Espalier Heritage School

Annual Planner 2020-21

Grade VII | **Subject: Science**

Sr No	Lesson Name	learning objectives/ Subtopic	Methodology	Pedagogical methods	Learning outcome	Teaching Aid	Teaching Place	Reff.books with pg.no.	No.of lectures required	Class Activities /Diagrams / Map work	Activity Suggested
1	Nutrition in Plants	Students will identify sources of nutrients for plants. • Students will contrast macronutrients with micronutrients. • Students will understand the role of nitrogen as a special plant nutrient. • Students will be introduced to the concept of a mutualistic symbiosis. • Students will examine other sources of plant nutrition such as parasitism and carnivore behavior.	1) Demonstrartion cum Explanation. 2) Technology based	*explore surroundings, natural processes, phenomena using senses viz. seeing, touching, tasting, smelling, hearing * pose questions and find answers through reflection, discussion, designing and performing appropriate activities, role plays, debates, use of ICT, etc. *record the observations during the activity, experiments, surveys, field trips, etc.	Do leaves other than green also carry out photosynthesis? writes word equation for photosynthesis	Potted plant, Iodine, black box, PPT & Video	School Farm, Laboratory and AV room	NCERT Textbook, Science Quest, Galaxy & Lakhmir Singh (if available)	10	Photosynthesis process, Equation of photosynthesis, Testing for starch in leaf	Take two potted plants. Keep one in the sun and one in the dark and note down your observation.
2	Nutrition in Animals	*understand how animals utilise (use) food *Digestion in animals (grass eating and meat eating) *Parts of digestive system *Digestion and feeding in amoeba	1) Technology based 2) Laboratory Method 3)Lecture cum demonstration 4) Heuristic Mehod	*explore surroundings, natural processes, phenomena using senses viz. seeing, touching, tasting, smelling, hearing * pose questions and find answers through reflection, discussion, designing and performing appropriate activities, role plays, debates, use of ICT, etc. *record the observations during the activity, experiments, surveys, field trips, etc.	differentiates materials and organisms such as, digestion in different organisms; identifies materials types of teeth; draws labelled diagrams/ flow charts e.g., organ systems in human	Torso, Model or chart of digestive system, model of teeth, samples of food (salt, sugar, neem solution, chilly etc), Iodine solution, Videos	Laboratory, AV room and School Farm field	NCERT Textbook, Science Quest, Galaxy & Lakhmir Singh (if available)	12	Testing of boiled rice and chewed rice for starch, Identify the taste regions on toungue, Diagram of digestive system	Find out about the various food items and the time it takes to digest.
3	Fibre to Fabric	*learn about fabrics which comes from animal sources *know which animals yields fibre and who rears those animals *learn which parts of animals yield yarn *understand how animal fibre is converted into fabric	1) Lecture cum demonstration 2) Technology based	explore surroundings, natural processes, phenomena using senses viz. seeing, touching, tasting, smelling, hearing • pose questions and find answers through reflection, discussion, designing and performing appropriate activities, role plays, debates, use of ICT, etc. • record the observations during the activity, experiments, surveys, field trips, etc.	identifies materials such as, animal fibres, classifies materials e.g., plant and animal fibres; explains processes and phenomena, e.g., processing of animal fibres; draws labelled diagrams/ flow charts; life cycle of silk moth, etc.	Samples of different fabrics, Videos	Gazebo, AV room	NCERT Textbook, Science Quest, Galaxy & Lakhmir Singh (if available)	12	Burning of fibre to differentiate between animal and plant fibre, Life cycle of silkworm, (if cocoon of silkworm available unreeling of the cocoon)	Visit to sericulture farm, Visit to textile or cottage industry.
4	Heat	* difference between hot and cold *Measurement of temperature *Transfer of heat *Different types of clothing according seasons	1) Laboratory method 2) Demonstration cum Lecture method 3)Inquiry based 4)Technology based	pose questions and find answers through reflection, discussion, designing and performing appropriate activities, role plays, debates, use of ICT, etc. • record the observations during the activity, experiments, surveys, field trips, etc. • analyse recorded data, interpret results and draw inference/ make generalisations and share findings with peers and adults	explains processes and phenomena heating, measures and calculates e.g., temperature, conductors	Water samples(too hot, too cold and normal), Laboratory and Clinical Thermometer, metal rod, wax, candle/ burner, crystals of potassium permanganate, Videos	Laboratory, AV room, Gazebo	NCERT Textbook, Science Quest, Galaxy & Lakhmir Singh (if available)	12	Testing human body temperature of various students, Convection of heat in water, Transfer of heat by convection, Diagram of land and sea breeze	Visit a vet and find normal body temperature of various animals
5	Acids, Bases and Salts	*To enable the students to know about acid, base and salts. *To enable the students to differentiate the acid, base and salts . *To enable the students to identify the acid , bases and salts *Uses of Acid & Base in day- to-day life.	1) Laboratory method 2) Demonstration cum Lecture method 3)Inquiry based 4)Technology based	pose questions and find answers through reflection, discussion, designing and performing appropriate activities, role plays, debates, use of ICT, etc. • record the observations during the activity, experiments, surveys, field trips, etc. • analyse recorded data, interpret results and draw inference/ make generalisations and share findings with peers and adults	conducts simple investigations to seek answers to queries, e.g., Can extract of coloured flowers be used as acid-base indicator? writes word equation for chemical reactions, e.g., acid-base reactions	litmus paper, turmeric, vinegar, curd, china rose, soap solution, phenolphthalein, various samples of acids and bases, Dil. HCl and Dil NaOH, Videos	Laboratory, AV room, Classroom	NCERT Textbook, Science Quest, Galaxy & Lakhmir Singh (if available)	10	Litmus test on various samples, Make turmeric and china rose indicator, Neutralisation recation	Find the pH of the soil in your school farm. Discuss with the farmer what pH is beat for which crop and ways to maintain the pH.

6	Physical and Chemical Changes	Discuss the difference between physical and chemical change; B. Appreciate the importance of the knowledge on physical and chemical change in our life through citing its applications in our community; and C. Write at least 5 examples of chemical and physical changes of matter	1) Laboratory method 2) Lecture cum demonstration 3)Kinesthetic Learning	explore surroundings, natural processes, phenomena using senses viz. seeing, touching, tasting, smelling, hearing • pose questions and find answers through reflection, discussion, designing and performing appropriate activities, role plays, debates, use of ICT, etc. • record the observations during the activity, experiments, surveys, field trips, etc. • analyse recorded data, interpret results and draw inference/ make generalisations and share findings with peers and adults	classifies materials and organisms based on physical and chemical changes, writes word equation for chemical reactions, e.g., acid-base reactions; corrosion, taking measures to prevent corrosion;	Iron nails, water, oil, cotton wool, calcium chloride, copper sulphate, blade, magnesium ribbon, vinegar, U tube, Lime water, baking soda, copper sulfate, HCl, Videos	Laboratory, AV room and Classroom	NCERT Textbook, Science Quest, Galaxy & Lakhmir Singh (if available)	10	dissolution test, freezing of water, rusting of iron, burning of magnesium ribbon, colour change of copper sulfate, lime water release carbon di oxide, crystallisation of copper sulfate, Balancing of equation.	Make your own common salt crystals.
7	Weather, Climate and Adaptations of Animals to Climate	*To know weather conditions are what happens in the atmosphere. To learn weather, climate, Adaptations in animals, global warming. To understand climate conditions on the earth suitable for life. Todifferentiate the regions have different climates? To understand climate adaptions and tropical rainforests. To know about deserts adaptions. To know about polar region in animals living in the Arctic region, animals living in the Antarctic region. To learn about migration. To learn global warming, effects of climate change.	1) Lecture cum Demonstration, 2) Technology based	pose questions and find answers through reflection, discussion, designing and performing appropriate activities, role plays, debates, use of ICT, etc. • record the observations during the activity, experiments, surveys, field trips, etc. • exhibit creativity presenting novel ideas, new designs/patterns, improvisation, etc. • internalise, acquire and appreciate values such as cooperation, collaboration, honest reporting, judicious use of resources, etc.	Learn weather conditions are what happens in the atmosphere. Understand weather, climate, Adaptations in animals, global warming Know climate conditions on the earth suitable for life. Differentiate regions to close to the equator. Recall the various types of habitats seen in India. Learn animals in the desert get their water from. Recall Polar Regions animals, Antarctic region, and migration. Explain what can cause global warming? And effects of change.	Models of various habitat, newspaper, videos	AV room, classroom,	NCERT Textbook, Science Quest, Galaxy & Lakhmir Singh (if available)	14	rain guage making, mind map on various adaptation by animals	Visit to animal sanctuary or animal park
8	Winds, Storms and Cyclones	* Air Exerts Pressure *Air Expands on Heating *Thunderstorms and Cyclones	1) Kinesthetic method 2)Lecture cum Demonstration 3) Technology based	pose questions and find answers through reflection, discussion, designing and performing appropriate activities, role plays, debates, use of ICT, etc. • record the observations during the activity, experiments, surveys, field trips, etc. • analyse recorded data, interpret results and draw inference/ make generalisations and share findings with peers and adults	exhibits values of honesty, objectivity, cooperation, freedom from fear and prejudices, exhibits creativity in designing, planning, making use of available resources, etc. relates processes and phenomena with causes, e.g., wind speed with air pressure;	Tin bottle, hot water, cold water, plastic bottle, piece of paper, balloons, paper strip, thread, 3 test-tubes or bottles, candle, plastic bags, windwane, barometer, newspaper, Videos	Laboratory, School roof, AV room, Swing Classroom	NCERT Textbook, Science Quest, Galaxy & Lakhmir Singh (if available)	14	air has weight, air expands on heating, air exerts pressure, make a windvane and barometer	Find information about the cyclone, storm prone areas in India. Find the precautionary measures to be followed in state of natural disaster.
9	Soil	Different kinds of soil *Soil profile *importance of soil *Percolation rate of water	1) Lecture cum demonstration 2)Inquiry based 3) Technology based	*explore surroundings, natural processes, phenomena using senses viz. seeing, touching, tasting, smelling, hearing • pose questions and find answers through reflection, discussion, designing and performing appropriate active *analyse recorded data, interpret results and draw inference/ make generalisations and share findings with peers and adults	crops grown with types of soil	Various soil samples, water, PVC pipe, burner or candle, test tube, filter paper, Video	Farm field, Laboratory, AV room	NCERT Textbook, Science Quest, Galaxy & Lakhmir Singh (if available)	12	Identifying soil on the basis of texture, shape, colour and size, Making the soil profile in the beaker, finding the percolation rate of soil, retention capacity of soil.	Visit the school farm. Talk to the farmer and discuss various soil samples which are best for various crops and also find the percolation and retention rate of the soil.

10	Respiration in Organisms	*understand why animals and plants breathe *learn the difference between breathing and respiration *see how plants and animals breathe in waters	1) Lecture cum demonstration 2)Sports based 3)Inquiry based 4) Kinesthetic learning 5) Technology based	explore surroundings, natural processes, phenomena using senses viz. seeing, touching, tasting, smelling, hearing • pose questions and find answers through reflection, discussion, designing and performing appropriate activities, role plays, debates, use of ICT, etc. • record the observations during the activity, experiments, surveys, field trips, etc.	• writes word equation for chemical reactions, e.g., respiration	Chart or Model of respiratory system, model of lungs, lime water, test tube and straw, measuring tape, specimen of cockrach, fish, Videos	Laboratory, Sports ground, AV room	NCERT Textbook, Science Quest, Galaxy & Lakhmir Singh (if available)	12	Equation of aerobic and anaerobic respiration, table of differentiation between breathing and respiration. Race to find the breathing rate, Making model of lung, lime water test, Measure the chest size while inhaling and exhaling	Find out about the yoga exercises and sports exercise to improve your lung capacity. Find out your and your friends lung capacity.
11	Transportation in Animals and Plants	*Circulation system *Heart and its working *Excretory system in humans *Transpiration in plants *transport of minerals and water in plants	1) Lecture cum demonstration 2) Sports based 3) Inquiry based 4) Technology based	explore surroundings, natural processes, phenomena using senses viz. seeing, touching, tasting, smelling, hearing • pose questions and find answers through reflection, discussion, designing and performing appropriate activities, role plays, debates, use of ICT, etc. • record the observations during the activity, experiments, surveys, field trips, etc.	measures and calculates e.g., temperature; pulse rate; draws labelled diagrams/ flow charts e.g., organ systems in human and plants;	Chart or Model of Circulatory and excretory system, Potted plant, plastic bag, rubber band, Stethoscope, Torso, Video	Sports ground, Laboratory, AV room	NCERT Textbook, Science Quest, Galaxy & Lakhmir Singh (if available)	15	Race to find out the heart rate and pulse rate, Make a model of heart, Make your own stethoscope or find the heart rate with clinical stethoscope, Make model of excretory system, Take a potted plant and tie a plastic bag to the leaf to find out transpiration	Find why one type of blood group cannot be transfused to other.
12	Reproduction in Plants	*Modes of reproduction *Pollination *Fertilization and seed formation *Spore formation *Seed dispersal	1) Laboratory method 2)Kinesthetic method 3) Lecture cum demonstration 4) Technology based	explore surroundings, natural processes, phenomena using senses viz. seeing, touching, tasting, smelling, hearing • pose questions and find answers through reflection, discussion, designing and performing appropriate activities, role plays, debates, use of ICT, etc. • record the observations during the activity, experiments, surveys, field trips, etc.	Vegetative propogation, Pollination, fertilisation, seed dispersal	Sample of potato, rose, fern. Specimen of spirogyra, yeast and spronagium, dissection box, microscope, hibiscus, samples of seeds, plastic bag,Video	School Farm, Laboratory and AV room	NCERT Textbook, Science Quest, Galaxy & Lakhmir Singh (if available)	15	Cutting, Layering, grafting, budding of various plants and growing them in the farm, Making a yeast sample to observe budding, dissection of flower and identifying its parts. Observation of specimen of spirogyra and spronagium, Collecting seed samples and mind map of seed dispersal, Diagram of parts of flower and fertilization of flower.	Graft a white rose plant on red rose plant and note down your observation.
13	Motion and Time	* understand the need to measure time *learn to calculate how fast an object moves (speed)	1) Inquiry based 2) Sports based 3)Lecture cum demonstration based 4) Technology based	pose questions and find answers through reflection, discussion, designing and performing appropriate activities, role plays, debates, use of ICT, etc. • record the observations during the activity, experiments, surveys, field trips, etc. •analyse recorded data, interpret results and draw inference/ make generalisations and share findings with peers and adults	measures and calculates speed of moving objects; time period of a simple pendulum, etc. plots and interprets graphs e.g., distancetime graph	Clock, tabla, spring, pendulum, measuring tape, chalk, stop watch, sand clock, graph paper, Video	Sports ground, Swing classroom, AV room	NCERT Textbook, Science Quest, Galaxy & Lakhmir Singh (if available)	12	Observe the various kinds of motions. Observe the movement of pendulum and find the time period. Race between students and rolling the ball to find the speed of the object. Plot a graph to find out the speed of two object or person.	Make a sundail, sandclock and water clock. Observe the speedometer of your parents vehicle. Calculate the speed by noting the distance and time.

14	Electric current and its effect	* To revive their previous knowledge about last year's lesson on "electricity and circuit. * Students will be familiarized with an electric circuit, circuit components and their respective functions and symbols. *To construct a simple electric circuit in the classroom and to explain how current flows and the bulb glows. *To introduce circuit diagram for a simple circuit *To make an electromagnet *To understand functioning of electric bell and electric heater	1) Inquiry based 2) Laboratory based 3)Technology based	pose questions and find answers through reflection, discussion, designing and performing appropriate activities, role plays, debates, use of ICT, etc. • record the observations during the activity, experiments, surveys, field trips, etc. • analyse recorded data, interpret results and draw inference/ make generalisations and share findings with peers and adults	draws labelled diagrams/ flow charts electric circuits; experimental set ups, explains processes and phenomena, e.g., heating and magnetic effects of electric current, etc.	Cell, wires, safety pins, LED, bulbs, cell holder, metal strip, iron nails, heating coil, fuse,magnetic compass, Nichrome wire Videos	Laboratory, AV room, Classroom	NCERT Textbook, Science Quest, Galaxy & Lakhmir Singh (if available)	12	Make a hand steadiness tester, identify the symbols for various electical components, make a battery, understand the connection of flow of current, make a simple circuit, make a circuit to understand heating effect, check the importance of fuse. make a electromagnet, Observe the working of electric bell	Make a working model of a railway signal with help of electromagnet.
15	Light	*Light travels in straight line *Reflection of light *Different kinds of mirror *the characteristics of the image formed by the plane mirror and other mirrors. *Different types of lens *Dispersion of light and formation of rainbow	1) Inquiry based 2) Laboratory based 3) Lecture cum demonstration 4) Technology based	pose questions and find answers through reflection, discussion, designing and performing appropriate activities, role plays, debates, use of ICT, etc. • record the observations during the activity, experiments, surveys, field trips, etc.	constructs models using materials from surroundings and explains their working, Newton's colour disc ,etc. images formed by mirrors and lenses, etc., on the basis of their properties, structure and function	Pipe, candle, CDs, torch, plane mirror, convex mirror, concave mirror, chess board, spoon, covex and concave lenses, glass prism, Newton's disc, Videos	AV room, Laboratory, Dance room	NCERT Textbook, Science Quest, Galaxy & Lakhmir Singh (if available)	15	light travels in straight line, formation of real and virtual images by mirrors and lens, properties of plane mirror, phenomenon of dispersion of light, burning of paper	Make your own rainbow.
16	Water: A Precious Resource	*Understand the importance of water to humans and they are able to reason how to conserve the precious water. *Understand the Earth's water cycle process and its various stages. *Need of water conservation and Management of Water	1) Lecture based 2) Value based 3) Technology based	explore surroundings, natural processes, phenomena using senses viz. seeing, touching, tasting, smelling, hearing • pose questions and find answers through reflection, discussion, designing and performing appropriate activities, role plays, debates, use of ICT, etc. • record the observations during the activity, experiments, surveys, field trips, etc.	depletion of water table with human activities, etc. makes efforts to protect environment, e.g., following good practices for sanitation at public places;	Chart of water cycle, School well (ground water), Water purifier, spoon , bucket, mug, glass and water, Videos	School Water management system, AV room and Classroom	NCERT Textbook, Science Quest, Galaxy & Lakhmir Singh (if available)	12	Availability of water, Water cycle, Groundwater, Depletion of water table, Ways to manage water.	Find sources of various water sources and ways to overcome water scarcity.
17	Forest: Our Lifeline	*To teach the students about the importance of forest in our life *How the various components of a forest are dependent on each other How forests help us Deforestation	1) Project based 2)Value based 3)Technology based	pose questions and find answers through reflection, discussion, designing and performing appropriate activities, role plays, debates, use of ICT, etc. • record the observations during the activity, experiments, surveys, field trips, etc. • analyse recorded data, interpret results and draw inference/ make generalisations and share findings with peers and adults	crops grown with types of soil dealing with acidity; taking measures during and after disasters testing and treating soil; makes efforts to protect environment, e.g., following good practices for sanitation at public places; minimising generation of pollutants; planting trees to avoid soil erosion; sensitising others with the consequences of excessive consumption of natural resources, etc	Charts on types of plants, Soil, water and plants, Videos	Botanical garden or forest, AV room, Classroom	NCERT Textbook, Science Quest, Galaxy & Lakhmir Singh (if available)	8	Visit to Botanical garden or forest, deforestation and awareness, how to prevent soil erosion, , Interrelationship of plant, animals, soil and decomposers in forest. Illeffects of deforestation	Visit to forest. Organise a tree planation drive.

18	Wastewater Story	*Origin of waste water *Constituents of waste water *Cleaning of waste water *Different waste water treatment *Work in group *Identify the important aspects of 'Waste water'	1) Value based 2)Brainstroming method 3)Lecture based 4) Technology based	pose questions and find answers through reflection, discussion, designing and performing appropriate activities, role plays, debates, use of ICT, etc. • record the observations during the activity, experiments, surveys, field trips, etc. • analyse recorded data, interpret results and draw inference/ make generalisations and share findings with peers and adults	suggesting methods for treatment of polluted water for reuse, etc. exhibits creativity in designing, planning, making use of available resources, etc. • exhibits values of honesty, objectivity, cooperation, freedom from fear and prejudices depletion of water table with human activities, etc.	Waste water, alum, charcoal, rocks, filter paper, Videos	Waste water plant, sewage system of school, filtration system of school	NCERT Textbook, Science Quest, Galaxy & Lakhmir Singh (if available)	8	Filtration of water, Chart of better practises of housekeeping, Devicing Sanitation methods, Alternate sewage disposal method.	Visit to Waste water managment plant in Nashik.