KIDS WORLD SCHOOL, NAGPUR
SESSION – 2026-27
CLASS – IX
SUBJECT – BIOLOGY

UNIT		Topic	Sub-Topic	Month		Suggested Ice-Breaking Activity	Teaching Pedagogy	Curricular Goals	Competency	Expected Learning Outcome	Assessment
No.	Name			Starting	Closing						
2	Cell: The Building Block of Life	Cell	Cell is a structural and functional unit of life.	June Day- 1	July	**Act Like a Cell** Ask students to act: "Be a cell membrane" → make a boundary with hands. "Be nucleus" → stand in center. **Purpose:** Basic understanding of cell parts through movement.	Explanation with the help of Entab videos and the teaching panel.	CG 3 – Explores the structure and function of the living world at the cellular level.	C 3.1 – Explains the role of cellular components.	1) Learner will able to recognize that the cell is a structural unit of life and functional unit of life processes.	
		How to Study Cells?	Structure of a light microscope: **Activity 2.1:** Let us estimate the size of a cell	Day- 2		**Clap if Visible** Clap if we can see a cell with eyes Clap if we need a microscope **Purpose:** Reinforces key idea in a fun way. **Example-** "Clap if we can see a **human hair** with eyes" "Clap if we can see a **cell** with eyes"	Explanation with the help of Biology lab visits to observe microscope for practical learning.	CG 8 – Explores the nature of science by doing Science	C 8.1 – Develops accurate and appropriate models (including geometric, mathematical, graphical) to represent real-life events and phenomena using scientific principles, and use these models to manipulate variables and predict results.	1) Learner will able to analyze result and present finding using scientific terms. 2) Learner will able to identify and describe the role of biomolecules in the structure and function of cell.	
		Structure of a Cell	**Activity 2.2:** Let us experiment-Cell membrane — The universal feature of a cell:	Day- 3		**Act Like a Membrane** Students form a circle holding hands (membrane) Allow only selected students to pass. **Purpose:** Demonstrates protection + control.	Explanation with the help of hands-on activities conducted in the classroom for practical learning.	CG 3 – Explores the structure and function of the living world at the cellular level.	C 3.2 – Analyses similarities and differences in the life processes involved in nutrition (photosynthesis in plants; absorption of nutrients in fungi; digestion in animals), transport (transport of water in plants; circulation in animals), exchange of materials (respiration and excretion), and reproduction.	1) Learner will able to explain activities inside the cell and its interactions with the environment. 2) Learner will able to demonstrate osmosis in cells. 3) Learner will able to differentiate between diffusion and osmosis. 4) Learner will able to carry out an experiment to understand the osmosis.	

		Cell wall — The outer covering of cells	**Activity 2.3:** Let us investigate (a) The onion peel cells, and (b) human cheek cells	Day- 4		**Draw What You Observe** How to do it: After showing diagram / slide: Draw onion cells (rectangular) Draw cheek cells (round/irregular) **Purpose:** Observation + recording skill	Explanation with the help of Biology lab visits to observe experiments and specimens.	CG 8 – Explores the nature of science by doing Science.	C 8.2 – Designs and implements a plan for scientific inquiry (formulates hypotheses, makes predictions, identifies variables, accurately uses scientific instruments and represents data.	1) Learner will able to prepare slides to observe cell structure.	
		The Cell Interior — A Coordinated Working System	**Activity 2.4:** Let us study- Plant and animal cells • Prokaryotic and eukaryotic cells.	Day- 5		**Stand or Sit –** Plant vs Animal Stand = Plant Sit = Animal Onion cell → Stand Cheek cell → Sit Leaf cell → Stand Muscle cell → Sit **Purpose:** Quick classification	Explanation with the help of Entab videos and teaching panel.	CG 3 – Explores the structure and function of the living world at the cellular level.	C 3.2 – Analyses similarities and differences in the life processes involved in nutrition (photosynthesis in plants; absorption of nutrients in fungi; digestion in animals), transport (transport of water in plants; circulation in animals), exchange of materials (respiration and excretion), and reproduction	1) Learner will able to differentiate between plant and animal cell, prokaryotic and eukaryotic cells.	
		Structure of a nucleus	**Nucleus —** House of coded instructions	July Day- 1	July	**Without Nucleus – Freeze** How to do it: Remove the “nucleus” student Now no one gives instructions Students stay confused / still **Purpose:** Shows cell cannot function without nucleus	Explanation with the help of activity-based learning.	CG 3 – Explores the structure and function of the living world at the cellular level.	C 3.3 – Describes the mechanisms of heredity (in terms of DNA, genes, chromosomes) and variation (as changes in the sequence of DNA)	1) Learner will able to discuss significant contributions of India, for example, Professor Arun Kumar Sharma for his work on chromosomes and methods for its studies.	ASSESSMENT AS LEARNING
		Cell as a structural and functional unit of life	**Endoplasmic Reticulum (ER) —** Manufacturing factory **Golgi apparatus —** The packaging and shipping centres	Day- 2		**Grand Ending Action (Whole Class)** All students act together: ER → moving hands (making) Golgi → packing gesture	Explanation with the help of Entab videos and teaching panel.	CG 3 – Explores the structure and function of the living world at the cellular level.	C 3.1 – Explains the role of cellular components (nucleus, mitochondria, endoplasmic reticulum, vacuoles, chloroplast, cell wall), including the semi-permeability of cell membrane in making cell the structural basis of living organisms and functional basis of life processes.	1) Learner will able to exhibit creativity and design models using low cost or no-cost eco-friendly material to study structure and functions of cell and cell organelles. 2) Learner will able to describe the structural and functional features of cells.	

						Purpose: ER makes, Golgi packs and sends!				3) Learner will able to explain the role of cells in the structure and functions of organisms.	
		Cell as a structural and functional unit of life	**Lysosomes —** The clean-up system **Mitochondria** — The powerhouse of the cell	Day- 3		**Lysosomes - Pick the Waste- Scatter paper pieces (waste)** Lysosome students pick and collect **Purpose:** Shows removal of waste **Mitochondria - Think and Imagine** Imagine you have no energy for a day" Students respond **Purpose:** Importance of mitochondria	Explanation with the help of hands-on activities conducted in the classroom.	CG 3 – Explores the structure and function of the living world at the cellular level.	C 3.1 – Explains the role of cellular components (nucleus, mitochondria, endoplasmic reticulum, vacuoles, chloroplast, cell wall), including the semi-permeability of cell membrane in making cell the structural basis of living organisms and functional basis of life processes.	1) Learner will able to cite case study related to the use of science in human life, for example, Leigh Syndrome and mitochondrial dysfunction. 2) Learner will able to describe the structural and functional features of cells. 3) Learner will able to explain the role of cells in the structure and functions of organisms.	
		Cell as a structural and functional unit of life	**Plastids —** Centre for food synthesis in the plant cells and beyond **Vacuoles —** The organelles for storage and support	Day- 4		**Storage Bag Activity** How to do it: Show a school bag/water bottle Ask: Why do we store things? Connect → vacuole stores water/food **Purpose:** Real-life connection	Explanation with the help of inquiry-based learning.	CG 3 – Explores the structure and function of the living world at the cellular level.	C 3.1 – Explains the role of cellular components (nucleus, mitochondria, endoplasmic reticulum, vacuoles, chloroplast, cell wall), including the semi-permeability of cell membrane in making cell the structural basis of living organisms and functional basis of life processes.	1) Learner will able to exhibit creativity and design models using low cost or no-cost eco-friendly material to study structure and functions of cell and cell organelles. 2) Learner will able to describe the structural and functional features of cells. 3) Learner will able to explain the role of cells in the structure and functions of organisms.	
		How do Normal Cells Grow and Divide?	**Activity 2.5:** Let us enhance our skills	Day- 5		**Observation-** Based Activity Show slides/images of dividing cells (onion root tip if available) Ask students to identify stages.	Explanation with the help of hands-on activities conducted in the classroom.	CG 3 – Explores the structure and function of the living world at the cellular level Hands on activity and visit to Biology Lab.	C 3.3 – Describes the mechanisms of heredity (in terms of DNA, genes, chromosomes) and variation (as changes in the sequence of DNA)	1) Learner will able to analyze result and present finding using scientific terms.	

		Cell division	Mitosis and Meiosis:	Day- 6		**Real-life Connection** Why do children resemble parents? (link to meiosis) Healing of wounds → mitosis	Explanation with the help of real-life examples.	CG 5 – Draws linkages between scientific knowledge and knowledge across other curricular areas.	C 5.3 – Applies scientific principles to explain the phenomena.	1) Learner will able to explain the role of cell division mitosis and meiosis in creating similarities and variations.	
		Recent advancement in cell biology	**Cell Theory** — The Unifying Principle of Biology	Day- 7		**Imagine You Are a Scientist** How to do it: Ask students: Close your eyes and imagine you are seeing something very tiny for the first time. Then ask: What do you think you will see? How will you feel? **Purpose:** Builds curiosity and connection	Explanation with the help of experiential learning through doing and observing.	CG 7 – Develops awareness of the most current discoveries, ideas, and frontiers in all areas of scientific knowledge in order to appreciate that Science is ever evolving, and that there are still many unanswered questions.	C 7.2 – States questions related to matters in the curriculum for which current scientific understanding is well-recognized.	1) Learner will able to exhibit creativity and design models using low cost or no-cost eco-friendly material to study structure and functions of cell and cell organelles. 2) Learner will able to pose questions, such as — Can we create artificial cell which behaves exactly like a natural living cell?	
3	Tissues in Action Life	Tissues	Why are Plant and Animal Tissues Different?	July Day- 8	July	**Role Play** – "Be a Plant vs Animal" How to do it: Divide class into 2 groups: Plant group Animal group Give actions: Plants → stand still, arms fixed Animals → move, walk, respond **Conclusion:** Plants are stationary → need support tissues Animals move → need muscle and nervous tissues **Purpose:** Concept through action	Explanation with the help of experiential learning through doing and observing.	CG 4 – Explores interconnectedness between organisms and their environment.	C 4.2 – Illustrates different levels of organisations of living organisms (from molecules to organisms).	1) Learner will able to differentiate between plant and animal tissues.	

		Tissues for Growth in Plants	**Activity 3.1:** Let us design experiments- Experimental set-up to observe the growth of roots.	Day- 9		**Draw What You See** Students draw root growth each day. **Purpose:** Visual understanding + engagement.	Explanation with the help of Biology lab visits to observe experiments and specimens.	CG 8 – Explores the nature of science by doing science.	C 8.2 – Designs and implements a plan for scientific inquiry (formulates hypotheses, makes predictions, identifies variables, accurately uses scientific instruments, represents data —primary and secondary — in multiple modes, draws inferences based on data, and understanding of scientific concepts, theories, laws and principles, and communicates findings using scientific terminology).	1) Learner will able to carry out an experiment to understand the growth in plant due to apical meristem.	
		How do plants grow in length?	Meristematic tissues (types and function of each)	Day- 10		**Observation Activity** Show plant/branch Ask students to identify: Tip (growth area) Thickness (stem) **Purpose:** Connect theory with real plant	Explanation with the help of Entab videos and teaching panel.	CG 4 – Explores interconnectedness between organisms and their environment.	C 4.2 – Illustrates different levels of organisations of living organisms (from molecules to organisms).	1) Learner will able to relate the structure of the different types of meristematic tissues with their functions.	
		Permanent tissues	(i) Protective tissue — Epidermis (ii) Supporting tissue — Simple permanent tissues	Day- 11		**Protective Layer Demo** (Real-life Analogy) How to do it: Take a fruit (apple/orange) Show it with peel and then peeled Ask: Which one will get damaged faster? **Concept Link:** Peel = Epidermis (protection) **Purpose:** Strong real-life connection	Explanation with the help of demonstration method.	CG 4 – Explores interconnectedness between organisms and their environment.	C 4.2 – Illustrates different levels of organisations of living organisms (from molecules to organisms).	1) Learner will able to relate the structure of the different types of protective tissues with their functions.	

		Permanent tissues	(iii) Conducting tissues — Complex permanent tissues	Day-12		**Straw Model Activity** How to do it: Use straws: One straight (xylem) One flexible (phloem) Blow/pull air to show movement **Purpose:** Structural understanding	Explanation with the help of hands-on activities conducted in the classroom for practical learning.	CG 4 – Explores interconnectedness between organisms and their environment.	C 4.2 – Illustrates different levels of organisations of living organisms (from molecules to organisms).	1) Learner will able to relate the structure of the different types of conducting tissues with their functions.	
		Animal Tissues	Epithelial tissues — Structure and functions	August Day- 1	August	**Absorption Demo** How to do it: Use sponge vs plastic sheet Sponge absorbs → like intestinal epithelium Plastic doesn't → no absorption **Purpose:** Function clarity	Explanation with the help of activity-based learning.	CG 4 – Explores interconnectedness between organisms and their environment.	C 4.2 – Illustrates different levels of organisations of living organisms (from molecules to organisms).	1) Learner will able to relate the structure of the different types of epithelial tissues with their functions.	
		Animal Tissues	Connective tissue- How are various parts connected in our body?	Day- 2		**Stretch & Feel Activity** Students: Stretch their arm Feel tension **Concept Link:** Tendons help movement	Explanation with the help of experiential learning through doing and observing.	CG 5 – Draws linkages between scientific knowledge and knowledge across other curricular areas.	C 5.3 – Applies scientific principles to explain phenomena in other subjects (sound pitch, octave, and amplitude in music; use of muscles in dance form and sports).	1) Learner will able to establish the correlation between different tissues for fitness, for example, role of muscles, cartilage and bones in facilitating movement. 2) Learner will able to explain the importance of yoga exercises for physical agility and in maintaining the correct posture.	
		Can we control movement in our body?	Voluntary movements and Involuntary movements.	Day- 3		**Control or No Control?** **Objective:** Differentiate between voluntary and involuntary movements **Procedure:** Ask students to perform actions: Raise your hand Clap	Explanation with the help of experiential learning through doing and observing.	CG 5 – Draws linkages between scientific knowledge and knowledge across other curricular areas.	C 5.3 – Applies scientific principles to explain phenomena in other subjects (sound pitch, octave, and amplitude in music; use of muscles in dance form and sports).	1) Learner will able to learn muscular tissue produces voluntary and involuntary movements for locomotion, and other movements in the body.	

						Stop your heartbeat (they can't!) Hold breath for few seconds Write all actions on the board **Discussion:** Which actions could you control? → Voluntary Which could you not? → Involuntary					
		How does the body sense, communicate and respond?	Nervous tissue	Day- 4		**Real-Life Demonstration** Situation: Touching something hot (Steel spoon (slightly warm, NOT hot) Warm water in a bowl (comfortable temperature) Thermos with warm water Ice cube (for contrast activity) Ask: What happens first? Why do we pull hand quickly? **Concept:** Reflex action (quick, automatic response)	Explanation with the help of real-life examples to make concepts easy.	CG 5 – Draws linkages between scientific knowledge and knowledge across other curricular areas.	C 5.3 – Applies scientific principles to explain phenomena in other subjects (sound pitch, octave, and amplitude in music; use of muscles in dance form and sports).	1) Learner will able to learn nervous tissue consists of neurons to receive and transmit impulses, and helps regulate body activities.	
		The Musculoskeletal System	**Activity 3.4:** Let us investigate What percentage of total body weight comes from bones and muscles?	Day- 5		**Estimate Your Body Composition** How to do it: Step on a weighing scale → note your body weight Use average values: Bones → 12–15% Muscles → 30–50% **Calculate:** Bone weight = total weight × %	Explanation with the help of activity-based learning to make lessons engaging.	CG 8 – Explores the nature of science by doing Science.	C 8.1 – Develops accurate and appropriate models (including geometric, mathematical, graphical) to represent real-life events and phenomena using scientific principles, and use these models to manipulate variables and predict results.	1) Learner will able to discuss the techniques and medical recommendations in recovery from muscular injuries.	

						Muscle weight = total weight × %					
		Elementary idea of musculoskeletal system	Types of Joints	Day- 6		**Move Your Body** Ask students to perform actions: Bend your elbow Rotate your shoulder Turn your neck Try to move your skull (they can't!) Then ask: Are all movements same? **Concept:** Different joints allow different types of movement	Explanation with the help of Entab videos and teaching panel.	CG 5 – Draws linkages between scientific knowledge and knowledge across other curricular areas.	C 5.3 – Applies scientific principles to explain phenomena in other subjects (sound pitch, octave, and amplitude in music; use of muscles in dance form and sports).	1) Learner will able to differentiate types of joints.	
		Elementary idea of musculoskeletal system	Skeletal System	Day- 7		**Observe and Identify** **How to do it:** Take students to lab in small groups Ask them to carefully observe the skeleton Point and explain: Skull Rib cage Backbone Limbs **Purpose-** Students repeat names by pointing	Explanation with the help of Biology lab visits to observe specimen.	CG 5 – Draws linkages between scientific knowledge and knowledge across other curricular areas.	C 5.3 – Applies scientific principles to explain phenomena in other subjects (sound pitch, octave, and amplitude in music; use of muscles in dance form and sports).	1) Learner will able to explain the importance of yoga exercises for physical agility and in maintaining the correct posture.	
		Think as a Scientist	From one cell to an organism: Totipotency	Day- 8		**Real-Life Link Activity** Show/Explain: Cutting of plant (e.g., money plant stem) grows into new plant **Concept:** Totipotency in plants	Explanation with the help of real-life examples to make concepts easy.	CG 7 – Develops awareness of the most current discoveries, ideas, and frontiers in all areas of scientific knowledge in order to appreciate that Science is ever evolving, and that there are still many unanswered questions.	C 7.2 – States questions related to matters in the curriculum for which current scientific understanding is well-recognised.	1) Learner will able to discuss significant contributions of India, for example, Professor Sipra Guha Mukherjee and Professor S.C. Maheshwari for their significant contribution in the plant cell and tissue culture research in India.	

11	Reproduction: How Life Continues	Asexual Reproduction	How is vegetative propagation in plants helpful in agriculture?	August Day- 9	September	Observe & Identify Show examples: Potato → eyes Ginger → rhizome Rose → stem cutting Students identify how new plants grow	Explanation with the help of demonstration method to show concepts step-by-step.	CG 5 – Draws linkages between scientific knowledge and knowledge across other curricular areas.	C 5.2 – Examines a case study related to the use of science in human life from the perspective of Social Sciences and Ethics (for example, Marie Curie, Jenner, treatment of patients with mental illnesses, the story of the atomic bomb, green revolution and GMOs, conservation of biodiversity).	1) Learner will able to discuss significant contributions of India, for example, Professor Panchanan Maheshwari for laying the foundation of plant cell and tissue culture research in India.	ASSESSMENT FOR LEARNING
		Asexual Reproduction	**Activity 11.2:** Let us explore Yeast with Outgrowths Budding in hydra	Day- 10		**Observe Yeast Activity** How to do it: Take sugar solution in a test tube Add a pinch of yeast + close with cotton plug Keep in a warm place (1–2 hours) Place a drop on slide + cover with coverslip Observe under microscope **Purpose:** Understand asexual reproduction (budding) Develop microscope handling & observation skills	Explanation with the help of Biology lab visits to observe experiments and specimens.	CG 8 – Explores the nature of science by doing Science.	C 8.2 – Designs and implements a plan for scientific inquiry (formulates hypotheses, makes predictions, identifies variables, accurately uses scientific instruments, represents data —primary and secondary — in multiple modes, draws inferences based on data, and understanding of scientific concepts, theories, laws and principles, and communicates findings using scientific terminology).	1) Learner will able to discuss significant contributions of India, for example, Professor Panchanan Maheshwari for laying the foundation of plant cell and tissue culture research in India.	
		Asexual Reproduction	**Activity 11.3:** Let us experiment Rhizopus	September Day- 1	September	**Grow Bread Mould** How to do it: Take bread/roti + sprinkle a few drops of water Place in a moist chamber (cotton + tissue in a box) Keep in a warm, dark place Observe daily (do not touch) **Purpose:** Understand growth of fungi (bread mould) Learn spore formation & reproduction	Explanation with the help of Biology lab visits to observe experiments and specimens.	CG 8 – Explores the nature of science by doing Science.	C 8.2 – Designs and implements a plan for scientific inquiry (formulates hypotheses, makes predictions, identifies variables, accurately uses scientific instruments, represents data —primary and secondary — in multiple modes, draws inferences based on data, and understanding of scientific concepts, theories, laws and principles, and communicates findings using scientific terminology).	1) Learner will able to discuss significant contributions of India, for example, Professor Panchanan Maheshwari for laying the foundation of plant cell and tissue culture research in India.	

						Develop observation and lab skills					
		Sexual Reproduction	**Activity 11.4: Let us explore** How does meiosis help create variations in sexual reproduction?	Day- 2		**Shuffle the Traits** Write traits on slips (eye color, height, etc.) Students pick random slips to create a "new individual" No two combinations are same **Purpose:** Understand role of meiosis in genetic variation Connect concept with real-life examples (siblings' differences)	Explanation with the help of hands-on activities conducted in the classroom for practical learning.	CG 4 – Explores interconnectedness between organisms and their environment.	C 4.4 – Analyses patterns of inheritance of traits in terms of Mendel's laws and its consequences at a population level (using models and/or simulations).	1) Learner will able to explain the role of cell division mitosis and meiosis in creating similarities and variations.	
		Sexual Reproduction in plants	**Activity 11.5: Let us explore** Sexual reproduction in flowering plants	Day- 3		**Flower as a Model** How to do it: Show a real flower (hibiscus/lily) Students identify: Stamen (male part) Pistil (female part) **Concept:** Structure involved in reproduction	Explanation with the help of experiential learning through doing and observing.	CG 8 – Explores the nature of science by doing Science.	C 8.2 – Designs and implements a plan for scientific inquiry (formulates hypotheses, makes predictions, identifies variables, accurately uses scientific instruments, represents data —primary and secondary — in multiple modes, draws inferences based on data, and understanding of scientific concepts, theories, laws and principles, and communicates findings using scientific terminology).	1) Learner will able to describe male and female reproductive organs in plants. 2) Learner will able to differentiate between ovule and seed; ovary and fruit.	
		Pollination	**Activity 11.6: Let us investigate** Experimental set-up for pollination	Day- 4		**Pollination Investigation** (Pea Plant) How to do it: Select flower buds & fresh flowers on pea plant Remove stamens from some flowers Cover some flowers with muslin cloth Leave one flower uncovered	Explanation with the help of demonstration method to show concepts step-by-step.	CG 8 – Explores the nature of science by doing Science.	C 8.2 – Designs and implements a plan for scientific inquiry (formulates hypotheses, makes predictions, identifies variables, accurately uses scientific instruments, represents data —primary and secondary — in multiple modes, draws inferences based on data, and understanding of scientific concepts, theories, laws and principles, and communicates findings	1) Learner will able to explain pollination.	

						Observe Growth Watch daily for fruit (pod) formation **Compare:** Covered vs uncovered flowers With stamens vs without stamens			using scientific terminology).		
		Pollination	Pollination strategies and reproductive success	Day- 5		**Observe & Compare** Show 2 flowers (real/pictures): One colorful One dull Ask: Which will attract pollinators more?	Explanation with the help of Entab videos and teaching panel.	CG 4 – Explores interconnectedness between organisms and their environment.	C 4.5 – Analyses evidences of biological evolution demonstrating the consequences of the process of natural selection in terms of changes — in allele frequency in population, structure, and function of organisms.	1) Learner will able to analyse the interactions between members of different groups of organisms, such as plants and pollinators. 2) Identify and explain the role of biotic and abiotic agents in seed dispersal and pollination.	
		Sexual Reproduction in Animals	Variations in Reproduction in Animals	Day- 6		**Group Sorting Game** How to do it: Give animal name cards: Cow, Dog, Human Frog, Fish Hen, Lizard Students stand in groups: Viviparous (give birth) Oviparous (lay eggs) **Concept:** Different reproductive modes	Explanation with the help of hands-on activities conducted in the classroom for practical learning.	CG 4 – Explores interconnectedness between organisms and their environment.	C 4.5 – Analyses evidences of biological evolution demonstrating the consequences of the process of natural selection in terms of changes — in allele frequency in population, structure, and function of organisms.	1) Learner will able to explain how variations are introduced by sexual reproduction.	
		Reproduction in Human Beings	What are the parts of the male reproductive system?	Day- 7		**Emoji Feelings Activity** How to do: Show emojis (happy, confused, angry, excited) Ask: Do emotions also change as we grow? **Purpose:** Connects physical + emotional changes	Explanation with the help of demonstration method to show concepts step-by-step.	CG 4 – Explores interconnectedness between organisms and their environment.	C 4.5 – Analyses evidences of biological evolution demonstrating the consequences of the process of natural selection in terms of changes — in allele frequency in population, structure, and function of organisms.	1) Learner will able to illustrate the structure of male reproductive units or systems in animals.	

						Makes topic relatable					
		Reproduction in Human Beings	What are the parts of the female reproductive system?	Day- 8		**Word Association** How to do: Start with a simple word: "Life" Ask students to say the first word that comes to their mind Continue chain: Life → Growth → Baby → Family → Care → etc. No right or wrong answers Benefit: Gradually brings the class toward the idea of growth and reproduction naturally. **Purpose:** Make students open up and participate freely	Explanation with the help of ICT tools like PPTs and smart boards.	CG 4 – Explores interconnectedness between organisms and their environment.	C 4.5 – Analyses evidences of biological evolution demonstrating the consequences of the process of natural selection in terms of changes — in allele frequency in population, structure, and function of organisms.	1) Learner will able to illustrate the structure of female reproductive units or systems in animals.	
		Reproduction in Human Beings	What happens when a sperm meets an egg?	Day- 9		**Two Become One** Ask students: "What happens when two things combine?" Examples: Red + Blue = ? Milk + sugar = ? Then connect: In the same way, sperm + egg = a new life begins.	Explanation with the help of inquiry-based learning by encouraging questions and exploration.	CG 4 – Explores interconnectedness between organisms and their environment.	C 4.5 – Analyses evidences of biological evolution demonstrating the consequences of the process of natural selection in terms of changes — in allele frequency in population, structure, and function of organisms.	1) Learner will able to learn if fertilisation occurs, the zygote develops into an embryo and pregnancy begins.	
		Reproduction in Human Beings	What happens when an egg is not fertilised?	Day- 10		**28-Day Human Calendar** Select 28 students Give them numbers (Day 1–28) **Mark:** Day 1–5 → Period	Explanation with the help of demonstration method to show concepts step-by-step.	CG 4 – Explores interconnectedness between organisms and their environment.	C 4.5 – Analyses evidences of biological evolution demonstrating the consequences of the process of natural selection in terms of changes — in allele frequency in population, structure, and function of organisms.	1) Learner will able to learn key stages of the menstrual cycle across a typical 28-day period.	

						Day 14 → Ovulation Ask: Which day is most important? What happens before and after? Builds visual understanding of timeline.					
		Reproduction in Human Beings	Mother's health during pregnancy	Day- 11		**Myths vs Facts** How to do it: Teacher reads simple statements Students show: Fact Myth Examples: "Reproductive health is important for everyone" "Only adults need to know about this" **Purpose:** Clears misconceptions	Explanation with the help of ICT tools like PPTs and smart boards.	CG 4 – Explores interconnectedness between organisms and their environment.	C 4.5 – Analyses evidences of biological evolution demonstrating the consequences of the process of natural selection in terms of changes — in allele frequency in population, structure, and function of organisms.	1) Learner will able to recognise the significance of contraceptive devices for population control and health including reproductive health. 2) Learner will able to recognise the importance of improvements in medical field for assisted reproductive technologies.	
		Reproduction in Human Beings	How can unwanted pregnancies and infections be prevented?	Day-12		**Safe or Unsafe?** Say situations: Using protection" "Sharing personal items like razors" "Visiting a doctor for advice" Students respond: Safe Unsafe Introduces idea of protection and hygiene.	Explanation with the help of activity-based learning to make lessons engaging.	CG 4 – Explores interconnectedness between organisms and their environment.	C 4.5 – Analyses evidences of biological evolution demonstrating the consequences of the process of natural selection in terms of changes — in allele frequency in population, structure, and function of organisms.	1) Learner will able to recognise the significance of contraceptive devices for population control and health including reproductive health. 2) Learner will able to pose questions, such as — How do heavy metals harm reproductive organs? Can extreme heat affect fertility?	ASSESSMENT OF LEARNING
12	Patterns in Life: Diversity and Classification	Diversity	India as a Biodiversity Hotspot	November Day 1	November	**Find the Odd One** Give sets: Tiger, Elephant, Mango tree Fish, Camel, Whale	Explanation with the help of Entab videos and teaching panel.	CG 4 – Explores interconnectedness between organisms and their environment.	C 4.3 – Analyses different levels of biological organisation from organisms to ecosystems and biomes along with interactions that take place at each level.	1) Learner will able to distinguish organisms based on certain characteristics, such as number of cells present, cellular organisation and mode of nutrition.	ASSESSMENT AS LEARNING

						Students find odd one and explain. Encourages thinking about habitats.					
		How has the Biodiversity Evolved?	**Activity 12.1: Let us compare and classify** How to Classify Organisms?	Day 2		**School Bag Sorting** Ask: What items are in your bag? Then ask: Can you group them? Books Stationery Lunch Real-life link to classification.	Explanation with the help of experiential learning through doing and observing.	CG 4 – Explores interconnectedness between organisms and their environment.	C 4.5 – Analyses evidences of biological evolution demonstrating the consequences of the process of natural selection in terms of changes — in allele frequency in population, structure, and function of organisms.	1) Learner will able to distinguish organisms based on certain characteristics, such as number of cells present, cellular organisation and mode of nutrition.	
		The Need for Classification	**Activity 12.2: Let us read a case study** Biological Classification Systems Over Time	Day 3		**Real Object Sorting** Material: Classroom items: Chalk, leaf, pen, stone, notebook Activity: Students group objects based on: Living / non-living Natural / Man-made **Learning:** Different criteria can be used for classification.	Explanation with the help of experiential learning through doing and observing.	CG 6 – Understands and appreciates the contribution of India through history, and the present time to the overall field of science, including the disciplines that constitute it.	C 6.1 – Knows and explains the significant contributions of India to all matters (concepts, explanations, methods) that are studied within the curriculum in an integrated manner.	1) Learner will able to classify various organisms in groups, such as five kingdoms, on the basis of their cellular organisation and ecological role.	
		Five Kingdom Classification	**Activity 12.3: Let us study** Classification of Living Organisms	Day 4		**Observe & Classify** Material: Pictures or real examples: Plant leaf, bread mold image, animal picture Activity: Students classify based on: Can make food? Can move?	Explanation with the help of demonstration method to show concepts step-by-step.	CG 4 – Explores interconnectedness between organisms and their environment.	C 4.1 – Applies the knowledge of cellular diversity in organisms along with the ecological role organisms play (autotrophic or heterotrophic nutrition) to classify them into five kingdoms.	1) Learner will able to classify various organisms in groups, such as five kingdoms, on the basis of their cellular organisation and ecological role.	

						Type of organism **Learning:** Classification based on characteristics.					
		Five Kingdom Classification	12.6.1. Kingdom Monera — Unicellular prokaryotes 12.6.2 Kingdom Protista — Unicellular eukaryotes	Day 5		**Invisible World Activity** Material: Clean water vs slightly dirty water (in transparent glass) Activity: Show both to students Ask: “Do you think living organisms are present?” Explain: Microorganisms are present but not visible. **Learning:** Introduction to microscopic unicellular life.	Explanation with the help of Entab videos and teaching panel.	CG 4 – Explores interconnectedness between organisms and their environment.	C 4.1 – Applies the knowledge of cellular diversity in organisms along with the ecological role organisms play (autotrophic or heterotrophic nutrition) to classify them into five kingdoms.	1) Learner will able to classify various organisms in groups, such as five kingdoms, on the basis of their cellular organisation and ecological role.	
		Five Kingdom Classification	12.6.3 Kingdom Fungi — Multicellular, heterotrophic eukaryotes with a cell wall 12.6.4 Kingdom Plantae — Multicellular, autotrophic eukaryotes with a cell wall	Day 6		**Observe the Bread Mold** Material: Bread slice (kept for 2–3 days) Activity: Show mold growth on bread Ask: “Is this plant or animal?” **Learning:** Fungi are different from plants & animals.	Explanation with the help of Entab videos and teaching panel.	CG 4 – Explores interconnectedness between organisms and their environment.	C 4.1 – Applies the knowledge of cellular diversity in organisms along with the ecological role organisms play (autotrophic or heterotrophic nutrition) to classify them into five kingdoms.	1) Learner will able to classify various organisms in groups, such as five kingdoms, on the basis of their cellular organisation and ecological role.	
		Five Kingdom Classification	Bryophyta — First steps on land, still need water Pteridophyta — Adaptation to land and having structural transport system	Day 7		**Wet vs Dry Test** Material: 2 setups: Wet cotton Dry surface **Activity:** Ask: “Where will simple plants grow better?”	Explanation with the help of hands-on activities conducted in the classroom for practical learning.	CG 4 – Explores interconnectedness between organisms and their environment.	C 4.1 – Applies the knowledge of cellular diversity in organisms along with the ecological role organisms play (autotrophic or heterotrophic nutrition) to classify them into five kingdoms.	1) Learner will able to analyse the interactions between members of different groups of organisms, such as lichens.	

						Students choose → Wet **Connect:** Bryophyta need water Pteridophyta are more adapted to land					
		Five Kingdom Classification	Gymnosperms — Reproduction without water Angiosperms — Efficient reproduction and seed dispersal	Day 8		**Seed Observation Activity** **Material:** Peanut / soaked seed Any fruit (tomato/apple) **Activity:** Cut fruit → show seeds inside Show peanut → seed without fruit Ask: Which one is covered? Which is naked? **Learning:** Gymnosperms → naked seeds Angiosperms → seeds inside fruit	Explanation with the help of Entab videos and teaching panel for better visual understanding.	CG 4 – Explores interconnectedness between organisms and their environment.	C 4.1 – Applies the knowledge of cellular diversity in organisms along with the ecological role organisms play (autotrophic or heterotrophic nutrition) to classify them into five kingdoms.	1) Learner will able to classify various organisms in groups, such as five kingdoms, on the basis of their cellular organisation and ecological role.	
		Kingdom Animalia —	Multicellular, heterotrophic eukaryotes	Day 9		**Draw Your Favorite Animal** Students draw and label: Mouth (feeding) Legs/wings (movement) **Learning:** Structure linked to function.	Explanation with the help of experiential learning through doing and observing.	CG 4 – Explores interconnectedness between organisms and their environment.	C 4.1 – Applies the knowledge of cellular diversity in organisms along with the ecological role organisms play (autotrophic or heterotrophic nutrition) to classify them into five kingdoms.	1) Learner will able to classify various organisms in groups, such as five kingdoms, on the basis of their cellular organisation and ecological role.	
		Looking across invertebrates	Protochordates — The appearance of the notochord	Day 10		**Soft vs Supported Body** Material: Paper (without support) Paper + straw Activity: Show bending vs firm structure	Explanation with the help of hands-on activities conducted in the classroom for practical learning.	CG 6 – Understands and appreciates the contribution of India through history, and the present time to the overall field of science, including the disciplines that constitute it.	C 6.1 – Knows and explains the significant contributions of India to all matters (concepts, explanations, methods) that are studied within the curriculum in an integrated manner.	1) Learner will able to classify various organisms in groups, such as five kingdoms, on the basis of their cellular organisation and ecological role.	

						Learning: Role of notochord in support.					
		Adaptations as Outcomes of Structural Change	The hierarchical nature of classification	Day 11		**Group Yourself** Activity: Stand in groups based on something common. Examples: Same shoe color Same birth month Same favorite subject Ask: Why did you form groups? **Connect:** We group things to make them easy to study—same in biology.	Explanation with the help of hands-on activities conducted in the classroom for practical learning.	CG 6 – Understands and appreciates the contribution of India through history, and the present time to the overall field of science, including the disciplines that constitute it.	C 6.1 – Knows and explains the significant contributions of India to all matters (concepts, explanations, methods) that are studied within the curriculum in an integrated manner.	1) Learner will able to distinguish organisms based on certain characteristics, such as number of cells present, cellular organisation and mode of nutrition.	
		Scientific Naming — The Binomial System Fossils as Evidence Biodiversity Under Threat	Rules for writing the scientific names	Day 12		**Name Confusion Game** Activity: Write on board: Tiger Sher Bagh Ask: Are these same or different? Students: Same Then ask: "How will scientists avoid confusion?" **Connect:** Need for one universal name.	Explanation with the help of Entab videos and teaching panel for better visual understanding.	CG 7 – Develops awareness of the most current discoveries, ideas, and frontiers in all areas of scientific knowledge in order to appreciate that Science is ever evolving, and that there are still many unanswered questions.	C 7.2 – States questions related to matters in the curriculum for which current scientific understanding is well-recognised.	1) Learner will able to describe the significance and rules of binomial nomenclature. 1) Learner will able to apply binomial nomenclature on some common organisms in their surroundings. 1) Learner will able to discuss ecological role of diverse organisms.	
13	Earth as a System: Energy, Matter, and Life	Biogeochemical Cycles	Water cycle Carbon cycle	December Day 1	December	**Wet Desk Activity** Sprinkle water on desk Ask: Where will this water go after some time? **Hands-on:** Blow air through straw into lime water (if possible)	Explanation with the help of Entab videos and teaching panel for better visual understanding.	CG 2 – Explores the physical world around them, and understands scientific principles and laws based on observations and analysis.	C 2.8 – *Explores interconnected systems and phenomena that support and affect life on Earth (hydrosphere, biosphere, atmosphere, geosphere, cryosphere and their interrelationships, earth processes, hazards, etc.).	1) Learner will able to describe how elements like carbon, nitrogen, oxygen and water are recycled between biotic and abiotic environments. 1) Learner will able to explain biogeochemical cycles, and the roles of biogeochemical cycles in circulating matter and energy continuously between	

						→ turns milky (CO_2 present) Outcome: **Students connect:** Respiration Photosynthesis Carbon movement				the non-living environment (abiotic) and living (biotic) organisms, making nutrients available, and maintaining environmental balance.	
		Biogeochemical Cycles	Nitrogen cycle	Day 2		**Soil Detective Activity** Materials: Soil sample (from school garden) Activity: Show soil and ask: Plants grow here, but what is inside soil that helps them?" Students guess: water, minerals Then ask: Is something invisible also helping?" Leads to idea of microorganisms (nitrogen fixing bacteria)	Explanation with the help of Entab videos and teaching panel for better visual understanding.	CG 2 – Explores the physical world around them, and understands scientific principles and laws based on observations and analysis.	C 2.8 – *Explores interconnected systems and phenomena that support and affect life on Earth (hydrosphere, biosphere, atmosphere, geosphere, cryosphere and their interrelationships, earth processes, hazards, etc.).	1) Learner will able to describe how elements like carbon, nitrogen, oxygen and water are recycled between biotic and abiotic environments 2) Learner will able to explain biogeochemical cycles, and the roles of biogeochemical cycles in circulating matter and energy continuously between the non-living environment (abiotic) and living (biotic) organisms, making nutrients available, and maintaining environmental balance	
		Biogeochemical Cycles	Oxygen cycle	Day 3		**Breathe & Realize Activity** Activity: Ask students to: Take a deep breath in… and out Ask: What are you taking in? (oxygen) What are you giving out? (carbon dioxide) Then ask: If we keep using oxygen, will it finish? Builds curiosity about recycling of oxygen	Explanation with the help of experiential learning through doing and observing.	CG 2 – Explores the physical world around them, and understands scientific principles and laws based on observations and analysis.	C 2.8 – *Explores interconnected systems and phenomena that support and affect life on Earth (hydrosphere, biosphere, atmosphere, geosphere, cryosphere and their interrelationships, earth processes, hazards, etc.).	1) Learner will able to describe how elements like carbon, nitrogen, oxygen and water are recycled between biotic and abiotic environments. 2) Learner will able to explain biogeochemical cycles, and the roles of biogeochemical cycles in circulating matter and energy continuously between the non-living environment (abiotic) and living (biotic) organisms, making nutrients available, and maintaining environmental balance.	
		Human Impact on Earth's Processes	Eutrophication (algal bloom)	Day 4		**Add More, See More Activity** Materials: Bowl of water	Explanation with the help of real-life examples to make concepts easy.	CG 4 – Explores interconnectedness between organisms and their environment.	C 4.3 – Analyses different levels of biological organisation from organisms to ecosystems and biomes along with	1) Learner will able to reflect the changing nature of Earth's environment through our traditional knowledge.	ASSESSMENT FOR LEARNING ASSESSMENT OF LEARNING

						A pinch of fertilizer / soil / powdered chalk Activity: Add a little → observe Add more → observe Ask: What happens when we add too much? Is more always good? **Leads to idea:** excess nutrients cause problems			interactions that take place at each level.		