San Juan del Sur Day School

Grade 2 Science Learning Outcomes and Unit Guide

Unit	Learning Outcomes	✓	Performance Indicators
	Earth & Space Science: Soils in the Environment (ES)		
Who We Are	Investigate the characteristics, including soil composition and ability to absorb water, of different types of soils in their environment.		Pose questions and make predictions about the characteristics and composition of soils that lead to exploration and investigation (e.g., What colors are soil? What does soil feel like? Where does soil come from? Is there water in soil?).
			Examine physical characteristics (e.g., particle size, texture, moisture, particle size distribution, color, and ability to hold together) of soils from different locations (e.g., garden, flower pot, river bed, slough, hill top, grassy field, lawn, ditch, and forest) in their environment.
			Classify soils in their environment according to location and type (e.g., clay, sand, silt, and loam).
			Analyze soil samples using tools such as spoons, hand lenses, jars, and filters appropriately and safely.
			Make and record observations and measurements in investigations related to soil composition using techniques such as notes in point form, diagrams, tables, bar graphs, photographs, and video.
			Make predictions about the capability of different types of soil to absorb water and test these predictions through exploration and investigation.
			Sort soil samples according to one or more physical characteristics such as texture, ability to absorb water, particle size, and color.
			Communicate procedures and results of investigations related to the testing of water absorption of soils using drawings, demonstrations, tables, graphs, oral and written descriptions.
			Propose answers to initial questions related to soil composition based on the results of personal investigations.
	Analyze the interdependence between soil and living things, including the importance of soil for individuals, society, and all components of the environment.		Suggest ways in which individuals and communities value and use soil, including the importance of Mother Earth.
			Examine the interdependence between animals and soils (e.g., insects and grubs live in soil, soil provides shelter for some animals, and earthworms aerate soil).
			Examine the interdependence between plants and soils (e.g., soils provide nutrients for plant growth, plant leaves die and fall onto the ground, and plant roots spread throughout soil).
			Relate the characteristics (e.g., composition, color, texture, and ability to absorb water) of soils to their uses (e.g., agriculture, berms, pottery, earth shelters, road building, habitats, landscaping, and purifying water).
			Observe the effects of moving water on soils in different environments (e.g., beneath an eavestrough downspout, along a stream bank, down a slope, and under a sprinkler).
			Collaboratively design and safely carry out procedures to determine the effects of moving water on different types of soils.
			Propose practices that individuals and communities can take to reduce the effects of erosion on a small scale (e.g., vegetable garden and flower pot) and a large scale (e.g., agricultural field, sports field, river bank, and road ditch).
			Suggest sustainable practices (e.g., composting and fertilizing) that can affect soils positively and reduce or prevent harmful effects such as compaction and contamination of soils.

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Where We Are in Place and Time	**Earth & Space Science: What Earth is Made of (EM)**		
	Investigate what our local environment is made from and how it was formed.		Record different parts of your local environment through investigating (eg. Rocks, trees, animals, hills. Mountains, rivers, roads, houses, estuaries.)
			Predict how these structures were formed (human construction, wind, erosion, animals).
			View school from above (hill) and draw/label the different parts that it is made of. (grass, road, trees, tires, turf, etc.)
			Represent their Earth by building a model from the materials they collect in their environment (eg. Build our school group with mud, using sticks for trees, rocks for roads, etc.)
	Physical Science: Motion and Relative Position (MP)		
	Analyze methods of determining the position of objects relative to other objects.		Describe the position of an object relative to other positions or stationary objects, including themselves, using appropriate vocabulary such as above, below, between, beside, on top, close to, far from, behind, in front of, to the right of, and to the left of.
			Place an object in an identified position (e.g., four steps to the right and one step forward, close, far, right, left, forward, back, up, down) relative to another object or position.
			Use appropriate tools (e.g., rulers and string) safely for observing and recording objects' positions.
			Create a set of directions (e.g., treasure hunt map) that other students can follow to locate a specified position.
			Follow directions to move in a specified way to different positions.
	Investigate factors, including friction, which affect the motion of natural and constructed objects, including self.		Pose questions about the motion of natural and constructed objects in their environment (e.g., How do we know if something is moving? What are some different types of motion? Why is it difficult to walk on some surfaces?).
			Describe examples of the motion of natural (e.g., birds flying, leaves falling, tree branches swaying, icicles melting, fish swimming, wind blowing, and creeks flowing) and constructed (e.g., vehicles moving, clock hands rotating, balls bouncing, playground swings, and tools operating) objects in their environment.
			Describe the motion of an object in terms of a change in position relative to other objects (e.g., faster, slower, towards, away, closer, and further).
			Examine a variety of toys, playground equipment, and other objects that move or which have components that move and ask questions that lead to exploration and investigation of the motion of objects.
			Investigate, describe, and represent different patterns of movement (e.g., walking, running, swinging, bouncing, sliding, rotating, spinning, crawling, and rolling) of familiar objects, including themselves.
			Relate the types of motion (e.g., crawling, walking, running, flying, swimming, slithering, galloping, crab walking, and rolling) to the physical characteristics of humans and familiar animals.
			Demonstrate how pushes and pulls can cause an object to speed up, slow down, stop, or change direction.
			Carry out a procedure to investigate the effects of pushes and pulls on the motion of objects using various objects and surfaces (e.g., paper, carpet, sandpaper, desktop, tile floor, wooden board, ice, sidewalk, grass, soil, and sand).
			Observe and record the effects of different textured surfaces on the friction between two objects or surfaces.
			Provide examples of technologies (e.g., skate, snowshoe, bicycle, ski, kayak, curling slider, and wheelchair) that are designed to make it easier for people and constructed objects to move on different surfaces.
			Generate new questions about the motion of objects that arise from what was learned (e.g., Do objects move the same way in space or in water or in another liquid? What causes motion?).

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How We Express Ourselves	**Physical Science: Liquids and Solids (LS)**		
	Investigate properties (e.g., color, taste, smell, shape, and texture) of familiar liquids and solids.		Pose questions that lead to investigation and exploration of the properties of familiar liquids and solids.
			Classify objects in various natural and constructed environments as liquids or solids.
			Identify examples of how liquids, in all three states of matter, are used at home, in the school, and throughout their communities.
			Record and compare observable physical properties (e.g., color, taste, smell, shape, texture, transparency, and ability to adapt to the shape of container) of familiar liquids and solids.
			Distinguish between properties of familiar liquids and solids.
			Demonstrate that liquids and solids are matter because they have mass and take up space.
			Group or sequence liquids and solids according to one or more observable physical properties (e.g., color, state, texture, smell, transparency, and buoyancy).
	Investigate interactions between liquids and solids, and technologies based on those interactions.		Pose questions that lead to exploration and investigation of combining liquids and solids.
			Investigate how liquids change when they are poured into different containers.
			Describe examples of useful objects and materials in their environment that are made by combining different liquids or solids and liquids.
			Investigate and describe the changes in characteristics of familiar solids and liquids resulting from processes such as mixing and dissolving liquids with liquids, solids with solids, and liquids with solids.
			Distinguish between familiar solids (e.g., sand, sugar, salt, gravel, soil, and drink crystals) that dissolve in water and those that do not.
			Carry out an investigation to determine the relative viscosity (thickness) of different liquids (e.g., water, milk, and syrup) when placed on various surfaces (e.g., paper, paper towel, cotton, plastic, and wax paper).
			Design and carry out an investigation to determine the rate and ability of various materials (e.g., paper, paper towel, cotton, plastic, and wax paper) to absorb liquids and explain how these capabilities determine their uses.
			Use a variety of sources to gather information about objects that sink and float (e.g., canoes, kayaks, barges, boats, buoys, and fishing lures).
			Demonstrate an understanding of sinking and floating by solving a related practical problem such as building an object that will float, carry a load, and be stable.
How the World Works	**Engineering, Technology, & Application of Science (ETS)**		
	The shape and stability of structures of natural and designed objects are related to their function (s).		Ask questions based on observations to find more information about the natural and/or designed world.
			Investigate a situation that people want to change or create and recognize it can be approached as a problem to be solved through engineering.
			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.
			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 (e.g. diagram, drawing, physical replica, diorama, dramatization, or story board)
			Develop a simple model based on evidence to represent a proposed object or tool.
			Collect, record, and share observations, and analyze data from tests of an object or tool to determine if it works as intended.
			Recognize that because there is always more than one possible solution to a problem, it is useful to compare and test designs.

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How We Organize Ourselves	**Life Systems: Growth and Changes in Animals (AN)**		
	Analyze the growth and development of familiar animals, including birds, fish, insects, reptiles, amphibians, and mammals, during their life cycles.		Pose questions about the growth and development of familiar animals.
			Identify the names of the offspring (e.g., cub, pup, calf, kitten, chick, fawn, fingerling, maggot, tadpole, gosling, and infant) of familiar animals.
			Compare the length and stages of life cycles of familiar animals.
			Describe the characteristics common to each stage (e.g., birth, youth, adulthood, and old age) of the life cycle of familiar animals (e.g., dog, cat, beaver, frog, fish, bird, ant, wasp, and chicken).
			Analyze which traits (e.g., body size, head size to body ratio, and number of limbs) remain relatively constant and which change in specific animals as they grow and develop.
			Create a physical, visual, or dramatic representation of the growth and development of familiar animals during their life cycles.
			Predict how big a specific animal will grow based on observed patterns of animal growth and changes.
			Design an animal suited for life in a particular environment (real or imaginary) and represent its growth and changes throughout its life cycle.
	Compare the growth and development of humans with that of familiar animals.		Pose questions about similarities and differences between animal and human growth.
			Predict ways in which humans change as they grow.
			Create representations of changes in the growth and development of humans throughout their life cycle (e.g., baby, preschooler, elementary student, teenager, adult, and elderly person).
			Sequence pictures or illustrations of humans and familiar animals according to stage of life cycle.
			Compare patterns in human growth and development to that of familiar animals.
			Compare the food choices and eating habits of various familiar animals as they relate to growth and development.
Sharing the Planet	**Life Systems: Growth and Changes in Animals (AN)**		
	Assess the interdependence of humans and animals in natural and constructed environments.		Predict which animals live in various locations (e.g., tree, underground, nest, cave, water, and soil) within a variety of natural and constructed environments.
			Observe familiar animals in natural (e.g., tree, stream, pond, forest, and beneath a rock) and constructed (e.g., garden, sports field, zoo, aquarium, and city) environments safely and respectfully.
			Assess features of natural (e.g., woodland, stream, grassland, and forest) and constructed (e.g., backyard, zoo, schoolyard, and classroom) environments that support or hinder the health and growth of familiar animals.
			Analyze ways in which human activities intentionally or unintentionally can help or harm wild and domesticated animals.
			Examine ways in which humans and animals interact with each other (e.g., pet, companionship, transportation guide dog, search and rescue, and providing food), including ways in which animals can cause harm to humans.