Grade 2 Curriculum Map
Instructional Plan for Grade 2 Science
Susan J. Buss
St. Paul's Lutheran School
Written: July 2021

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Submitted by Susan J. Buss
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	Content Type	Objectives	Standards	Assessment	Materials
AUGUST & SEPTEMBER	• 24 • Inv. 1: Solids	• Investigate and sort objects based on their properties. • Observe, describe, and compare the properties and behaviors of solids and liquids. Record observations with pictures, numbers, and words. • Recognize the properties of solid materials that make them appropriate for tower construction; build towers. • Explore solid objects, such as pieces of wood, plastic, and metal. • Observe, describe, and sort the objects according to their properties. • Construct towers (and other structures), using the properties inherent in the materials to accomplish the task. • Discover solid objects in the schoolyard environment, and sort the found objects into natural and human-made. Key understandings: • Solid is one state or phase of matter. • Objects are described and identified by their properties. • Objects are made of one or more materials. • Natural and human-made objects occur outdoors.	SCI.SEP5.A.K-2 • Students recognize that mathematics can be used to describe the natural and designed world. This includes the following: • Use counting and numbers to identify and describe patterns in the natural and designed worlds. • Describe, measure, or compare quantitative attributes of different objects and display the data using simple graphs. • Use qualitative and/or quantitative data to compare two alternative solutions to a problem. SCI.SEP7.A.K-2 • Students compare ideas and representations about the natural and designed world. This includes the following: • Identify arguments that are supported by evidence. • Distinguish between explanations that account for all gathered evidence and those that do not. • Analyze why some evidence is relevant to a scientific question and some is not. • Distinguish between opinions and evidence in one's own explanations. • Listen actively to arguments to indicate agreement or disagreement based on evidence, or to retell the main points of the argument. • Construct an argument with evidence to support a claim. • Make a claim about the effectiveness of an object, tool, or solution that is supported by relevant evidence. •	• Science notebook entries • Teacher observations • Scientific practices • Benchmark Assessment • Investigation 1 I-Check	Science Resources Book: • "Everything Matters" • "Solid Objects and Materials" • "Towers"
OCTOBE	• 20 • Inv. 2: Liquids • Inv. 3: Bits and Pieces	• Combine and separate solid materials of diff erent particle sizes using tools. • Observe, describe, and record what happens when solids and water are	SCI.SEP4.A.K-2 • Students collect, record, and share observations. This includes the following: • Record information (observations, thoughts, and ideas).	• Science notebook entries • Teacher observation • Benchmark Assessment	Science Resources Book • "Liquids" • "Pouring" • "Comparing Solids and Liquids"

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R		mixed and when liquids and water are mixed. • Investigate liquids in a variety of settings to become familiar with their properties. • Rehearse precise liquids vocabulary, using liquid properties cards. • Use representational materials to enhance their understanding of the unique behaviors of liquids. • Explore the properties of water puddles in the schoolyard • Conduct an experiment with beans, rice, and cornmeal to find out how solids behave when the pieces are small. • Shake, rattle, and roll the materials in bottles, pour them from container to container, and separate them by using screens. • Go outdoors to find particulate solid materials. • Observe the particles when poured on a flat surface and compare the particles to water on the same surface. Key Understandings: • Liquid is one common state of matter. • Liquids move freely in containers. • Liquids have many properties that help identify them. • Liquids take the shape of their containers. • The surfaces of liquids are flat and level. • Liquids pour and flow.Solid materials can occur as masses of small particles. • A mass of particulate matter can form piles and support a denser object on its surface. • Particulate solids can be separated by size (with screens).	• Use and share pictures, drawings, or writings of observations. • Use observations (firsthand or from media) to describe patterns or relationships in the natural and designed worlds in order to answer scientific questions and solve problems. • Compare predictions (based on prior experiences) to what occurred (observable events). • Analyze data from tests of an object or tool to determine if the object or tool works as intended. SCI.SEP8.A.K-2 • Students use observations and texts to communicate new information. This includes the following: • Read developmentally-appropriate texts or use media to obtain scientific and technical information. Use the information to determine patterns in or evidence about the natural and designed worlds. • Describe how specific images (e.g., a diagram showing how a machine works) support a scientific or engineering idea. • Obtain information using various texts, text features (e.g., headings, tables of contents, glossaries, electronic menus, icons), and other media that will be useful in answering scientific questions or supporting scientific claims. • Communicate information or design ideas and solutions with others in oral or written forms. Use models, drawings, writing, or numbers that provide detail about scientific ideas, practices, or design ideas. • 2-PS1-1. Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties. • 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. • 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. SCI.ESS2.C.2 • Water is found in many types of places and in different forms on Earth. •	• Investigation 2 I-Check • Teacher observations • Scientific practices • Benchmark Assessment • Investigation 3 I-Check	

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		• Masses of particulate matter can pour. • The surface of a mass of particles is not flat and level. • Particulate matter occurs naturally in the outdoors.			

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NOVEMBER	• 19 • Inv. 4: Solids, Liquids, and Water	• Use knowledge to conduct an investigation on an unknown material (toothpaste). • Use knowledge to conduct an investigation on an unknown material (toothpaste). • Investigate interactions between solids and water and liquids and water. • Observe, describe, record, and organize the results. • Test toothpaste to determine if it is a solid or a liquid. • Investigate melting and freezing of familiar liquids. • Collect solid materials outdoors and mix them with water. • Observe changes in the color and clarity of the water as evidence that something mixed with the water. Key Understandings: • Some solids change when mixed with water; others do not. • Some solids dissolve in water. • Water can be separated from a mixture through evaporation; evaporation leaves the solid behind. • Some liquids mix with water; others form layers. • Some materials have properties of both solids and liquids. • Melting is the change from solid to liquid. • Freezing is the change from liquid to solid.	SCI.SEP3.A.K-2 • Students plan and carry out simple investigations, based on fair tests, which provide data to support explanations or design solutions. This includes the following: • With guidance, plan and conduct an investigation in collaboration with peers (for K). • Plan and conduct an investigation collaboratively to produce data to serve as the basis for evidence to answer a question. • Evaluate different ways of observing and measuring a phenomenon to determine which way can answer the question being studied. • Make observations (firsthand or from media) and measurements to collect data that can be used to make comparisons. • Make observations (firsthand or from media) and measurements of a proposed object or tool or solution to determine if it solves a problem or meets a goal. • Make predictions based on prior experiences. •	• Science notebook entries • Teacher observation • Scientific practices • Benchmark Assessment • Investigation 4 I-Check	Science Resources Book • "Mix It Up!" • "Heating and Cooling"

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		• Heat causes materials to melt; cold causes them to freeze.			
DECEMBER	• 15 • Inv. 1: First Rocks	• Observe and compare physical properties of rocks and soils, using various tools. • Rub rocks together and observe that they break into smaller pieces. • Explore the mineral portion of the planet. • Investigate several kinds of rocks and begin to understand the properties of rocks. • Observe rocks (using hand lenses), rub rocks, wash rocks, sort rocks, and describe rocks. • Organize a class rock collection. • Observe and represent the properties of rocks and the colorful minerals they contain. • Investigate a mixture of different-sized river rocks. • Separate the rocks using a series of three screens to identify five sizes of rocks: large pebbles, small pebbles, large gravel, small gravel, and sand. • Add water to a vial of sand to discover silt and clay. • Learn how sand is formed Key Understandings: • .	SCI.SEP1.A.K-2 • Students ask simple descriptive questions that can be tested. This includes the following: • Ask questions based on observations to find more information about the natural world. • Ask or identify questions that can be answered by an investigation.	• Science notebook entries • Teacher observation • Benchmark Assessment • Investigation 1 I-Check	Science Resources Book • "Exploring Rocks" • "Colorful Rocks"

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JANUARY	• 21 • Inv. 2: River Rocks • Inv. 3: Using Rocks •	• Use screens to separate and group river rocks by particle size, and investigate properties of pebbles, gravel, sand, silt, and clay particles. • Observe weather by using senses and simple tools. • Explore places where earth materials are naturally found and ways that earth materials are used. • Investigate a mixture of different-sized river rocks. • Separate the rocks using a series of three screens to identify five sizes of rocks: large pebbles, small pebbles, large gravel, small gravel, and sand. • Add water to a vial of sand to discover silt and clay. • Learn how sand is formed. • Learn how people use earth materials to construct objects. • Make rubbings from sandpaper, sculptures from sand, decorative jewelry from clay, and bricks from clay soil. • Go on a schoolyard field trip to look for places where earth materials occur naturally and where people have incorporated earth materials into building materials. Key Understandings: • Rocks are earth materials. • Rocks can be described by the property of size. • Rock sizes include clay, silt, sand, gravel, pebbles, cobbles, and boulders. • Smaller rocks result from the weathering of larger rocks. • Earth materials are natural resources. • The properties of different earth materials make each suitable for specific uses.	SCI.CC5.K-2 • Students observe objects may break into smaller pieces, be put together into larger pieces, or change shapes. SCI.CC6.K-2 • Students observe the shape and stability of structures of natural and designed objects are related to their function(s). SCI.SEP1.B.K-2 • Students define simple problems that can be solved through the development of a new or improved object or tool. SCI.PS1.A.2 • Matter exists as different substances that have different observable properties. Different properties are suited to different purposes. Objects can be built up from smaller parts. •	• Science notebook entries • Teacher observation • Scientific practices • Benchmark Assessment • Investigation 2 I-Check • Teacher observation • Science notebook entry • Benchmark Assessment • Investigation 3 I-Check	Science Resources Book • "The Story of Sand" • "Rocks Move" • "Making Things with Rocks" • "What Are Natural Resources?"

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		• Different sizes of sand are used on sandpaper to change the surface of wood from rough to smooth. • Earth materials are commonly used in the construction of buildings and streets. • Earth materials are used to make sculptures and jewelry.			
FEBRUARY	• 18 • Inv. 4: Soil and Water	• Use sand to make sculptures and clay to make beads, jewelry, and bricks. • Find, collect, record, and compare samples of soil outside the classroom. • Assemble and disassemble soils. • Explore humus as an ingredient in soil. • Compare homemade and local soils, using techniques introduced in Investigation 2. • Read about sources of natural water, sort images of water sources, both fresh and salt, and discuss where water is found in their community. Key Understandings: • Earth materials are natural resources. • Soils can be described by their properties (color, texture, ability to support plant growth). • Soil is made partly from weathered rock and partly from organic material. Soils vary from place to place. • Natural sources of water include streams, rivers, ponds, lakes, marshes, and the ocean. Sources of water can be fresh or salt water. • Water can be a solid, liquid, or gas.	SCI.CC1.K-2 • Students recognize that patterns in the natural and human designed world can be observed, used to describe phenomena, and used as evidence. SCI.SEP6.B.K-2 • Students use evidence and ideas in designing solutions. This includes the following: • Use tools and materials to design and/or build a device that solves a specific problem or a solution to a specific problem. • Generate and compare multiple solutions to a problem. SCI.ETS1.B.K-2 • 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. •	• Teacher observation • Science notebook entry • Benchmark Assessment • Investigation 4 I-Check	Science Resources Book • "What Is in Soil?" • "Testing Soil" • "Where Is Water Found?" • "States of Water"

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MARCH	• 17 • Inv. 1: Mealworms	• Study biodiversity by focusing on insects and plants and their interactions. • Conduct an initial investigation, to observe the phenomenon of mealworms and observe their structures and behaviors. • Individually care for and observe two larval mealworms in a vial. • Over 10 weeks, observe the larvae grow, molt, pupate, and finally turn into beetles (adults), which mate, lay eggs, and die. • Read about and use media to gather information about the diversity of plants and animals that live in different habitats. Key Understandings: • Insects need air, food, water, and space. • The life cycle of the beetle is egg, larva, pupa, and adult, which produces eggs. • Insects have characteristic structures and behaviors. • Adult insects have a head, thorax, and abdomen. • Insects have predictable characteristics at different stages of development. • There are many different kinds of living things and they live in different places on land and in water.	SCI.CC3.K-2 • Students use relative scales (e.g., bigger and smaller; hotter and colder; faster and slower) to describe objects. They use standard units to measure length. SCI.SEP6.A.K-2 • Students use evidence and ideas in constructing evidence-based accounts of natural phenomena. This includes the following: • Use information from observations (firsthand and from media) to construct an evidence-based account for natural phenomena. SCI.LS1.A.1 • All organisms have external parts that they use to perform daily functions. • 2-LS4-1. Make observations of plants and animals to compare the diversity of life in different habitats.	• Science notebook entry • Performance assessment • Benchmark Assessment • Investigation 1 I-Check	Science Resource Book • "Animals and Plants in Their Habitats" Video • All about Water • Ecosystems Online Activities • "Habitat Gallery" • "Where Does It Live?" • "What Doesn't Belong?" • "Organism Match"

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APRIL	• 20 • Inv. 2: Brassica Seeds	• Engage with biodiversity of plants by studying the natural history of a flowering plant and in the process uncover the phenomenon of a flower. • Plant tiny rapid-cycling brassica seeds in a planter cup. The brassica plants grow under continuous light and develop for a month. • Analyze the experimental results of growing seeds in different conditions and design an experiment to test the effects of water and light on mature plants. • Study pollination through video and by cross-pollinating their brassica plants. • Observe and record the complete life cycle from seed to seed. • Search for seeds outdoors and learn about ways that animals disperse seeds to new locations. Key Understandings: • Plants need water, air, nutrients, light, and space. • As plants grow, they develop roots, stems, leaves, buds, flowers, and seeds in a sequence called a life cycle. • Seeds develop into new plants that look like the parent plant. • Animals disperse seeds, moving them from one location to another where they grow. • Bees and other insects help some plants by moving pollen from flower to flower.	SCI.CC2.K-2 • Students learn that events have causes that generate observable patterns. They design simple tests to gather evidence to support or refute their own ideas about causes. SCI.CC7.K-2 • Students observe some things stay the same while other things change, and things may change slowly or rapidly. SCI.LS1.B.1 • Parents and offspring often engage in behaviors that help the offspring survive. SCI.LS2.A.2 • Plants depend on water and light to grow. Plants depend on animals for pollination or to move their seeds around. SCI.LS3.A.1 • Young organisms are very much, but not exactly, like their parents, and also resemble other organisms of the same kind. SCI.LS3.B.1 • Individuals of the same kind of plant or animal are recognizable as similar, but can also vary in many ways. • 1-LS3-1. Make observations to construct an evidence-based account that young plants and animals are like, but not exactly like, their parents.	• Science notebook entries • Performance assessments • Benchmark Assessment • Investigation 2 I-Check	Science Resources Book • "Flowers and Seeds" • "How Seeds Travel" Videos • How Plants Grow • What Is Pollination? • How Seeds Get Here . . . and There Online Activity • "Watch It Grow!"

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M A Y	• Inv. 3: Milkweed Bugs	• Observe a second insect—the milkweed bug—through its stages of life, and compare the phenomena of complete and simple metamorphosis. Groups of students receive vials of milkweed bug eggs. • Each group prepares a habitat for the bugs, providing air, food, water, and space, including shelter. • Observe structure, pattern, and behavior as the insects advance through simple metamorphosis. • Gather information using media about garden and backyard insects and other animals. • Go outdoors to search for insects living naturally on the ground and on plants and design an insect habitat. • Continue to explore biodiversity of animals by investigating schoolyard habitats to observe insects and other small animals and design an insect habitat Key Understandings: • Insects need air, food, water, and appropriate space including shelter; different insects meet these needs in different ways in different habitats. • The life cycle of some insects is egg, nymph stages, and adult, which produces eggs. • Variations exist within a group of related organisms. • As insects grow, they molt their exoskeleton. • There are many different kinds of living things and they live in different places on land and in water.	SCI.CC4.K-2 • Students understand objects and organisms can be described in terms of their parts and that systems in the natural and designed world have parts that work together. SCI.LS1.C.K • Animals obtain food they need from plants or other animals. Plants need water and light. SCI.LS1.D.1 • Animals sense and communicate information and respond to inputs with behaviors that help them grow and survive • K-LS1-1. Use observations to describe patterns of what plants and animals (including humans) need to survive. • 1-LS1-1. Use materials to design a solution to a human problem by mimicking how plants or animals use their external parts to help them survive, grow, and meet their needs. • 1-LS1-2. Read texts and use media to determine patterns in behavior of parents and offspring that help offspring survive. • 2-LS2-1. Plan and conduct an investigation to determine if plants need sunlight and water to grow. • 2-LS2-2. Develop a simple model that mimics the function of an animal in dispersing seeds or pollinating plants. • 1-LS3-1. Make observations to construct an evidence-based account that young plants and animals are like, but not exactly like, their parents. SCI.ESS3.A.K • Living things need water, air, and resources from the land, and they live in places that have the things they need. Humans use natural resources for everything they do. •	• Science notebook entries • Benchmark Assessment • Investigation 3 I-Check	Science Resources Book • "So Many Kinds, So Many Places" Videos • House and Backyard Insects Bugs Online Activity • "Insect Hunt"

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