Montana Science Model Curriculum Guide by Grade Level: Kindergarten

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Contents

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Resources	Three Dimensions		
	Disciplinary Core Ideas (DCI's)	Science and Engineering Practices (SEP's)	Crosscutting Concepts (CCC's)
Paul Anderson Videos: Details on each component of the standards Next Generation Science Standards (NGSS) at National Science Teachers Association (NSTA) Hub: Detailed explanations of the three dimensions, videos of what it looks like in the classroom, curriculum guidance, and classroom resources Evidence Statements: Observations of what students should know and be able to do when they perform the standard. Helpful for formative and summative assessments The Framework: The framework for Montana Science Standards and for the Next Generation Science Standards NGSS Storylines: These storylines explain questions that students should investigating and how by grade level; they paint the big picture of the big ideas STEM Teacher Tools: This site has every resource necessary to implement the new standards *Read more about the three dimensions in the NRC Framework online here (NGSS for States, By States)*	Disciplinary core ideas have the power to focus K–12 science curriculum, instruction and assessments on the most important aspects of science. To be considered core, the ideas should meet at least two of the following criteria and ideally all four: • Have broad importance across multiple sciences or engineering disciplines or be a key organizing concept of a single discipline; • Provide a key tool for understanding or investigating more complex ideas and solving problems; • Relate to the interests and life experiences of students or be connected to societal or personal concerns that require scientific or technological knowledge; • Be teachable and learnable over multiple grades at increasing levels of depth and sophistication. Disciplinary ideas are grouped in four domains: the physical sciences; the life sciences; the earth and space sciences; and engineering, technology and applications of science.	The practices describe behaviors that scientists engage in as they investigate and build models and theories about the natural world and the key set of engineering practices that engineers use as they design and build models and systems. The National Research Council (NRC) uses the term practices instead of a term like "skills" to emphasize that engaging in scientific investigation requires not only skill but also knowledge that is specific to each practice. Part of the NRC's intent is to better explain and extend what is meant by "inquiry" in science and the range of cognitive, social, and physical practices that it requires. Although engineering design is similar to scientific inquiry, there are significant differences. For example, scientific inquiry involves the formulation of a question that can be answered through investigation, while engineering design involves the formulation of a problem that can be solved through design. Strengthening the engineering aspects of the Next Generation Science Standards will clarify for students the relevance of science, technology, engineering and mathematics (the four STEM fields) to everyday life. (NGSS for States, By States).	Crosscutting concepts have application across all domains of science. As such, they are a way of linking the different domains of science. They include: Patterns, similarity, and diversity; Cause and effect; Scale, proportion and quantity; Systems and system models; Energy and matter; Structure and function; Stability and change. The Framework emphasizes that these concepts need to be made explicit for students because they provide an organizational schema for interrelating knowledge from various science fields into a coherent and scientifically-based view of the world. (NGSS for States, By States).

Kindergarten Physical Science

Montana Standard *Students must know and be able to:*	Disciplinary Core Ideas (DCI's)	Science and Engineering Practices (SEP's)	Crosscutting Concepts (CCC's)
plan and conduct an investigation to compare the effects of different strengths or different directions of pushes and pulls on the motion of an object K-PS2-1. NGSS Identifier	PS2.A, PS2.B, PS3.C	Planning and Carrying Out Investigations	Cause and Effect
analyze data to determine whether a design solution works as intended to change the speed or direction of an object with a push or a pull K-PS2-2. NGSS Identifier	PS2.A	Analyzing and Interpreting Data	Cause and Effect
construct an explanation based on observations of the effect of sunlight on earth's surface K-PS3-1. NGSS Identifier	PS3.B	Planning and Carrying out Investigations	Cause and Effect
use tools and materials to design and build a structure to reduce the warming effect of sunlight on an area K-PS3-2. NGSS Identifier	PS3.B	Constructing explanations and designing solutions	Cause and Effect

Kindergarten Life Science

Montana Standard *Students must know and be able to:*	Disciplinary Core Ideas (DCI's)	Science and Engineering Practices (SEP's)	Crosscutting Concepts (CCC's)
use observations to describe patterns of what plants and animals, including humans, need to survive K-LS1-1. NGSS Identifier	LS1.C	Analyzing and Interpreting Data	Patterns

Kindergarten Earth and Space Science			
Montana Standard *Students must know and be able to:*	Disciplinary Core Ideas (DCI's)	Science and Engineering Practices (SEP's)	Crosscutting Concepts (CCC's)
construct an argument supported by evidence for how plants and animals, including humans, can change the environment to meet their needs K-ESS2-2. NGSS Identifier	ESS2.E ESS3.C	Engaging in argument from evidence	Systems and system models
use a model to represent the relationship between the needs of different plants or animals, including humans, and the places they live K-ESS3-1. NGSS Identifier	ESS3.A	Developing and using models	Systems and system models
communicate ideas about the impact of humans on the land, water, air, or other living things in the local environment K-ESS3-3. NGSS Identifier	ESS3.C ETS1.B	Obtaining, evaluating and communicating information	Cause and effect
use and share observations of local weather conditions to describe patterns over time K-ESS2-1. NGSS Identifier	ESS2.D	Analyzing and Interpreting Data	Patterns
ask questions to obtain information about the purpose of weather forecasting to predict, prepare for, and respond to weather K-ESS3-2. NGSS Identifier	ESS3.B ETS1.A	Asking questions and defining problems	Cause and effect