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The goal of the California Next Generation Science Standards (CA NGSS) is to prepare California students to be informed citizens and future scientists. Students build science mastery through repeated learning experiences centered around everyday events in nature and their lives (“phenomena”). Focusing instruction around these observable phenomena allows students to understand how their world works and gives them the tools to solve problems they identify in it. Students shift from learning facts about science to actually engaging in the practices of science. They learn how to be scientists!
The CA NGSS divide science into four disciplines: life science, Earth and space science, physical science, and engineering. Students investigate phenomena from all four disciplines every year in elementary school.

Engineering, Technology, and Applications to Society
This brochure highlights these embedded engineering connections with an asterisk (*) in the grade level highlights below.

KINDERGARTEN
Life Science
What do plants and animals need to survive? Students discover patterns in their observations about living things and where they live. They collect evidence that living things depend upon and can change their environment. Students communicate ideas about how they can reduce their impact on the planet.*

Earth and Space Science
How does the weather change? Students share observations of their local weather. They learn how weather forecasting helps people prepare for and respond to severe weather.*

Physical Science
What causes objects to move? Students investigate the difference between pushing and pulling an object. They also design a solution to change the motion of an object with a push or pull.*

GRADE 1
Life Science
Why do plants and animals look the way they do? Students make observations of how an organism is similar to its parent but not an exact copy. They design solutions to schoolyard problems by using structures that mimic plant or animal parts.*

Earth and Space Science
What patterns can we observe by watching the Sun, Moon, and stars? Students observe these objects’ predictable patterns and analyze the length of daylight at different times of year.

Physical Science
How do sound and light enable us to see and hear? Students plan and conduct experiments to examine vibration, sound, light, and the interaction between light and objects. They determine the effect when they place materials in the path of a beam of light. They also build a device that uses light or sound to communicate over a long distance.*

GRADE 2
Life Science
How do plants survive and thrive? Students conduct investigations to determine what plants need in order to grow, examine seed dispersal and pollination of plants, and make observations of the diversity of life in different habitats.

Earth and Space Science
What shapes can we observe in Earth’s natural landscapes? Students obtain information about where water exists on Earth and develop ways to represent the shapes and types of landforms and water features. They design solutions to prevent wind or water from changing the shape of the land.*

Physical Science
Which materials should we use to build different objects? Students test different materials and classify them by their observable properties. They make observations and describe how an object can be broken apart into smaller pieces and reassembled to create a new object.* They examine how materials change when heated or cooled, determining that some changes can be reversed and some cannot.