact with each other in different ways and for different reasons.

B Students will demonstrate an understanding of the interdependence of living things. L.2.3B

1 Evaluate and communicate findings from informational text or other media to describe and to compare how animals interact with other animals and plants in the environment (i.e., predator-prey relationships, herbivore, carnivore, omnivore). L.2.3B.1

2 Conduct an investigation to find evidence where plants and animals compete or cooperate with other plants and animals for food or space. Present findings (i.e., using technology or models). L.2.3B.2

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4 Adaptations and Diversity L.2.4

Conceptual Understanding: Living things need air, food, water, and space to survive. Different environments support different types of plants and animals. Animals have adaptations allowing them to grow and survive in the climate of their specific environment.

A Students will demonstrate an understanding of the ways animals adapt to their environment in order to survive. L.2.4A

1 Evaluate and communicate findings from informational text or other media to describe how plants and animals use adaptations to survive (e.g., ducks use webbed feet to swim in lakes and ponds, cacti have waxy coatings and spines to grow in the desert) in distinct environments (e.g., polar lands, saltwater and freshwater, desert, rainforest, woodlands). L.2.4A.1

2 Create a solution exemplified by animal adaptations to solve a human problem in a specific environment (e.g., snowshoes are like hare's feet or flippers are like duck's feet). Use an engineering design process to define the problem, design, construct, evaluate, and improve the solution. * L.2.4A.2

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Physical Science P

5 Organization of Matter and Chemical Interactions P.2.5

Conceptual Understanding: Matter exists in different states, including solid, liquid, and gas forms. Solids have a definite shape, weight, and size (length). Liquids have a definite size (volume) but not a definite shape. A gas has neither definite shape nor size (volume). Changes to matter can result from changes in temperature. Some changes may or may not be reversible (i.e., melting or freezing versus burning a cake).

A Students will demonstrate an understanding of the properties of matter. P.2.5A

1 Conduct a structured investigation to collect, represent, and analyze categorical data to classify matter as solid, liquid, or gas. Report findings and describe a variety of materials according to observable physical properties (e.g., size, color, texture, opacity, solubility). P.2.5A.1

2 Compare and measure the length of solid objects using technology and mathematical representations. Analyze and communicate findings. P.2.5A.2

3 Compare the weight of solid objects and the volume of liquid objects. Analyze and communicate findings. P.2.5A.3

4 Construct scientific arguments to support claims that some changes to matter caused by heating can be reversed, and some changes cannot be reversed. P.2.5A.4

6 Motions, Forces, and Energy P.2.6

Conceptual Understanding: An object at rest will stay at rest unless it is pushed or pulled by an unbalanced force. Pushes and pulls can have different strengths, directions, or speeds. Friction occurs when two objects make contact. Friction can change the motion of an object, the speed of an object, and can also create heat. Friction can be increased or decreased.

A Students will demonstrate an understanding of how the motion of objects is affected by pushes, pulls, and friction on an object. P.2.6A

1 Conduct a structured investigation to collect, represent, and analyze data from observations and measurements to demonstrate the effects of pushes and pulls with different strengths and directions. Communicate findings (e.g., models or technology). P.2.6A.1

2 Generate and answer questions about the relationship between (1) friction and the motion of objects and (2) friction and the production of heat. P.2.6A.2

3 Develop a plan to change the force (push or pull) of friction to solve a human problem (e.g., improve the ride on a playground slide or make a toy car or truck go faster). Use an engineering design process to define the problem, design, construct, evaluate, and improve the plan. * P.2.6A.3

Earth and Space Sci

8 Earth and the Universe E.2.8

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Conceptual Understanding: Patterns of the Sun, Moon, and stars can be observed, described, and predicted. The sun is the source of heat and light for the solar system. Seasonal changes occur as the Earth orbits the Sun because of the tilt of the Earth on its axis. At night, one can see light from stars and sunlight being reflected from the moon. Telescopes make it possible to observe the Moon and the planets in greater detail. Space exploration continues to help humans understand more about the universe.

A Students will demonstrate an understanding of the appearance, movements, and patterns of the sun, moon, and stars. E.2.8A

1 Recognize that there are many stars that can be observed in the night sky and the Sun is the Earth's closest star. E.2.8A.1

2 With teacher guidance, observe, describe, and predict the seasonal patterns of sunrise and sunset. Collect, represent, and interpret data from internet sources to communicate findings. E.2.8A.2

3 Observe and compare the details in images of the moon and planets using the perspective of the naked eye, telescopes, and data from space exploration. E.2.8A.3

4 With teacher support, gain an understanding that scientists are humans who use observations and experiments to learn about space. Obtain information from informational text or other media about scientists who have made important discoveries about objects in space (e.g., Galileo Galilei, Johannes Kepler, George Ellery Hale, Jill Tarter) or the development of technologies (e.g., various telescopes and detection devices, computer modeling, and space exploration). E.2.8A.4

5 Use informational text and other media to observe, describe, and predict the visual patterns of motion of the Sun (sunrise, sunset) and Moon (phases). E.2.8A.5

6 Create a model that will demonstrate the observable pattern of motion of the Sun or Moon. Use an engineering design process to define the problem, design, construct, evaluate, and improve the model. * E.2.8A.6

10 Earth's Resources E.2.10

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Conceptual Understanding: Earth is made of different materials, including rocks, sand, soil, and water. An Earth material is a resource that comes from Earth. Earth materials can be classified by their observable properties. Human life and health are heavily dependent on these materials. Understanding how to best conserve these resources will continue to be a major challenge for humans.

A Students will demonstrate an understanding of how humans use Earth's resources. E.2.10A

1 Use informational text, other media, and first-hand observations to investigate, analyze, and compare the properties of Earth materials (including rocks, soils, sand, and water). E.2.10A.1

2 Conduct an investigation to identify and classify everyday objects that are resources from the Earth (e.g., drinking water, granite countertops, clay dishes, wood furniture, or gas grill). Classify these objects as renewable and nonrenewable resources. E.2.10A.2

3 Use informational text and other media to summarize and communicate how Earth materials are used (e.g., soil and water to grow plants; rocks to make roads, walls, or buildings; or sand to make glass). E.2.10A.3

4 Use informational text, other media, and first-hand observations to investigate and communicate the process and consequences of soil erosion. E.2.10A.4

5 With teacher guidance, investigate possible solutions to prevent or repair soil erosion. E.2.10A.5