

Scheme of Work

NAS 4

Chapter	Subtopic	Objective	Page No.	Activities
Unit 1a Characteristics and Life processes of organisms	Physical and behavioural characteristics of major groups of living things	Compare and contrast characteristics that distinguish major groups of living things(plants and animals).	5	Construct a scrap book collecting plants/animals' pictures and classifying them as well. Which of them can you find in Pakistan? Observe animals and plants from your surrounding area and study their characteristics and behaviors. (Where did you see them, where do they live, what do they eat?)
		Classify animals in terms of vertebrates and invertebrates with examples and analyze the differences and similarities in vertebrates and invertebrates.	6-7	
		Classify plants in terms of flowering and non-flowering with examples and analyze the differences and similarities in flowering and non-flowering plants.	9-11	
		Recognize and appreciate diversity in life (both plants and animals) and identify ways to protect diversity	11	
Unit 1b Characteristics and Life processes of organisms	Functions of major structures in living things	Identify major parts/ organs in animals (teeth, bones, lungs, heart, stomach muscles, brain).	16-22	Use small pots to plant few seeds, provide water and sunlight, observe their growth and record changes.

		Relate the parts/ organs of body of animals to their functions (e.g., teeth break down food, bones support the body, lungs take in air, the heart circulates blood, the stomach helps to digest food, muscles move the body). Identify parts of a plant body (leaves, stem, flowers, seeds, roots). Relate the structures of plants to their functions(i.e., roots absorb water and nutrients and anchor the plant, leaves make food, the stem transports water and food, flowers produce seeds, and seeds produce new plants).	18-22 23 23-27	Take two similar plants, and place one in regular water and the other in colored (ink) water for a few days. Observe any changes. Cut the stems and discuss the differences. Imagine that you woke up one morning and found all the plants withered. Write a story about what happens after that. Explore what makes humans different from plants with respect to movement and obtaining food.
Unit 2 Ecosystem	1. Diversity of the conditions for life on Earth	Recognize what an ecosystem is (e.g., forests, ponds, rivers, grasslands and deserts). Explain biotic (plants, animals and humans) and abiotic components (light, temperature, soil and water) and their linkages.	33-34 32	Distribute animal and plant pictures (or name cards) among students and place different chart sheets representing different ecosystems. Take turns placing the animals/plants on the different ecosystem charts.

		Analyse the way these biotic and abiotic constituents create a balance to sustain any ecosystem. Recognize the interactions between animals and plants and the importance of maintaining balance within an ecosystem	32 32	Using the materials used in the above activity, select the picture with a balanced ecosystem and remove one of its biotic or abiotic components. Now ask students to discuss in groups about the impact it will have on an ecosystem. Once the students have discussed, ask them to present their findings as a group (by selecting one group presenter)
	2. Relationships in simple food chains	Describe a few food chains and analyse their structure to understand its function. Describe the roles of living things at each link in a simple food chain (e.g., plants produce their own food; some animals eat plants, while other animals eat the animals that eat plants). Identify and describe common predators and their prey.	37 36 37	Show some time lapse video showing the concept of prey, predator or survival of the fittest. Construct a model or create a chart by pasting pictures of animals and plants in a simple food chain using common plants and animals from familiar ecosystems, such as a forest or a desert. Using these models/charts allow students to observe and discuss the food chain so that they can understand how a food chain works.

	2. Ways of maintaining good health	Describe the importance of maintaining good health. Recognize everyday behaviours that promote good health (e.g., a balanced diet, drinking clean water, exercising regularly, brushing teeth, getting enough sleep) Define balanced diet and explain its components. Identify common food sources included in a balanced diet (e.g., fruits, vegetables, grains, milk and meat group). Understand the value of clean drinking water and inquire about the factors that generally make it unclean. Explore a few ways that can help make water clean and suitable for drinking (water filtration and boiling).	46 51-53 51-52 52 53 53	
Unit 4 Matter and its characteristics	1. States of matter and its characteristics	Describe matter and its states. Describe characteristics of each state of matter with examples.	58 58-59	

	2. Physical properties as a basis of classifying matter	Compare and sort objects and materials on the basis of physical properties (e.g., mass, volume, states of matter, ability to conduct heat or electricity, ability to float or sink in water). Explore the properties of metals (i.e. appearance, texture, color, odor, density). Identify properties of metal (conducting heat and electricity) and relate these properties to use of metals (i.e. a copper electrical wire, an iron cooking pot).	61 62	
Unit 5 Forms of energy and energy transfers	1. Common sources and uses of energy	Identify sources of energy (e.g., the Sun, flowing water, wind, coal, oil, gas). Recognize that energy is needed to do work, (e.g. for moving objects), heating and lighting. Describe and demonstrate the transformation of energy. Understand the importance of energy conservation. Recognize the role and responsibility of humans to conserve energy resources.	68-69 68 69-70 71 71	

	2. Light and sound in everyday life:	Relate familiar physical phenomena (i.e., shadows, reflections, and rainbows) to the behaviour of light. Relate familiar physical phenomena (i.e., vibrating objects, echoes) to the production and behaviour of sound	72 73-74	
	3. Heat Transfer	Recognize that warmer objects have a higher temperature than cooler objects. Investigate the changes that occur when a hot object is brought in contact with a cold object. Identify ways to measure temperature and understand its unit.	74 74-75 75	
	4. Electricity and simple electric circuits	Describe and demonstrate that electrical energy in a circuit can be transformed into other forms of energy (e.g., heat, light, sound). Explain and provide reasoning that a simple electric circuit requires a complete electrical pathway.	76 75	

Unit 6 Forces and Motion	1. Familiar forces and the motion of objects	Describe force and motion with examples from daily life Identify gravity as a force that draws objects to Earth. Investigate that friction force works against the direction of motion. Provide reasoning with evidence that friction can be either detrimental or useful under different circumstances.	82 83-84 84 84-85	Design a hover-craft using the concept of friction. (With the help of balloon and CD/paper plate). Design rubber band wheel car and try it on different surfaces. Use talcum powder on the same surfaces to demonstrate the effect of friction.
	2. Simple machines	Recognize that simple machines, (e.g., levers, pulleys, gears, ramps) help make motion easier (e.g., make lifting things easier, reduce the amount of force required, change the distance, or change the direction of the force).	85-86	Make simple levers to lift objects (such as books) in the classroom.
Unit 7 Earth and its resources	1. Physical characteristics of Earth	Recognize that earth's surface is made up of land and water in and is surrounded by air. Recognize that water in rivers and streams flows from mountains to oceans or lakes.	92 92	

	2. Earth's resources	Identify some of Earth's natural resources that are used in everyday life (e.g., water, wind, soil, forests, oil, natural gas, minerals). Recognize that some remains (fossils) of animals and plants that lived on Earth a long time ago are found in rocks, soil and under the sea. Differentiate between renewable and non-renewable resources Investigate the impact of human activities on Earth's natural Resources Suggest the ways to conserve the natural resources.	93-94 96 97 98 98	Ask students to identify a simple everyday object they use or are familiar with (furniture, shoes, books, clothes etc). Discuss the various resources used in making it. Which of these are non-renewable? What would happen if we run out of these resources? Help students create their own fossils using 'plaster of paris', paper cups and a small toy or object that can fit inside the cup.
Unit 8 Earth's Weather and Climates	1. Weather and climate	Understand the difference between weather and climate. Relate that weather (i.e., daily variations in temperature, humidity, precipitation in the form of rain or snow, clouds, and wind) changes with changing geographical location. Recognize that average temperature and precipitation can change seasons and location.	104 107 108	Measure the temperature every day for a week and observe other weather conditions such as rain, sun, cloudcover, hail storm and make a weather chart.

Unit 9 Earth in the Solar System	1. Objects in the Solar System and their movements	Describe and demonstrate the Solar System with the sun at the centre and the planets revolving around the sun. Identify the sun as a source of heat and light for the Solar System. Recognize that the earth has a moon that revolves around it, and from earth the moon looks different at different times of the month.	114 114 115	Using clay or plasticine or any such material and prepare models of Solar system and Phases of moon. Study the web link and prepare working model of solar system and related concepts
	2. Earth's motion and related patterns observed on Earth	Investigate and describe how day and night are related to Earth's daily rotation about its axis, and provide evidence of this rotation from the changing appearance of shadows during the day. Describe how seasons in Earth's Northern and Southern hemispheres are related to Earth's annual movement around the Sun.	115 116	
	3. Solar and Lunar eclipses	Illustrate and explain how solar and lunar eclipses occur.	117-118	Design models of solar and lunar eclipses

Unit 10 Technology in everyday life	1. basic craft making (out of paper, cardboard, reeds, packing material etc.)	Practice techniques of folding, cutting, tearing and pasting papers, cardboard to make objects and patterns.	124	Practice making things out of paper at home
		Design paper bags, envelopes, cards and face mask.	125	
	2. basic technical model making (out of clay)	Design models of sphere, cube, prism, cylinder and cone with clay or play dough.	129	Make clay toys at home and school. Use water soluble paints to colour the toys.
		Design hammer, wheels, rollers and gears using clay or play dough	129	
	3. Technical activities	Operate mobile phones for use of calculator, alarm clock and calendar	130	If students don't have mobile phones ask them to borrow a phone from a grown up and practice the activities under supervision.
		Operate mobile phones for taking snap shots	130	
	4. Elementary first aid	Recognize the items of first aid box.	131	
		Use digital and clinical thermometer externally to measure body temperature.	132	
		Check blood pressure by digital blood pressure monitor	132	