



GRADE 3 SCIENCE LEARNING OUTCOMES AND UNIT GUIDE

Unit	Learning Outcomes	✓	Performance Indicators
Who We Are	Life Systems: Plant Growth and Changes (PL)		
	Investigate the growth and development of plants, including the conditions necessary for germination.		Pose questions related to plant growth (e.g., How do very young plants look different from grown plants? How much water do plants need to grow? Do all plants grow in the same way?).
			Observe and explain the function of the major structures (i.e., root, stem, flower, leaf, and fruit or seed) of a variety of plants.
			Relate characteristics such as the number and shape of leaves, flower color, height, and presence and type of fruit in different types of plants to the plant's environment.
			Observe and represent, using written language, pictures, and charts, changes that occur through the life cycle of a flowering plant.
			Compare the basic needs of plants to the basic needs of animals and humans.
			Research ways in which plants rely on animals and abiotic factors (e.g., gravity, wind, and water) to support plant reproduction by dispersing seeds.
			Predict and investigate conditions such as the temperature, available sunlight, available nutrients in soil, and available water, which are necessary for plant germination and growth.
			Care for a flowering plant throughout its life cycle, tracking its growth and changes.
			Estimate, record, and display relevant measurements of plant growth, using rulers, tables, and bar graphs.
			Suggest explanations for patterns and discrepancies in the growth rate of similar plants grown in varying conditions.
			Explain the importance of water and light for plant growth and the mechanisms by which plants obtain water and light from the environment.
			Students know how sugar, water, and minerals are transported in a vascular plant.
			Students know plants use carbon dioxide (CO ₂) and energy from sunlight to build molecules of sugar and release oxygen.
		Students know plant and animal cells break down sugar to obtain energy, a process resulting in carbon dioxide (CO ₂) and water (respiration).	
		Pose new questions about conditions necessary for plant growth, based on what was learned.	



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Earth & Space Science : Weather (WE)				
Where We Are in Place and Time	Measure and represent local weather, including temperature, wind speed and direction, amount of sunlight, precipitation, relative humidity, and cloud cover.		Pose questions about local weather conditions and methods of collecting weather data.	
			Use a technological problem-solving process to design and construct simple weather instruments (e.g., wind vane, rain gauge, thermometer, barometer, and anemometer).	
			Explain the function and purpose of simple weather instruments.	
			Compile and display local weather data (e.g., temperature, wind speed and direction, amount of sunlight, precipitation, relative humidity, and cloud cover) for a given time interval (e.g., hourly throughout the day, daily for one week, and weekly for one month) using a weather journal, tables, charts, diagrams, and graphs.	
			Construct a wind rose to determine the predominant wind direction in a region over a given time period.	
			Evaluate, using student-developed criteria, the effectiveness of a personally-constructed weather instrument.	
			Generate simple conclusions about the prevailing local weather conditions.	
			Pose new questions about local weather conditions based on what was learned.	
	Investigate local, national, and global weather conditions, including the role of air movement and solar energy transfer.		Pose questions about the characteristics of local, national, and global weather conditions.	
			Demonstrate properties of air, in that air takes up space, has weight, expands and rises when heated, exerts pressure, and moves from areas of high pressure to areas of low pressure.	
			Design and safely carry out an experiment to determine the effects of solar energy on different surfaces (e.g., water, soil, sand, asphalt, concrete, grass, and wood).	
			Record and share, using tables, charts, diagrams, and graphs, the results of experimentation into the effects of solar energy on different surfaces.	
			Describe the characteristics of severe weather events, such as hurricanes, tornadoes, blizzards, hailstorms, droughts, and tropical cyclones, including the role of air movement and solar energy transfer in those events.	
			Relate weather extremes (e.g., hottest air temperature, lowest air temperature, greatest rainfall, highest wind speed etc..) to specific locations in Nicaragua and on Earth.	
			Compare weather conditions locally, regionally, and across Nicaragua at various times throughout the year.	
	Analyze the impact of weather on society and the environment,		Research how and why people in their communities use short- and long-term weather forecasts in their daily lives.	
			Analyze the impact of weather conditions for a particular region on the lives and livelihoods of people in that region, including choices of food, shelter, clothing, transportation, and employment.	
			Research effects of short- and long-term changes in weather on the lives and livelihoods of people locally, nationally, and globally.	
	Physical Science: Energy and Matter (EM)			
	How We Express Ourselves	Recognize that molecules and atoms exist. Energy and matter have multiple forms and can be changed from one form to another.		Energy comes from the Sun to Earth in the form of light.
				Investigate how energy is stored. Sources of stored energy take many forms, such as food, fuel, and batteries.
				Identify machines and living things that convert stored energy to motion and heat.
				Observe and investigate properties of matter and recognise that matter has three forms: solid, liquid, and gas. (ice, water, steam)
				Investigate evaporation and melting and recognize that they are changes that occur when the objects are heated.
			Recognize that all matter is made of small particles called atoms, too small to see with the naked eye.	



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	How the World Works	
Objects in the sky move in regular and predictable patterns.		The patterns of stars stay the same, although they appear to move across the sky nightly, and different stars can be seen in different seasons. Use a star wheel to recognise how stars move.
		Observe and record the way in which the Moon's appearance changes during the four- week lunar cycle.
		Telescopes magnify the appearance of some distant objects in the sky, including the Moon and the planets. The number of stars that can be seen through telescopes is dramatically greater than the number that can be seen by the unaided eye.
		Represent through art, dance, drama etc. how earth is one of several planets that orbit the Sun and that the Moon orbits Earth.
		Investigate and pose questions about the position of the Sun in the sky and changes during the day and from season to season.
		Physical Science: Structures and Materials (SM)
Investigate properties of materials and methods of joinery used in structures.		Identify problems to be solved relating to the properties of materials in structures (e.g., What is the purpose of the structure? What materials are appropriate for constructing the structure? What are appropriate methods of joinery?).
		Examine the properties of materials used in natural and human- built structures (e.g., beaver lodge, bird nest, wasps' nest, honeycomb, ant hill, house, marionette, circus float, umbrella, ladder, bridge, earth lodge, drink can, soccer ball, playground equipment, and toys).
		Compare the properties of materials used historically and currently throughout the world to construct structures such as houses, bridges, towers, and roads.
		Sort materials for use in constructing structures according to one or more physical properties such as strength, texture, color, flexibility, and durability.
		Analyze how various similar and dissimilar materials can be joined (e.g., gluing, nailing, screwing, stapling, taping, Velcroing and tying) and identify the most appropriate methods for joining specific materials for an identified use.
		Use appropriate tools (e.g., hammer, nail, glue, and scissors) to cut, shape, make holes, sew, and assemble materials safely.
		Develop and carry out a plan, including making predictions, identifying variables, and recording relevant observations, to test the strength of various materials (e.g., straws, toothpicks, masking tape, string, cotton balls, wooden blocks, Styrofoam, cloth, clay, and spaghetti).
Assess the function and characteristics of strong, stable, and balanced natural and human-built structures.		Assess the suitability of various materials for constructing structures, including methods of strengthening those materials (e.g., adding more layers, tying or gluing together, triangulation, cross-bracing, and changing the shape of the materials).
		Analyze the purpose or function of various natural and human- built structures.
		Examine how some human-built structures are modeled on shapes and structures found in nature.
		Assess how 2-D shapes (e.g., rectangle, triangle, circle, square, hexagon, and octagon) and 3-D objects (e.g., dome, arch, and cylinder) provide strength, stability, and balance to natural and human-built structures.
		Compare the characteristics of solid (e.g., sand castle, mountain, and dam), frame (e.g., partition wall, soccer net, and spider web), and shell (e.g. bike helmet, balloon, and drink can) structures.
		Classify natural and human-built structures as solid, frame, or shell structures.
	Compare the characteristics of different types of shelter (e.g., tent, igloo, hut, boat, castle, tipi, yurt, and house) constructed by people throughout the world, past and present.	
	Examine the characteristics and significance of historical structures such as Tikal, Stonehenge, the Parthenon, Petra, the Great Wall of China, Angkor Wat, Machu Picchu, the Taj Mahal, the Pyramids, and Easter Island moai.	
	Analyze how various shapes contribute to balance and stability in humans and various animals.	
	Develop and carry out a plan to construct a simple structure such as a tower, bridge, or bird feeder that meets teacher- or student-specified criteria related to strength, stability, and function.	
	Estimate measurements to select appropriate quantities of required materials for constructing a structure.	
	Illustrate the construction process for a simple structure, including descriptions of the components of the structure, using labelled drawings, written and oral explanations, and demonstrations.	
	Assess the strength, stability, and balance of personally- constructed structures and make changes to improve the structure as deemed necessary.	
Identify materials or parts of a structure that failed and hypothesize why they failed.		



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Life Systems: Adaptions (AD)			
How We Organize Ourselves	Recognize that physical structure or behavior may improve an organism's chance for survival.		Understand how plants and animals have structures that serve different functions in growth, survival, and reproduction.
			Investigate diverse life forms in different environments, such as oceans, deserts, tundra, forests, grasslands, and wetlands.
			Investigate how living things cause changes in the environment in which they live: some of these changes are detrimental to the organism or other organisms, and some are beneficial.
			Make predictions and investigate what happens when the environment changes; some plants and animals survive and reproduce; others die or move to new locations.
			Investigate organisms that have evolved and went extinct understanding what caused their survival or extinction.
Life Systems: Plant Growth and Changes (PL)			
Sharing the Planet	Analyze the interdependence among plants, individuals, society, and the environment.		Observe, safely and respectfully, plants in local environments (e.g., classroom, flower garden, school yard, community garden, forest, and field).
			Research traditional and contemporary uses of plants or parts of plants, such as food, beverages, medicine, arts, seed banks, shade, wind breaks, erosion protection, cultural celebrations, and products like dyes, shelter, and clothing.
			Examine the importance of agriculture in Nicaragua, including the variety of plants and plant-related products.
			Describe examples of plant biodiversity (e.g., trees, shrubs, bushes, herbs, grasses, vines, and mosses) in various ecosystems throughout the world.
			Explain how to determine whether plants are healthy and discuss the impacts of diseased plants on society and the environment.
			Describe ways that plants and animals depend on each other.
			Assess the impact of natural (e.g., animal migration, fire, competition, and decay) and human activity (e.g., burning land, logging, fertilizing, soil compaction, and picking endangered plants) on the biodiversity of plant species.
			Examine the type and quantity of plants and plant matter in the diets of people who live in various communities and/or represent various cultures.
			Explain how and why plants are replenished naturally (e.g., forest fires and pollination) and artificially (e.g., tree farms, planting seedlings, and seed banks).
			Imagine a world without plants and describe the impact on animals, people, and the environment.