Kindergarten

Kindergarten students enter school with an eagerness to explore the world around them. Although their experience and background knowledge may be limited, science instruction provides ample opportunity to develop investigative thinking, reasoning, and argumentation in the context of familiar surroundings. In kindergarten, students are developing the foundational skills necessary for future learning and success in science. Explicit science instruction is critical for developing scientific literacy and fostering students' curiosity.

Students in kindergarten are introduced to disciplinary core ideas (DCIs) from the scientific domains of physical, life, and Earth and space sciences. In studying the physical sciences core idea, "Motion and Stability: Forces and Interaction," students will plan and carry out developmentally appropriate investigations about changes in motion. In the life sciences core idea, "Ecosystems: Interactions, Energy, and Dynamics," students will observe phenomena, gather information, and use models to explore and explain the natural world close to them. In the Earth and space sciences DCIs, "Earth's Systems" and "Earth and Human Activity," students observe the effects of sunlight and study weather patterns.

Embedded in the content standards are the disciplinary core ideas of the Engineering, Technology, and Applications of Science (ETS) domain, which require students to use design strategies in conjunction with knowledge and understanding of science and technology to solve practical problems. Engineering standards are denoted with a gear icon⚙. Through guided participation in the engineering design process, students will design ways to reduce the effects of sunlight and design possible solutions to lessen human impact on the environment.

Each content standard completes the stem *"**Students will**…"*

Motion and Stability: Forces and Interactions		
Changes in Motion	1. Plan and carry out investigations to determine the effects of forces of different strengths and directions on the motion of an object, including speed, direction, and distance traveled. *Examples: pushing, pulling, or crashing objects* 2. Analyze data from investigations to determine whether a design solution provides sufficient force to change the speed or direction of an object. *Example: constructing a ramp to increase or decrease the speed of a moving object*	**Cause and Effect**

Ecosystems: Interactions, Energy, and Dynamics		
Structures and Processes	3. Use data from observations to distinguish characteristics of living and nonliving things. 4. Use observations to determine patterns of what plants and animals (including humans) need to survive, including light, water, and nutrients.	**Patterns**
Interdependent Relationships	5. Gather information from observations and media to explain how plants and animals can provide for their needs by changing their environment. *Examples: tree roots breaking a sidewalk to provide space, red fox burrowing to create a den to raise young, humans growing gardens for food and building roads for transportation, birds and beavers using available materials to construct their homes* 6. Use models of natural habitats to represent the interdependence among plants and animals native to their community. *Examples: school garden, terrarium, aquarium, classroom animal habitat (worms, geckos, butterflies), virtual habitat models*	**Systems and System Models**
Earth's Systems		
Energy Transfer	7. Make observations and describe the effects of sunlight on Earth's surface. *Examples: evaporation of water or increased temperature of soil, rocks, and sand caused by direct and indirect sunlight* 8. ⚙ Design, construct, and test a device to reduce the effects of sunlight. *Examples: hat, canopy, umbrella, tent*	**Cause and Effect**
Weather	9. Observe, record, and communicate local weather patterns over a period of time. *Examples: daily increase in temperature from morning to afternoon, typical rain and storm patterns from season to season* 10. Obtain, evaluate, and communicate information about using weather forecasts to make plans and prepare for severe weather.	**Patterns**

Earth and Human Activity		
Human Impact	11. ✿Identify a problem and design possible solutions that lessen the human impact on the local environment. *Examples: Notice trash accumulating on the playground and come up with a plan to address it; observe gravel washing from a driveway onto a grassy area and create a barrier to keep the rocks in place.*	**Cause and Effect**