HUDSONVILLE PUBLIC SCHOOLS ELEMENTARY COURSE FRAMEWORK

Standard Subject	Standard Category	Project Lead the Way Unit Name	Standard Name	Description
Course/Subject: 2nd Grade STEAM				**School Year: 2022-2023**
Next Generation **Science** Standards	Matter and Its Interactions	Materials Science: Properties of Matter, Materials Science: Form and Function	2-PS1-1	Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.
Next Generation **Science** Standards	Matter and Its Interactions	Materials Science: Properties of Matter, Materials Science: Form and Function	2-PS1-2	Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose.
Next Generation **Science** Standards	Matter and Its Interactions	Materials Science: Properties of Matter	2-PS1-3	Make observations to construct an evidence-based account of how an object made of a small set of pieces can be disassembled and made into a new object.
Next Generation **Science** Standards	Matter and Its Interactions	Materials Science: Properties of Matter	2-PS1-4	Construct an argument with evidence that some changes caused by heating or cooling can be reversed and some cannot.
Next Generation **Science** Standards	Ecosystems: Interactions, Energy, and Dynamics	Materials Science: Form and Function	2-LS2-2	Develop a simple model that mimics the function of an animal in dispersing seeds or pollinating plants.
Next Generation **Science** Standards	Earth's Place in the Universe	The Changing Earth	2-ESS1-1	Use information from several sources to provide evidence that Earth events can occur quickly or slowly.
Next Generation **Science** Standards	Earth's Systems	The Changing Earth	2-ESS2-1	Compare multiple solutions designed to slow or prevent wind or water from changing the shape of the land.
Next Generation **Science** Standards	Earth's Systems	The Changing Earth	2-ESS2-2	Develop a model to represent the shapes and kinds of land and bodies of water in an area.
Next Generation **Science** Standards	Earth's Systems	The Changing Earth	2-ESS2-3	Obtain information to identify where water is found on Earth and that it can be solid or liquid.

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Next Generation **Science** Standards	Engineering Design	Materials Science: Properties of Matter, Materials Science: Form and Function, The Changing Earth, Grids and Games	K-2-ETS1-1	Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.
Next Generation **Science** Standards	Engineering Design	Materials Science: Properties of Matter, Materials Science: Form and Function, The Changing Earth, Grids and Games	K-2-ETS1-2	Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.
Next Generation **Science** Standards	Engineering Design	Materials Science: Properties of Matter, Materials Science: Form and Function, The Changing Earth	K-2-ETS1-3	Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.
Next Generation **Science** Standards	Science and Engineering Practices	Materials Science: Properties of Matter, Materials Science: Form and Function, The Changing Earth, Grids and Games	Developing and Using Models	Modeling in K–2 builds on prior experiences and progresses to include using and developing models (i.e., diagram, drawing, physical replica, diorama, dramatization, or storyboard) that represent concrete events or design solutions.
Next Generation **Science** Standards	Science and Engineering Practices	Materials Science: Properties of Matter, Materials Science: Form and Function, The Changing Earth	Planning and Carrying Out Investigations	Planning and carrying out investigations to answer questions or test solutions to problems in K–2 builds on prior experiences and progresses to simple investigations, based on fair tests, which provide data to support explanations or design solutions.
Next Generation **Science** Standards	Science and Engineering Practices	Materials Science: Properties of Matter, Materials Science: Form and Function, The Changing Earth, Grids and Games	Analyzing and Interpreting Data	Analyzing data in K–2 builds on prior experiences and progresses to collecting, recording, and sharing observations.
Next Generation **Science** Standards	Science and Engineering Practices	Materials Science: Properties of Matter, Materials Science: Form and Function, The Changing Earth, Grids and Games	Using Mathematics and Computational Thinking	Mathematical and computational thinking in K–2 builds on prior experience and progresses to recognizing that mathematics can be used to describe the natural and designed world(s).

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Next Generation **Science** Standards	Science and Engineering Practices	Materials Science: Properties of Matter, Materials Science: Form and Function, The Changing Earth, Grids and Games	Constructing Explanations and Designing Solutions	Constructing explanations and designing solutions in K–2 builds on prior experiences and progresses to the use of evidence and ideas in constructing evidence-based accounts of natural phenomena and designing solutions.
Next Generation **Science** Standards	Science and Engineering Practices	Materials Science: Properties of Matter, Materials Science: Form and Function, The Changing Earth, Grids and Games	Engaging in Argument from Evidence	Engaging in argument from evidence in K–2 builds on prior experiences and progresses to comparing ideas and representations about the natural and designed world(s).
Next Generation **Science** Standards	Science and Engineering Practices	Materials Science: Properties of Matter, Materials Science: Form and Function, The Changing Earth, Grids and Games	Obtaining, Evaluating, and Communicating Information	Obtaining, evaluating, and communicating information in K–2 builds on prior experiences and uses observations and texts to communicate new information.
Next Generation **Science** Standards	Disciplinary Core Ideas (K-2) Physical Science	Materials Science: Properties of Matter, Materials Science: Form and Function	PS1.A Structure and Properties of Matter	Different kinds of matter exist and many of them can be either solid or liquid, depending on temperature. Matter can be described and classified by its observable properties.
Next Generation **Science** Standards	Disciplinary Core Ideas (K-2) Physical Science	Materials Science: Properties of Matter, Materials Science: Form and Function	PS1.A Structure and Properties of Matter	Different properties are suited to different purposes.
Next Generation **Science** Standards	Disciplinary Core Ideas (K-2) Physical Science	Materials Science: Properties of Matter	PS1.B Chemical Reactions	Heating and cooling substances cause changes that are sometimes reversible and sometimes not.
Next Generation **Science** Standards	Disciplinary Core Ideas (K-2) Physical Science	Materials Science: Properties of Matter	PS1.A Structure and Properties of Matter	A great variety of objects can be built up from a small set of pieces.
Next Generation **Science** Standards	Disciplinary Core Ideas (K-2) Life Science	Materials Science: Form and Function	LS2.A Interdependent Relationships in Ecosystems	Plants depend on water and light to grow.

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Next Generation **Science** Standards	Disciplinary Core Ideas (K-2) Life Science	Materials Science: Form and Function	LS2.A Interdependent Relationships in Ecosystems	Plants depend on animals for pollination or to move their seeds around.
Next Generation **Science** Standards	Disciplinary Core Ideas (K-2) Earth and Space Science	The Changing Earth	ESS1.C The History of Planet Earth	Some events on Earth occur very quickly; others can occur very slowly.
Next Generation **Science** Standards	Disciplinary Core Ideas (K-2) Earth and Space Science	The Changing Earth	ESS2.A Earth Materials and Systems	Wind and water change the shape of the land.
Next Generation **Science** Standards	Disciplinary Core Ideas (K-2) Earth and Space Science	The Changing Earth	ESS2.B Plate Tectonics and Large-scale System Interactions	Maps show where things are located. One can map the shapes and kinds of land and water in any area.
Next Generation **Science** Standards	Disciplinary Core Ideas (K-2) Earth and Space Science	The Changing Earth	ESS2.C The Roles of Water in Earth's Surface Processes	Water is found in many types of places and in different forms on Earth.
Next Generation **Science** Standards	Disciplinary Core Ideas (K-2) Engineering, Technology, and Applications of Science	Materials Science: Properties of Matter, Materials Science: Form and Function, The Changing Earth, Grids and Games	ETS1.A Defining and Delimiting Engineering Problems	Asking questions, making observations, and gathering information are helpful in thinking about problems.
Next Generation **Science** Standards	Disciplinary Core Ideas (K-2) Engineering,	Materials Science: Properties of Matter, Materials Science: Form and Function, The Changing Earth, Grids	ETS1.A Defining and Delimiting Engineering	Before beginning to design a solution, it is important to clearly understand the problem.

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	Technology, and Applications of Science	and Games	Problems	
Next Generation **Science** Standards	Disciplinary Core Ideas (K-2) Engineering, Technology, and Applications of Science	Materials Science: Properties of Matter, Materials Science: Form and Function, The Changing Earth, Grids and Games	ETS1.B Developing Possible Solutions	Designs can be conveyed through sketches, drawings, or physical models. These representations are useful in communicating ideas for a problem's solutions to other people.
Next Generation **Science** Standards	Disciplinary Core Ideas (K-2) Engineering, Technology, and Applications of Science	Materials Science: Properties of Matter, Materials Science: Form and Function, The Changing Earth, Grids and Games	ETS1.C Optimizing the Design Solution	Because there is always more than one possible solution to a problem, it is useful to compare and test designs.
Next Generation **Science** Standards	Crosscutting Concepts (K-2)	Materials Science: Properties of Matter, Materials Science: Form and Function, The Changing Earth, Grids and Games	Patterns	Patterns in the natural and human designed world can be observed, used to describe phenomena, and used as evidence.
Next Generation **Science** Standards	Crosscutting Concepts (K-2)	Materials Science: Properties of Matter, Materials Science: Form and Function, Grids and Games	Cause and Effect	Events have causes that generate observable patterns.
Next Generation **Science** Standards	Crosscutting Concepts (K-2)	Materials Science: Properties of Matter	Cause and Effect	Simple tests can be designed to gather evidence to support or refute student ideas about causes.
Next Generation **Science** Standards	Crosscutting Concepts (K-2)	The Changing Earth	Systems and System Models	Objects and organisms can be described in terms of their parts.
Next Generation **Science** Standards	Crosscutting Concepts (K-2)	The Changing Earth	Systems and System Models	Systems in the natural and designed world have parts that work together.

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Next Generation **Science** Standards	Crosscutting Concepts (K-2)	Materials Science: Properties of Matter	Energy and Matter: Flows, Cycles, and Conservation	Objects may break into smaller pieces, be put together into larger pieces, or change shapes.
Next Generation **Science** Standards	Crosscutting Concepts (K-2)	Materials Science: Form and Function, The Changing Earth	Structure and Function	The shape and stability of structures of natural and designed objects are related to their function(s).
Next Generation **Science** Standards	Crosscutting Concepts (K-2)	The Changing Earth	Stability and Change	Things may change slowly or rapidly.
Next Generation **Science** Standards	Connections to Nature of Science (K-2)	Materials Science: Properties of Matter	Science Models, Laws, Mechanisms, and Theories Explain Natural Phenomena	Scientists search for cause and effect relationships to explain natural events.
Next Generation **Science** Standards	Connections to Nature of Science (K-2)	The Changing Earth	Science Addresses Questions About the Natural and Material World	Scientists study the natural and material world.
Next Generation **Science** Standards	Connections to Engineering, Technology, and Applications of Science (K-2)	Materials Science: Properties of Matter, Materials Science: Form and Function	Influence of Engineering, Technology, and Science on Society and the Natural World	Every human-made product is designed by applying some knowledge of the natural world and is built using materials derived from the natural world.
International Society for Technology in Education Standards for Students (ISTE)	Empowered Learner	Grids and Games	1a	Students articulate and set personal learning goals, develop strategies leveraging technology to achieve them and reflect on the learning process itself to improve learning outcomes.

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International Society for Technology in Education Standards for Students (ISTE)	Empowered Learner	Grids and Games	1c	Students use technology to seek feedback that informs and improves their practice and to demonstrate their learning in a variety of ways.
International Society for Technology in Education Standards for Students (ISTE)	Digital Citizen	Grids and Games	2a	Students cultivate and manage their digital identity and reputation and are aware of the permanence of their actions in the digital world.
International Society for Technology in Education Standards for Students (ISTE)	Digital Citizen	Grids and Games	2b	Students engage in positive, safe, legal and ethical behavior when using technology, including social interactions online or when using networked devices.
International Society for Technology in Education Standards for Students (ISTE)	Digital Citizen	Grids and Games	2d	Students manage their personal data to maintain digital privacy and security and are aware of data- collection technology used to track their navigation online.
International Society for Technology in Education Standards for Students (ISTE)	Knowledge Constructor	Grids and Games	3d	Students build knowledge by actively exploring real-world issues and problems, developing ideas and theories and pursuing answers and solutions.

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International Society for Technology in Education Standards for Students (ISTE)	Innovative Designer	Grids and Games	4a	Students know and use a deliberate design process for generating ideas, testing theories, creating innovative artifacts or solving authentic problems.
International Society for Technology in Education Standards for Students (ISTE)	Innovative Designer	Grids and Games	4b	Students select and use digital tools to plan and manage a design process that considers design constraints and calculated risks.
International Society for Technology in Education Standards for Students (ISTE)	Innovative Designer	Grids and Games	4c	Students develop, test and refine prototypes as part of a cyclical design process.
International Society for Technology in Education Standards for Students (ISTE)	Innovative Designer	Grids and Games	4d	Students exhibit a tolerance for ambiguity, perseverance and the capacity to work with open-ended problems.
International Society for Technology in Education Standards for Students (ISTE)	Computational Thinker	Grids and Games	5a	Students formulate problem definitions suited for technology-assisted methods such as data analysis, abstract models and algorithmic thinking in exploring and finding solutions.

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International Society for Technology in Education Standards for Students (ISTE)	Computational Thinker	Grids and Games	5c	Students break problems into component parts, extract key information, and develop descriptive models to understand complex systems or facilitate problem-solving.
International Society for Technology in Education Standards for Students (ISTE)	Computational Thinker	Grids and Games	5d	Students understand how automation works and use algorithmic thinking to develop a sequence of steps to create and test automated solutions.
International Society for Technology in Education Standards for Students (ISTE)	Creative Communicator	Grids and Games	6a	Students choose the appropriate platforms and tools for meeting the desired objectives of their creation or communication.
International Society for Technology in Education Standards for Students (ISTE)	Creative Communicator	Grids and Games	6b	Students create original works or responsibly repurpose or remix digital resources into new creations.
International Society for Technology in Education Standards for Students (ISTE)	Creative Communicator	Grids and Games	6c	Students communicate complex ideas clearly and effectively by creating or using a variety of digital objects such as visualizations, models or simulations.

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International Society for Technology in Education Standards for Students (ISTE)	Creative Communicator	Grids and Games	6d	Students publish or present content that customizes the message and medium for their intended audiences.
International Society for Technology in Education Standards for Students (ISTE)	Global Collaborator	Grids and Games	7a	Students use digital tools to connect with learners from a variety of backgrounds and cultures, engaging with them in ways that broaden mutual understanding and learning.
International Society for Technology in Education Standards for Students (ISTE)	Global Collaborator	Grids and Games	7b	Students use collaborative technologies to work with others, including peers, experts or community members, to examine issues and problems from multiple viewpoints.
International Society for Technology in Education Standards for Students (ISTE)	Global Collaborator	Grids and Games	7c	Students contribute constructively to project teams, assuming various roles and responsibilities to work effectively toward a common goal.