



Tamil Nadu Curriculum Framework 2025
Proposed Draft Syllabus, Pedagogical Approaches and Assessment Strategies
Classes 3- 5 - Science

Introduction: The Tamil Nadu State Education Policy 2025 emphasizes activity-based, play-based, and experiential learning in Science at the primary level, where children explore personal hygiene, health, the living and non-living world, and develop sensory awareness. This curriculum is designed to, evoke interest, a sense of wonder and curiosity in the world around. It fosters cognitive skills and abilities to help students understand themselves and the world around them. It introduces the processes of scientific enquiry in student thinking and doing. It builds awareness of, sensitivity to and care of the natural world and all life, and nurtures students to apply their learning in everyday living to make age-appropriate, informed decisions and responsible choices. It builds an appreciation that scientific learning and technology can enrich life and contribute to the well-being of all. It encourages them to become self-directed learners, work collaboratively with peers.

THEME	CLASS 3	Class 4	Class 5
C.G: Gets introduced to the life of plants -their structures and functions and how the soil and insects nourish them.			
1. WORLD OF PLANTS	<ul style="list-style-type: none"> • Parts of a plant and its functions • Requirements of plants to grow • Tree study 	<ul style="list-style-type: none"> • Parts of a flower • The processes of pollination, fertilization, seed dispersal and germination • Methods of seed dispersal • Life cycle of a plant—from seed to fruit • The special role of butterflies and bees in pollination 	<ul style="list-style-type: none"> • Soil as essential element to plant life • Elements of soil - particulate matter, air, water and decaying material, life in the soil • Layers of soil • Experiment to demonstrate that soils retain water • Process of making manure • Process of decomposition - brief introduction to microbes, burrowers and fungi

C.G: Builds a relationship with food through an understanding of how food is grown and processed and makes healthy food choices.			
2.FOOD WE EAT	<ul style="list-style-type: none"> • Parts of plants eaten • Types of food eaten • Steps involved in growing food 	<ul style="list-style-type: none"> • From farm to table - e.g., steps in processing rice • Uses of flattened and puffed rice • Cooking processes • Hygiene in food preparation and serving 	<ul style="list-style-type: none"> • Food pyramid • Introduction to various terms such as carbohydrate, protein, fat • characteristics of healthy food
C.G: Gets introduced to various human body systems and their basic functions through simple activities and learns principles of good posture			
3.THE HUMAN BODY	<ul style="list-style-type: none"> • Pictorial representation of the systems of the human body and a brief introduction to their basic functions - movement • Principles of good posture • Activities 	<ul style="list-style-type: none"> • Pictorial representation of the systems of the human body and a brief introduction to their basic functions - 5 Senses • Activities 	<ul style="list-style-type: none"> • Pictorial representation of the systems of the human body and a brief introduction to their basic functions - Heart, Respiratory, Digestive and Excretory • Activities
C.G: Learns basic first aid for a few conditions and how to keep safe in various situations.			
4.FIRST AID & SAFETY	<ul style="list-style-type: none"> • Safety rules to be practiced at school, home and community contexts 	<ul style="list-style-type: none"> • Safety rules to be practiced at school, home and community contexts 	<ul style="list-style-type: none"> • First aid for a few conditions
C.G: Gets introduced to the world of animals through observational studies, understanding of behaviours and how their physical structures are related to their functions in the environment.			
5.WORLD OF ANIMALS	<p>A.</p> <ul style="list-style-type: none"> • Life story of a domestic animal <p>B.</p> <ul style="list-style-type: none"> • Observational study of Small Creatures <p>C.</p> <ul style="list-style-type: none"> • Observational study of Birds 	<ul style="list-style-type: none"> • Life Cycles of Animals - (Butterfly, Frog) • Animal Behaviour • Factors influencing behaviours • How animals communicate 	<ul style="list-style-type: none"> • Physical structures of animals and their relationship to the function in the environment • For camouflage • For climatic protection • For locomotion

C.G: Appreciates designs both natural and man, correlates properties of materials with their use and makes simple objects with easily available materials.			
6.MATERIALS and DESIGNS (NATURAL and MAN MADE)	<ul style="list-style-type: none"> Homes of birds Shapes of utensils Shops and how they organize the things they sell Design for inclusion of differently abled 	<ul style="list-style-type: none"> Steps to make things with drinking straw, leaves, paper, match boxes Different kinds of materials and the objects made from them Properties of materials and their relationship to use 	<ul style="list-style-type: none"> Objects are made with a combination of materials Processing of materials to make objects using different kinds of tools and machines and energy Degradable and non-degradable wastes
C.G: Experiments with soil, water and air to get introduced to the properties of elements.			
7.ELEMENTS	SOIL <ul style="list-style-type: none"> Characteristics of soil- textures colour, ability to retain water Experiment to compare how different kinds of soil retain water sandy, clayey and fertile soils and their uses art activities 	WATER <ul style="list-style-type: none"> Experiments to understand a few properties of water Their applications in everyday life 	AIR <ul style="list-style-type: none"> Experiments to understand a few properties of air Their applications in everyday life as necessary for all life forms Experiment to show that air gets polluted with dust and smoke Sources of air pollution
C.G: Explores functioning of systems around them in expanding circles starting with their local environment, interactions of biotic and abiotic factors in a pond ecosystem and cycles in nature -food chains and webs, the water cycle, and the life cycle of insects			
8. PATTERNS AND INTERACTIONS IN NATURE	MY ENVIRONMENT (Local Area) <ul style="list-style-type: none"> Observation of the local area -natural and man made features Documentation (both pictorial and written) 	INTERACTIONS IN A POND <ul style="list-style-type: none"> Different types of ponds Diversity of animal life in a pond Ponds as a self-sustaining freshwater ecosystem made up of biotic (producers, consumers, decomposers) and abiotic factors Interactions between Biotic and Abiotic factors 	WATER CYCLE, FOOD CHAINS AND FOOD WEBS <p>A. Water Cycle</p> <p>B. Food Chains and Webs</p> <ul style="list-style-type: none"> Food chains Producers, primary consumers, secondary consumers, tertiary consumers, decomposers An example of a food web

		<ul style="list-style-type: none"> Differences between a stream and a pond 	<ul style="list-style-type: none"> Food chains and webs exist in all ecosystems
STAND ALONE TOPICS			
C.G: Explores light and shadows to understand the formation of shadows, their size, shape and position in relation to light sources.			
LIGHT and SHADOWS			<ul style="list-style-type: none"> How shadows are created Objects that cast and do not cast shadows Positions and sizes of shadows with reference to light source
C.G: Experiments with bar magnets to understand polarity and magnetization.			
MAGNETS			<ul style="list-style-type: none"> The repulsive and attractive properties of magnets How to magnetize non- magnetic objects and verify that
C.G: Learns that push and pull (forces) can move objects, stop them and change their shape			
FORCES		<ul style="list-style-type: none"> Push and Pull forces Forces can stop moving objects, and can change the shape of objects Technology that uses push and pull forces observable in the environment Work as movement when force is applied and its measurement 	

Content	Learning Outcome
<p>THE WORLD OF PLANTS</p> <p>A.</p> <ul style="list-style-type: none"> • Parts of a plant and its function • Experiment to demonstrate transport of water from the roots Transport of food from leaves <p>B.</p> <ul style="list-style-type: none"> • Requirements of plants to grow - sunlight, air, water • Plants as the primary source of food <p>C.</p> <ul style="list-style-type: none"> • Observational study of Trees • Vocabulary to describe canopy, bark, texture of stems, leaf arrangement 	<p>A.</p> <ul style="list-style-type: none"> • Draws and names the parts of a plant in your immediate environment • Tabulates special features. • Draws and labels the parts of a grass • Draws and labels the parts of a tree • Performs the experiment to demonstrate how water is transported from the roots and transport of food from leaves • Notes down observations • Draws inferences and conclusions and discusses them <p>B.</p> <ul style="list-style-type: none"> • Understands that plants make their own food and are the primary source for all life <p>C.</p> <ul style="list-style-type: none"> • Identifies and names 5 commonly found trees around them • Detailed observational study of 3 trees • Describes the size, canopy, structure of bark, branches, leaf arrangement patterns, flowers, fruits using appropriate vocabulary • Compares similarities and differences between them • Draws the leaves and their arrangement and venation patterns • Observes and shares the interaction of trees with other life forms...birds, insects, people
<p>THE FOOD WE EAT</p> <ul style="list-style-type: none"> • Parts of plants that are eaten • Root and stem modifications • Types of food: • Greens and Tubers • Steps involved in growing a crop using rice as an example 	<ul style="list-style-type: none"> • Using examples from the food eaten – names the part of the plants that are eaten (e.g. potato – stem, carrot -root) • Identifies and names grains and other ingredients used in the kitchen, foods from the animals • Makes a small booklet by drawing/ sticking them and labelling them • Identifies and draws 5 greens and 5 tubers • Shares how he/she identified them

	<ul style="list-style-type: none"> • Lists the food from animals • Sequences and names the steps involved in growing rice • Shows respect for the effort to grow food by not wasting it
<p>THE HUMAN BODY -MOVEMENT</p> <ul style="list-style-type: none"> • Pictorial representation of the skeletal system of the human body and a brief introduction to movement • Joints of the body with labels • Principles of good posture in sitting, standing, lifting • Macro Movement -activities for coordination (e.g., simultaneously moving hands in different directions) • Micro movements- drawing patterns on the right side and left side of a central line as mirror images 	<ul style="list-style-type: none"> • Names the major joints • Tabulates their movements as up, down, sideways and round • Understands the principles of good posture in sitting, standing, lifting • Does the macro and micro movements with ease and accuracy
<p>SAFETY</p> <ul style="list-style-type: none"> • Safety rules to be practiced in school, house and community contexts • Touch rules-safe touch, unsafe touch, no touch, • Protective responses in unsafe situations and reporting to a safe adult • Identifying their safe person • Awareness of helpline numbers 	<ul style="list-style-type: none"> • Identifies what is unsafe touch and knows how to respond to an unsafe situation
<p>THE WORLD OF ANIMALS</p> <p>A.</p> <ul style="list-style-type: none"> • Life story of a domestic animal -It's habitat, it's food, it's daily and seasonal routines, it's young ones, it's social behaviours <p>B.</p> <ul style="list-style-type: none"> • Observational Study of Birds • Line diagrams of birds- crow, myna, sunbird, dove, parakeets, hens and their homes • How to describe the parts of a bird - beak, head, body, tail, feathers, size, colours • The food eaten by the birds in the environment 	<p>A.</p> <ul style="list-style-type: none"> • Narrates the life of a domestic animal • Draws a line diagram of an elephant • Using leaves makes animal shapes-leaf zoo <p>B.</p> <ul style="list-style-type: none"> • Observes, names and describe birds - crow, myna, sunbird, dove, parakeets, hens and any other birds commonly found in their area • Observes how they fly and makes an effort to listen to the bird sounds • Draws the pictures of birds and colours them

<p>C.</p> <ul style="list-style-type: none"> • Observational Study of Small Creatures • Small creatures around us -mosquitoes, ants, cockroaches, butterflies, bees, spiders, millipede • Definition of an insect • Line diagrams of insects (butterfly, ant) • Some insects may cause health problems (e.g., cockroaches in food, mosquitoes) 	<ul style="list-style-type: none"> • Compares and contrasts them based on criteria like size, colour, physical features • Sets up a bird bath in school and house <p>C.</p> <ul style="list-style-type: none"> • Observes, identifies and names the commonly found small creatures • Compares them and categorizes them based on criteria-number of legs, presence of wings, size, shape of body, where they are found-(in the house / in the soil/around plants/ on trees /near flowers, • Observes and does a study of ants and their behaviour (e.g., how they communicate, build homes and move towards food) • Knows the definition of an insect -lists the insects from the small creatures observed • Draws a butterfly and ant. Colours the butterflies given • Compares butterfly with millipede and notes differences • Understands that a few insects may cause health problems
<p>MATERIALS and DESIGNS (NATURAL and MAN MADE)</p> <p>A.</p> <ul style="list-style-type: none"> • Homes of birds -pictures of the nests of weaver bird, tailor bird, myna, woodpecker <p>B.</p> <ul style="list-style-type: none"> • Utensils of different shapes <p>C.</p> <ul style="list-style-type: none"> • Shops and how they organize the things they sell (vegetable and fruit shops) <p>D.</p> <ul style="list-style-type: none"> • Design for inclusion of differently abled - (ramps, wheel chairs, wide doors, grip bars, tactile tiles) 	<p>A.</p> <ul style="list-style-type: none"> • Observes and describes the nests of the weaver bird, myna, tailor bird and woodpecker in terms of their size, shape, materials used • Correlates the design with the size, beak and usage by the bird • Compares the different nests <p>B.</p> <ul style="list-style-type: none"> • Correlates the different shapes of vessels and their uses <p>C.</p> <ul style="list-style-type: none"> • Observes and illustrates vegetable & fruit carts/shops and how they arrange the fruits and vegetables <p>D.</p> <ul style="list-style-type: none"> • Observes and documents designs for inclusion in the community and buildings around

<p>ELEMENTS-SOIL</p> <ul style="list-style-type: none"> • Characteristics of soil- texture, colour, ability to retain water • Experiment to compare how different kinds of soil retain water with procedural steps and tabulation to record results • Sandy, clayey and fertile soils • Art activities with clay 	<ul style="list-style-type: none"> • Brings sample of different kinds of soil – sand, from field / garden, clay and describes them (colour, texture, smell if any) with appropriate vocabulary • Does the experiment following the procedure, notes down observations in the table. • Categorises the soils as sandy, clayey or fertile • Has a discussion on their possible uses • Makes various objects with clay
<p>INTERACTIONS- MY ENVIRONMENT (Local Area Study)</p> <ul style="list-style-type: none"> • Observation of the local area-Format for documentation 	<ul style="list-style-type: none"> • Names the type of terrain-coastal area/ plains/ mountainous area, / urban area/ agricultural area • Lists the natural life forms seen -trees, animals from studies done earlier • Lists the water bodies and sources of water (tap, well) • Names the weather conditions (rainy/ hot/ cool) & seasonal variations • Identifies waste disposal facilities for dry and wet waste • Identifies sources of food (market, shops, eateries, food grown locally) • Lists buildings (schools, hospitals, banks, parks...) in the area • Lists open spaces and green areas –play grounds, parks, • Identifies different types of transport used in the area • Lists occupations of people in the locality • Expresses feelings of what is liked/ disliked/ what can be improved in the environment

CLASS 4

Content	Learning Outcomes
WORLD OF PLANTS <ul style="list-style-type: none">• Parts of a flower• The processes of pollination, fertilization and germination in brief• Life cycle of a plant - from seed to fruit• Reasons for dispersal of seeds• Types of seeds and few methods of seed dispersal• The special role of butterflies and bees in pollination	<ul style="list-style-type: none">• Draws and names the parts of a flower• Observes and names flowers commonly found and categorizes them based on criteria - size, colour, smell, differences in structure• Understands the processes of pollination, fertilization, seed dispersal and germination• Draws the life cycle of a plant from seed to fruit and makes a flow diagram displaying the processes• Finds out how a tuber like potato is grown• Collects 4-5 seeds, draws them and tabulates similarities and differences• Correlates the features of the seed with its method of dispersal, discusses it in class and verifies conclusions• Understands and appreciates the interdependence in nature - bees, butterflies, wind, water help flowers in pollination
FOOD WE EAT <ul style="list-style-type: none">• From farm to table• Steps in processing of grains (husking, boiling, polishing) and products of rice, (raw rice/ boiled rice/ flattened/ puffed rice)• Cooking processes –boiling, steaming, sauteing, frying• Hygienic practices in food preparation and serving	<ul style="list-style-type: none">• Traces the steps of the processes involved in the rice that is eaten backwards to the rice grain and draws a flow chart• Tabulates by observation similarities and differences between raw rice, parboiled rice, hand pound rice, flattened and puffed rice• Finds out some dishes that can be made with different products of rice and shares it in class• Observes various processes of cooking at home and discusses it in class• Lists various food items eaten and their processes of cooking (e.g. idli and steaming)• Knows and practices food hygiene

<p>THE HUMAN BODY -OUR 5 SENSES</p> <ul style="list-style-type: none"> • 5 sense organs of the human body and a brief introduction to their basic functions • Activities based on the senses • Song on the tastes 	<ul style="list-style-type: none"> • Understands the modalities of the sense organs tongue and various tastes, hot and cold food, touch-skin-pressure, touch, temperature, smells-pleasant and unpleasant odours, hearing sounds- soft, loud, high pitched and low pitched sounds, harm to the ear caused by loud sounds, sight-colours and shades, foreground and background, recognition of shape • Correlates favourite food items with its various tastes • Names favourite hot and cool food items • Uses 2 colours and shows gradation in shades • In the given picture, uses two colours to show what is in the background and foreground • Identifies shapes in the picture given • Explores the differences in perceptions of touch on the back and front of the palm • Explores with classmates, making loud and soft sounds keeping the pitch constant • Changes the pitch and tries the same activity • Listens to various sounds in the environment—bird sounds • Identifies pleasant and unpleasant smells in the environment and shares with friends
<p>SAFETY</p> <ul style="list-style-type: none"> • Safety rules to be practiced in school, house and community contexts • Keeping safe during floods, cyclones, lightning strikes • Keeping safe with inflammable materials and with fires & smoke • Safe electricity usage • Safe internet and mobile use • Awareness of helpline numbers and safety symbols 	<ul style="list-style-type: none"> • Practices and demonstrates understanding of safety rules in simulated situations.

<p>THE WORLD OF ANIMALS -LIFE CYCLE OF ANIMALS ANIMAL COMMUNICATION</p> <p>A.</p> <ul style="list-style-type: none"> • Brief description of habitats of butterflies and frogs • Life cycle of a butterfly • Life cycle of a frog • Story of how a boy tried to help a butterfly emerge by cutting the cocoon and its consequences <p>B.</p> <ul style="list-style-type: none"> • Why dogs wag their tails, tilt their heads, run in circles, dig, bark, circle a space before lying down, why cows moo, lick other cows, • How animals communicate - Visual signals, Auditory signals, Chemical signals, Body odours, Touch signals • Dogs can be trained to respond to human communication (e.g., dogs being trained for different purposes) 	<p>A.</p> <ul style="list-style-type: none"> • Illustrates and labels the life cycles of a butterfly and frog • Compares them -notes similarities and differences and discusses it <p>B.</p> <ul style="list-style-type: none"> • Shares their observations of animal communication
<p>MATERIALS and DESIGNS (NATURAL and MAN MADE)</p>	
<p>Content</p>	<p>Learning Outcome</p>
<ul style="list-style-type: none"> • Different kinds of materials and the objects made from them - wood, metal, ceramic, rubber, glass, plastic, fabric • Properties of strength, ability to stretch, flexibility, transparency and their relationship to use 	<ul style="list-style-type: none"> • Links materials with their properties and tabulates the results • Correlates materials with objects and their uses • Given scenarios, selects materials that can be used and gives reasons for the choice (e.g.,if I want to shift 20 big books from one place to another, what will I use?)
<p>ELEMENTS-WATER</p> <ul style="list-style-type: none"> • Understands a few properties of water through experiments -water moves things, dissolves things, things float/ sink in water, water finds its level, climbs up, flows down 	<ul style="list-style-type: none"> • Performs the experiments to demonstrate the properties of water following the given procedure • Notes down observations in the tabulation format • Draws inferences and conclusions and discusses them • Observes where these properties are used in life around them (e.g., making lemon juice, floating some kinds of logs of wood, downstream to transport them)

<p>INTERACTIONS IN A POND</p> <ul style="list-style-type: none"> • Different types of ponds • Diversity of animal life in a pond • Features of pond life -It is a system of living (biotic) and non living- water, sunlight, soil and minerals, air-oxygen (abiotic) elements functioning together. • Brief description of how they function together-Interactions • Differences between a pond and stream 	<ul style="list-style-type: none"> • Names ponds around (if any) and the type of pond • Using line diagrams to draw the animals and plants in the pond • Represents the interactions of biotic and abiotic factors learnt with illustrations and shares it in class • Compares stream and pond and tabulates similarities and differences
<p>FORCES</p> <p>A. Forces</p> <ul style="list-style-type: none"> • Push and Pull forces • Forces can stop moving objects • Forces can change the shape of objects • Technology that uses push and pull (forces) observable in the environment around them 	<p>A.</p> <ul style="list-style-type: none"> • Experiments with moving objects around them by pushing and pulling (chair, table, bags, ball, pencil box...) • Understands the term force as a push or pull • Compares the magnitudes of forces by pushing or pulling objects of different sizes, shapes and weights and tabulates differences observed • Compares pushing and pulling • Experiments with stopping moving objects –moving ball, tops, marbles, sliding objects and records observations • Changes the shapes of objects by kneading, breaking, crushing and records observations
CLASS 5	
Content	Learning Outcomes
<p>THE WORLD OF PLANTS</p> <ul style="list-style-type: none"> • Soil as essential for plant life and growth • Elements of soil -particulate matter, air, water and decaying material, life and soil • Layers of soil • Soils retain water • Process of making manure and uses of humus • Process of decomposition / decay of different materials (leaves, plants, plastic, paper, food) 	<ul style="list-style-type: none"> • Perceives soil as a composite of air, water, and particles and living beings and vital for plant life and growth • Draws a diagram to show that soil has many layers • Does a simple experiment to understand how soil retains water: Performs the experiment following the given procedure, Notes down observations, Draws inferences and conclusions and discusses them. • Creates a manure pit in the ground/ large pot • Records the materials and processes of creation of pit

<ul style="list-style-type: none"> • Brief introduction to microbes in the soil, burrowers like earthworms and fungi • Importance of decomposition 	<ul style="list-style-type: none"> • Records observations of changes over a period of time on a regular basis • Describes the differences in soil before and after the process - colour, texture, smell and understands the benefits of humus • Discusses what happens if there is no decomposition
<p>FOOD WE EAT</p> <ul style="list-style-type: none"> • Food pyramid as enunciated by the National Institute of Nutrition, Hyderabad- a healthy diet needs foods from each of food groups • Introduce the terms carbohydrates, proteins, fats, vitamins and minerals and briefly state their specific roles in the body • Features of healthy foods 	<ul style="list-style-type: none"> • Correlates the dishes in a meal (e.g., idli, sambhar) with the food groups • Understands what is meant by healthy food and makes a menu for a balanced meal • Compares packaged foods eaten by listing the additives in the labels • Discusses the role of taste in making food choices • Makes a recipe booklet of 5-6 recipes of food that is healthy and tasty • Creates a poster in groups on ‘healthy eating for good health’
<p>THE HUMAN BODY</p> <ul style="list-style-type: none"> • Pictorial representation of the systems of the human body and a brief introduction to their basic functions -heart, respiratory, digestive, excretory • Measuring breath and pulse rate at the wrist with different activities 	<ul style="list-style-type: none"> • Names the basic parts of the heart, respiratory, digestive, excretory systems • Understands briefly the functions of the different systems • Feels the pulse at the wrist and tabulates the changes in rate (beats / minute) with activities like walking, running, jumping..etc • Tabulates the breath rate (number of breaths/ minute) and its variations with the activities
<p>FIRST AID</p> <ul style="list-style-type: none"> • First aid for • cuts and wounds • burn injuries • heat stroke • for sprains • for fractures- how to make a sling for the arm with a piece of cloth • for animal bites • for snake bites • Awareness of helpline numbers and safety symbols 	<ul style="list-style-type: none"> • Practices and demonstrates first aid learnt

<p>THE WORLD OF ANIMALS - STRUCTURE and FUNCTION</p> <ul style="list-style-type: none"> • Physical structures of animals are related to their functions in the environment they live in • Features for camouflage against predators and for hunting prey • For climatic protection • For locomotion • For eating food <p>(Note: with examples for each)</p>	<ul style="list-style-type: none"> • Understands that structure and function are related • Draws and Correlates the beaks and claws of birds with their food habits • Colours the chameleons based on their background • Draws the skin patterns of tigers, leopards, deer, giraffe • Discusses what enables - cheetah and deer to run fast, cat and owl see in the dark • Observes animals in their environment and attempts to make structure function correlations. Discusses it in class.
<p>MATERIALS and DESIGNS (NATURAL and MAN MADE)</p> <ul style="list-style-type: none"> • Objects are made with a combination of materials • To make objects, different materials are processed in steps using different kinds of tools, machines and energy E.g., How we make cloth and fibre from cotton • How a silk worm makes silk • All objects used and made are ultimately from natural resources • Degradable and non-degradable wastes 	<ul style="list-style-type: none"> • Observes objects around and lists all the materials used (e.g., swing, cycle) • Makes a flow diagram of the steps involved in making cloth from cotton • Lists the machines and tools, materials used and the energy sources • Contrasts it with how a silk worm spins silk • Traces the path of objects after use-(e.g., paper, cloth, plastic covers) • Classifies objects as degradable and non- degradable • Understands waste pollution as beyond natures capacity to break down the materials • Uses materials responsibly - practices the 5 R's
<p>ELEMENTS -AIR</p> <ul style="list-style-type: none"> • Properties of air through experiments - air is all around, moves and pushes things, air makes sound, air can be compressed • Air is made of different kinds of gases, all life needs air to breathe-Importance of plant life in gas exchanges with humans and animal life • Experiment to show that air gets polluted with dust and smoke • Sources of air pollution (burning, deforestation, industrial processes, excessive transportation) and how it changes the composition of the gases in the air 	<ul style="list-style-type: none"> • Performs experiments to understand properties of air following the given procedure - notes down observations, draws inferences and conclusions and discusses them • Observes usage of these properties in life around them (e.g., wheels, air pumps, windmills, dispersal of seeds, musical instruments) • Performs an experiment to demonstrate that air carries dust and smoke • Understands the sources of air pollution

<p>WATER CYCLE</p> <ul style="list-style-type: none"> • Experiments to demonstrate freezing of water, evaporation of water • Three states of matter- solid, liquid, gases • Water Cycle <p>FOOD CHAINS AND FOOD WEBS</p> <ul style="list-style-type: none"> • Producers - autotrophs - plants, Primary consumers - Herbivores, Secondary consumers - Carnivores, Tertiary consumers - Higher - level carnivores. Decomposers s- Fungi and bacteria that recycle nutrients back into the ecosystem for autotrophs to survive • Flow from Producer - Tertiary consumers • Examples of animals for each of the categories given above • An example of a food web • Food chains and webs exist in all ecosystems 	<ul style="list-style-type: none"> • Performs experiments to demonstrate freezing and evaporation of water following the given procedure: Notes down observations, Draws inferences and conclusions and discusses them • Uses the terms solid, liquid, gases accurately • Observes where these properties are used in life around them (e.g., ice cream boxes, steam used in cooking...) • Understands the water cycle • Draws a food chain based on the descriptions and information given. • Discusses and finds an answer to the question - What does the autotroph-the plant- uses to nourish itself? • Illustrates with line diagrams an example of a food web • Discusses and creates a small food web and draws a food chain in the local environment • Shows evidence of care by planting trees and a judicious use of forest produce (e.g. paper) • Understands that Processes in Nature are cyclical
<p>LIGHT AND SHADOWS</p> <ul style="list-style-type: none"> • Formation of shadows • Objects that cast and do not cast shadows • Positions and sizes of shadows with reference to light source 	<ul style="list-style-type: none"> • Experiments with light sources and objects on how shadows are cast and records both the process and results of the experiment • Explores objects that cast/ do not cast shadows and tabulates the results • Observes the positions and sizes of shadows with reference to the light sources and records it • Explores puppet shows with shadows
<p>MAGNETS</p> <ul style="list-style-type: none"> • The repulsive and attractive properties of magnets (Like poles repel and unlike poles attract) • Magnetisation of non- magnetic objects 	<ul style="list-style-type: none"> • Experiments with bar magnets to understand their repulsive and attractive properties • Learns how to magnetize a piece of metal by the stroking method

Skill	Skill Subset
Cognitive Skills	
Observation (environment/ text/ visual representation)	Observe using all senses accurately, larger context & for detail
Questioning	Frame and articulate a Question or sets of Questions, Sequence a set of questions Explore based on a question
Comparing	Observe similarities/ differences/ patterns/trends Compare outer features/abstract qualities
Categorizing	Define a basis / criterion for categorization, Sort/Pair/ Group on the basis of categorization Match, regroup on a fresh basis, represent classes, subclasses, Tabulate, Explain the categorization
Pattern Recognition	Identification of pattern from observations/ experiences/ data
Sequencing	Sequence - earlier from later, distant from near, Sequence steps in a planned activity Make or follow a flow diagram, Make a timeline
Forming Associations	Make links between seen & unseen, Draw an inference between conclusion & prior data Ability to go from previous knowledge to present learning, Make associations in various contexts
Drawing Inferences	Make age- appropriate inferences of cause & effect
Data Collection Interpretation & Analysis	Choose an appropriate way of collecting data for the question/ observation, Collect data – quantitative / qualitative, Collect data over different time intervals, Interpret quantitative and qualitative data - mathematical data /tables/ flow diagrams/illustrated data/summaries Identify and recognize patterns, Apply data to problem solve, Generate summaries/reports from data
Work with Experiments	Follow Instructions and do experiments, Design simple experiments to explore a question
Fostering math skills through science	Measurement - Selection of appropriate measuring instrument, Use appropriate units of measurement, Estimation - Quantities, distances, weights, Count
Reading Comprehension	Understand, show proof of comprehension - Narrate/ Describe/Explain to another/ Summarize Spot key words /Unknown words, Apply understanding, Understand science related vocabulary

Communication & Representational Skills

Drawing Skills	Learn to represent through drawing, Draw from imagination/ Following the dotted lines/ Following instructions/ Within a grid/ Continuing a pattern/Colouring, Form Drawing and <i>Kolams</i> , for recognizing and continuing a pattern, mirror images, for right and left differentiation, for symmetry
Writing Skills	Describe phenomenon observed, Investigative expression - Accurate noting down of data/ Reporting observations & results systematically, Small summaries, Journalling reflections/ questions
Speaking Skills	Share what is known ... Describe/ Narrate/ Name Make presentations in groups Participate in discussions
Presenting in various modalities	Make flow diagrams/ tables/ graphs/mind maps
Reflecting	Reflect on what is learnt On the processes of learning What could have been done differently/ improved On the processes of participation
Design Skills	
Make and Use Models	Make observing the pictures and the sequence in the picture/From your imagination /Following instructions/ Using materials in the environment/Design for a particular purpose Use models
Fostering Spatial Skills	Jigsaws/Mazes/Drawing a Map/Reading a map/ Following a map/2 & 3 dimensional representation/ Spotting shapes and figures in pictures and in the environment/Pattern recognition
Social Skills	
With Peers in a Group	Wait for one's turn, give everyone in the group a chance to participate, Listen attentively Help other members, Share Information, Take turns to present, Designate an anchor by turn
In Class	Follow instructions given by teacher/ Anchor, Follow procedures in experiments and activities Avoid disruptions, Participate in group discussions and activities
In Daily Living	Respect for people and all life, Respect for all professions & cultural backgrounds Applying learning... Make informed & responsible decisions

Pedagogical Approaches

Primary Science is built on inquiry-based learning where students observe phenomena and raise questions. The questions guide the design of activities/ investigations/ further observations. Qualitative or quantitative data is gathered. An appropriate form (table, chart, graph, report) is chosen to present the data. Through analysis and association, students identify patterns, explain cause-and-effect relationships, and connect concepts to real-world contexts and their environment. They communicate understanding using multiple representations - oral, written, and visual. Students reflect on what they have learnt, what they would do differently, what they would like to explore further. Collaborative learning through pairs, groups, and whole-class discussions fosters the co-construction of ideas and the sharing of experiences.

Assessment Strategies

Effective assessment strategies in primary Science include formative techniques, summative evaluations and student-led approaches (peer/self-assessment). Formative Assessment (assessment for learning) includes continuous checks during lessons (questioning, observation), encourages real-time feedback and helps teachers adapt instruction. These methods help teachers track progress, identify misconceptions, and foster inquiry-based learning. Observational Assessment (observations of behaviors during group work or experiments) and use of open-ended questions to probe scientific thinking captures collaboration, cognitive skills, and scientific attitudes. Summative Assessment (end-of-unit/term exercises) provide a snapshot of overall understanding of concept. Peer & Self-Assessment with scaffolding for the young learner, supports reflection, responsibility and metacognition. Combining approaches ensures a more holistic picture of student learning to emerge. Care is taken to see that summative tests are not exclusively focused upon as they can reduce curiosity. The aim of assessment is to provide constructive feedback that guides improvement, not just grades.