Montana Science Model Curriculum Guide by Grade Level: Grade 2

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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)

Grade 2 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 describe and classify various materials by their observable properties 2-PS1-1. NGSS Identifier	PS1.A	Planning and carrying out investigations	Patterns
conduct an investigation and analyze data to determine which materials have the properties best suited for an intended purpose 2-PS1-2. NGSS Identifier	PS1.A	Analyzing and interpreting data	Cause and effect
make observations to construct an evidence-based claim of how an object made of a small set of pieces can be disassembled and made into a new object 2-PS1-3. NGSS Identifier	PS1.A	Constructing explanations and designing solutions	Energy and Matter
construct an argument with evidence that some changes caused by heating or cooling can be reversed and some cannot 2-PS1-4. NGSS Identifier	PS1-B	Engaging in argument from evidence	Cause and effect

Grade 2 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)
plan and conduct a cause and effect investigation to determine whether plants need sunlight and water to grow 2-LS2-1. NGSS Identifier	LS2.A	Planning and carrying out investigations	Cause and effect

develop a simple model that mimics the structure and function of an animal in dispersing seeds or pollinating plants 2-LS2-2. NGSS Identifier	LS2.A	Developing and Using Models	Structure and Function
make observations of plants and animals to compare and contrast the diversity of life in different habitats 2-LS4-1. NGSS Identifier	LS4.D	Planning and carrying out investigations	

Grade 2 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)
use information from several sources to provide evidence that Earth events can occur quickly or slowly 2-ESS1-1. NGSS Identifier	ESS1.C	Constructing explanations and designing solutions	Stability and Change
construct explanations to compare multiple physical and naturally built designs which impact wind or water's effect on the shape of the land 2-ESS2-1. NGSS Identifier	ESS2.A	Constructing explanations and designing solutions	Stability and Change
develop models to represent the shapes and kinds of land and bodies of water in an area 2-ESS2-2. NGSS Identifier	ESS2.B	Developing and Using Models	Patterns
obtain information to identify where water is found on Earth and that water can be solid, liquid, or gas 2-ESS2-3. NGSS Identifier	ESS2.C	Obtaining, Evaluating, and Communicating Information	Patterns