

ANNUAL CURRICULUM PLAN 2020-21

SCIENCE  
CLASS VII

**VISION OF TEACHING SCIENCE:** To make students actively engaged in science practices, to deepen their understanding of core science ideas. To develop student's capability to engage in scientific inquiry, and to teach students how to reason in a scientific context.

**APRIL - SEPTEMBER**

<b>CHAPTER</b>	<b>TRANSACTION STRATEGY/ INNOVATIVE PEDAGOGY</b>	<b>LEARNING OUTCOMES</b>	<b>CORE SKILLS/ ART INTEGRATION/ INTERDISCIPLINARY LINKAGES</b>
<b>1 – NUTRITION IN PLANTS</b> <ul style="list-style-type: none"><li>• Modes of nutrition</li><li>• Photosynthesis</li></ul>	<ul style="list-style-type: none"><li>• The students will be introduced to the topic nutrition through interactive method.</li><li>• A quiz will be conducted to recollect the previous knowledge.</li><li>• Audio-visual aids will be used to explain the different types of nutrition in plants.</li></ul>	<p>Students will learn about</p> <ul style="list-style-type: none"><li>• Modes of nutrition</li><li>• Autotrophic nutrition in plants</li><li>• Heterotrophic nutrition in plants</li><li>• Symbiosis</li><li>• Photosynthesis</li></ul> <p>Students will identify materials and organisms based on their food relationship.</p> <p>Students will understand the importance of plants for the survival of all living organisms.</p>	<ul style="list-style-type: none"><li>• <b>Core Skills:</b> Observational skill, Awareness, Thinking skill, Analytical skill</li><li>• <b>Art Integration:</b> * Make a diagram of pitcher plant on an A-3 Size sheet. *Identifying the plants in the neighborhood and finding out their mode of nutrition</li><li>• <b>Interdisciplinary linkage:</b> Environmental Sciences</li></ul>
<b>2 – NUTRITION IN ANIMALS</b> <ul style="list-style-type: none"><li>• Digestion in Humans</li><li>• Digestion in Grass-Eating Animals</li><li>• Feeding and Digestion in Amoeba</li></ul>	<ul style="list-style-type: none"><li>• Lecture method</li><li>• Discussion method</li><li>• Doing an activity to understand the different areas of tongue to detect the four basic tastes-salty, sour, sweet and bitter.</li><li>• Demonstration of an experiment to study the affect of saliva on food – iodine test by sharing the animations of OLABs</li><li>• PPT and Videos will be shown to the students to explain digestion in humans, ruminants and amoeba.</li></ul>	<p>Students will learn about</p> <ul style="list-style-type: none"><li>• Nutrition in humans</li><li>• Role of each digestive organs and function of digestive juices.</li><li>• Steps in animal nutrition</li><li>• Nutrition in grass eating animals</li><li>• Nutrition in Amoeba</li></ul>	<ul style="list-style-type: none"><li>• <b>Core skills:</b> Observational skill, Drawing skill, Inquiry skill, thinking skill.</li><li>• <b>Art integration:</b> * Make a poster on balanced diet to understand its importance. * Make a chart on digestive system of human being and cow. Note down the differences in the two systems. Make a report and present in the class.</li><li>• <b>Interdisciplinary linkage:</b> Health Sciences</li></ul>

<p><b>3 - FIBRE TO FABRIC</b></p> <ul style="list-style-type: none"> <li>• Animal fibres – Wool and Silk</li> </ul>	<ul style="list-style-type: none"> <li>• Topics will be explained to the students by lecture cum discussion method.</li> <li>• Project method will be used for the topics.</li> <li>• The students will explore other sources to get more information on the topic and will present it in the form of a project apart from the topics given in the book.</li> </ul>	<p>Students will understand about</p> <ul style="list-style-type: none"> <li>• Animals that yield wool</li> <li>• Processing of wool</li> <li>• Life history of silk moth</li> <li>• Rearing of silk worms</li> <li>• Processing of silk</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Core skills:</b> Observational skill, Classification skill, Analytical skill</li> <li>• <b>Art integration:</b> * Make a chart on Life cycle of silk worm and make a report on how silk is obtained from silkworm and present in the class. *Students will collect samples of different fibres to study their properties. They will be able to make right choice of fabric according to the usage and weather</li> <li>• <b>Interdisciplinary linkage:</b> Textile Industry</li> </ul>
<p><b>4 – HEAT</b></p> <ul style="list-style-type: none"> <li>• Hot and cold</li> <li>• Measuring temperature</li> <li>• Transfer of heat</li> <li>• Kinds of clothes we wear in Summer and Winter</li> </ul>	<ul style="list-style-type: none"> <li>• Lecture cum Demonstration method</li> <li>• Experimental method</li> <li>• To show clinical and laboratory thermometer and explain their working</li> <li>• The children will be asked to measure the body temperature of some of their friends and family members and record their observations in a tabular form on a sheet of paper.</li> <li>• Children will be shown animations of an activity to show Flow of heat through a metal strip by conduction.</li> <li>• To discuss the applications of convection current and heat radiation.</li> <li>• To explain kinds of clothes we wear in summer and winter.</li> </ul>	<p>Students will understand</p> <ul style="list-style-type: none"> <li>• What heat is</li> <li>• Temperature and its measurement using thermometers</li> <li>• Different types of thermometers</li> <li>• Methods of heat transfer by conduction, convection and radiation</li> <li>• Sea breeze and land breeze phenomenon</li> <li>• Absorption of heat by dark- coloured and light coloured objects</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Core skills:</b> observational skill, Analytical skill, Measurement skill, thinking skill.</li> <li>• <b>Art integration:</b> * Make a chart on Sea breeze and land breeze. * The children will learn the use of clinical and laboratory thermometer</li> <li>• <b>Interdisciplinary linkage:</b> Geography, Health Sciences.</li> </ul>
<p><b>5 – ACIDS, BASES AND SALTS</b></p> <ul style="list-style-type: none"> <li>• Acids and Bases</li> <li>• Natural Indicators</li> <li>• Neutralization</li> </ul>	<ul style="list-style-type: none"> <li>• The students will be explained acids and bases by Lecture cum discussion method, demonstration method.</li> <li>• Discussion on different substances containing acids and bases</li> <li>• Children will be shown the animations of OLab activities to understand testing of acids and bases containing substances</li> </ul>	<p>Students will understand</p> <ul style="list-style-type: none"> <li>• acids and bases and its properties</li> <li>• the classification of substances into acidic, basic and neutral substances</li> <li>• Testing solution of common substances</li> <li>• Neutralization reaction and its application in everyday life situations</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Core skills:</b> Observational skill, analytical skill, classification skill, experimental skill</li> <li>• <b>Art integration:</b> * Using the knowledge of acids and bases, write a secret message with the help of baking soda and beet root. Explain how it works on a sheet of paper.</li> </ul>

	<p>using natural indicators – litmus, China rose and turmeric.</p> <ul style="list-style-type: none"> <li>• Students will be demonstrated neutralisation reactions through animations of OLABs shared in their class groups.</li> <li>• Discussion of neutralization in everyday life.</li> </ul>	<p>like – indigestion, Ant bite, Soil treatment etc.</p>	<p>* Students will be asked to make a card for their mother by using turmeric indicator and soap solution.</p> <ul style="list-style-type: none"> <li>• Interdisciplinary linkage: Chemical and Pharmaceutical industry, Health sciences</li> </ul>
<p><b>6 – PHYSICAL AND CHEMICAL CHANGES</b></p> <ul style="list-style-type: none"> <li>• Physical changes</li> <li>• Chemical change</li> <li>• Rusting of iron</li> <li>• Crystallization</li> </ul>	<ul style="list-style-type: none"> <li>• Lecture cum demonstration method will be used to explain the physical and chemical changes</li> <li>• Group activity will be done to understand the physical changes like cutting, folding papers, melting of ice, etc.</li> <li>• An activity of reaction between vinegar and baking soda to explain chemical changes will be shown to the children through animations of OLABs shared in the class groups.</li> <li>• Discussing many other examples for physical and chemical changes with the active participation of children and sharing PPT</li> <li>• Video of crystallization of copper sulphate will be shown.</li> </ul>	<p>Students will learn about</p> <ul style="list-style-type: none"> <li>• Two types of changes – physical and chemical</li> <li>• To differentiate between physical and chemical changes</li> <li>• To write chemical reactions in word equations</li> <li>• What is rusting of iron and how can it be prevented</li> <li>• Crystallization – a process to obtain pure substances in pure state from their solutions</li> </ul>	<ul style="list-style-type: none"> <li>• Core skills: Observational skill, analytical skill, experimental skill, classification and application skill,</li> <li>• Art integration: <ul style="list-style-type: none"> <li>* Students will be asked to make a list of physical and chemical changes occurring in their surroundings.</li> <li>* Students will be asked to make crystals of alum or common salt to understand crystallization.</li> </ul> </li> <li>• Interdisciplinary linkage: Economics – how to prevent monetary losses due to rusting</li> </ul>
<p><b>10 – RESPIRATION IN ORGANISMS</b></p> <ul style="list-style-type: none"> <li>• Why do we respire?</li> <li>• Breathing</li> <li>• Mechanism of breathing</li> <li>• Breathing in other animals- Cockroach, Earthworm, fish, Plants</li> </ul>	<ul style="list-style-type: none"> <li>• Lecture cum discussion method to explain the various topics</li> <li>• To do activities to find breathing rate and to understand movement of chest cavity and diaphragm while inhalation and exhalation</li> <li>• Explaining with diagrams through PPT to understand the breathing in other organisms and in plants</li> <li>• PPT, Videos of activities – mechanism of breathing in humans, cockroaches and some animals will be shown to the students.</li> </ul>	<p>Students will learn about</p> <ul style="list-style-type: none"> <li>• Respiration and its types Aerobic and anaerobic</li> <li>• What is breathing and mechanism of breathing</li> <li>• To differentiate between respiration and breathing</li> <li>• Breathing rate</li> <li>• What do we breathe out</li> <li>• Breathing in cockroach, frogs, earthworm fish and plants</li> </ul>	<ul style="list-style-type: none"> <li>• Core skills: Observational skill, Drawing skill, creative skill, Thinking skill, analytical skill</li> <li>• Art integration: <ul style="list-style-type: none"> <li>* Students will make a model of human respiratory system and make a chart by drawing and explaining it.</li> <li>* Children will understand the importance of oxygen for living organisms, Tree plantation, Green India</li> </ul> </li> <li>• Interdisciplinary linkage: Environmental sciences, Health Science</li> </ul>

OCTOBER TO MARCH

CHAPTER	TRANSACTION STRATEGY/ INNOVATIVE PEDAGOGY	LEARNING OUTCOMES	CORE SKILLS/ ART INTEGRATION/ INTERDISCIPLINARY LINKAGES
<p><b>11 – TRANSPORTATION IN ANIMALS AND PLANTS</b></p> <ul style="list-style-type: none"> <li>• Circulatory system</li> <li>• Excretion in animals</li> <li>• Transport of substances in plants</li> <li>• Transpiration</li> </ul>	<ul style="list-style-type: none"> <li>• Lecture method</li> <li>• Discussion method</li> <li>• Experimental method.</li> <li>• To do a class room activity to count the pulse rate and to record heartbeat.</li> <li>• To explain the structure of heart, human excretory system through PPT.</li> <li>• To explain transport of food, water and minerals in plants, transpiration and its advantages through PPT</li> <li>• Animation videos will be shown to children</li> </ul>	<p>Students will know about</p> <ul style="list-style-type: none"> <li>• Circulatory system- heart, blood vessels and blood</li> <li>• Functioning of circulatory system.</li> <li>• Excretion in animals</li> <li>• Excretory system in humans.</li> <li>• Transport of substances in plants</li> <li>• Transpiration</li> <li>• Learner will be able to know: measure and calculate pulse rate, heartbeat. Student applies learning of scientific concepts in day to day life,</li> <li>• Students will exhibit creativity in designing, planning and making use of available resources etc.</li> <li>• To draw labeled diagrams</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Core skills:</b> Observational skill, Drawing skill, experimental skill, application skill.</li> <li>• <b>Art integration:</b> * Make a chart showing the structure of heart and Excretory system. *Children will be asked to count their heartbeat in one minute. * Make a poster to create awareness on maintaining a healthy heart.</li> <li>• <b>Interdisciplinary linkage: Health Sciences</b></li> </ul>
<p><b>12 – REPRODUCTION IN PLANTS</b></p> <ul style="list-style-type: none"> <li>• Modes of reproduction: Asexual and sexual</li> <li>• Sexual reproduction</li> <li>• Fruit and seed formation</li> <li>• Seed dispersal</li> </ul>	<ul style="list-style-type: none"> <li>• To explain methods of asexual reproduction with diagrams and through PPT</li> <li>• To dissect the flower to explain its structure and its role in sexual reproduction</li> <li>• To explain fruit and seed formation and methods of seed dispersal.</li> <li>• Videos and animations will be shown to understand the above mentioned concepts.</li> </ul>	<p>Students will learn</p> <ul style="list-style-type: none"> <li>• To differentiate between sexual and asexual mode of reproduction</li> <li>• Different methods of asexual reproduction</li> <li>• Sexual reproduction in plants</li> <li>• Fruits and seed formation</li> <li>• Methods of seed dispersal</li> <li>• To draw labelled diagrams</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Core skills:</b> Observational skill, Drawing skill, experimental skill, Inquiry skill, Application skill.</li> <li>• <b>Art integration:</b> *Children will dissect the flower to study its parts. * Visit a garden and write down the names of different plants growing there and note the common method of reproduction, the agents of pollination. Make a report and present in the class.</li> <li>• <b>Interdisciplinary linkage: Environmental sciences</b></li> </ul>

<p><b>14 – ELECTRIC CURRENT AND ITS EFFECTS</b></p> <ul style="list-style-type: none"> <li>• Symbols of electric components</li> <li>• Heating effect of electric current</li> <li>• Magnetic effect of electric current</li> <li>• Electromagnet</li> <li>• Electric Bell</li> </ul>	<ul style="list-style-type: none"> <li>• Lecture cum discussion method</li> <li>• Students will be shown and explained heating effect of electric current and magnetic effect of current through PPT and animations.</li> <li>• Students will be explained - a fuse, its characteristics and uses through discussion and videos.</li> <li>• To explain circuit diagram, Electromagnet and Electric Bell along with their PPT and videos.</li> </ul>	<p>Students will learn about</p> <ul style="list-style-type: none"> <li>• Symbols and components of an electric circuit</li> <li>• Heating effect of electric current</li> <li>• Electric overload, short circuit and fuse</li> <li>• Magnetic effect of electric current</li> <li>• Electromagnet</li> <li>• Working of electric bell</li> <li>• To draw circuit diagram</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Core skills:</b> Observational skill, Experimental skill, and Application skill.</li> <li>• <b>Art integration:</b> Children will be asked to observe the electrical implements at home to study the heating effect of electric current. * Make working model of Electric circuit.</li> <li>• <b>Interdisciplinary linkage:</b> Mechanics and Electric gadgets</li> </ul>
<p><b>15 – LIGHT</b></p> <ul style="list-style-type: none"> <li>• Light travels along a straight line</li> <li>• Reflection of Light</li> <li>• Spherical mirrors</li> <li>• Images formed by Lenses</li> <li>• Sunlight – White or coloured</li> </ul>	<ul style="list-style-type: none"> <li>• Lecture method</li> <li>• Discussion method</li> <li>• Demonstrating an activity to observe the path of light</li> <li>• With the participation of children to do an activity to show reflection of light and show videos of OLABs.</li> <li>• To demonstrate and discuss lateral inversion</li> <li>• To demonstrate the image formation by lenses through animations of OLABs</li> <li>• Explaining white light consists of seven colours using a model of Newton’s disc.</li> </ul>	<p>Students will know about</p> <ul style="list-style-type: none"> <li>• Rectilinear propagation of light</li> <li>• Reflection of light through plane mirror and spherical mirrors</li> <li>• Image formation by convex lens and concave lens.</li> <li>• To observe and analyze the image formation by lenses and mirrors</li> <li>• To differentiate between virtual image and real image.</li> <li>• To understand white light consists of seven colours.</li> </ul> <p>Learner will be able to apply scientific knowledge of lateral inversion in day to day life.</p>	<ul style="list-style-type: none"> <li>• <b>Core skills:</b> Observational skill, Experimenting skill, Application skill.</li> <li>• <b>Art integration:</b> * Children will be asked to do an activity with a pipe to show that light travels in a straight line. * Make a model of Newton’s disc to understand white light consists of seven colours.</li> <li>• <b>Interdisciplinary linkage :</b> Optics</li> </ul>
<p><b>16 - WATER – PRECIOUS RESOURCE</b></p> <ul style="list-style-type: none"> <li>• Availability of water</li> <li>• Forms of water</li> <li>• Ground water- Important source of water</li> <li>• Depletion of water table</li> <li>• Distribution of water</li> <li>• Water management</li> <li>• Effect of water scarcity</li> </ul>	<ul style="list-style-type: none"> <li>• Lecture method</li> <li>• Discussion method</li> <li>• Project method</li> <li>• Children will be a part of class room debate to discuss the availability of water, Scarcity of water, Depletion of water table.</li> <li>• Students will be shown audio visuals to understand the effect of water scarcity on plants and animals, water management etc.</li> </ul>	<p>Student will know about</p> <ul style="list-style-type: none"> <li>• The various forms in which water exists in nature.</li> <li>• Different source of water</li> <li>• The scarcity of water and its effect on life.</li> <li>• Water management.</li> </ul> <p>Learner will understand that water is a precious resource. They will know the importance of conservation of water. They will carry out a campaign to conserve water at home and in the school</p>	<ul style="list-style-type: none"> <li>• <b>Core skills:</b> Observational skill, Understanding, Environmental awareness, application skill.</li> <li>• <b>Art integration:</b> * Children will present a street play on Save water – JAL HAI TO KAL HAI * Make a poster on ‘Importance of water harvesting’</li> <li>• <b>Interdisciplinary linkage:</b> Geography, Environmental Science, Dramatics</li> </ul>

<p><b>17 – FORESTS: OUR LIFELINE</b></p> <ul style="list-style-type: none"> <li>• Forest and its uses</li> <li>• Interdependence of plants and animals</li> <li>• Deforestation</li> </ul>	<ul style="list-style-type: none"> <li>• Students will be part of class room discussion to know about forest and its uses.</li> <li>• Students will be explained interdependence of plants and animals through audio visual aids (PPT, Videos)</li> <li>• To conduct a class room debate on destruction of forests and its conservation.</li> </ul>	<p>Students will know about</p> <ul style="list-style-type: none"> <li>• Uses of forests.</li> <li>• Interdependence of plants and animals</li> <li>• Destruction of forests – causes and consequences.</li> <li>• Conservation of forests</li> </ul> <p>Students will apply the knowledge in their daily life situations. They will be aware about the importance of plants and understand the importance of planting trees. They will apply eco-friendly methods to their life.</p>	<ul style="list-style-type: none"> <li>• <b>Core skills:</b> Observational skill, Classification skill, Analytical skill, debating skill.</li> <li>• <b>Art integration:</b> *A visit / virtual visit to Zoo will be organized for children and they will collect information about different types of plants and animals. * Make a poster on “forest is one of the richest natural resource in Sikkim”. * Organising a Tree Plantation programme.</li> <li>• <b>Interdisciplinary linkage:</b> Geography, Environmental Sciences</li> </ul>
<p><b>18 – WASTEWATER STORY</b></p> <ul style="list-style-type: none"> <li>• Water – our Lifeline</li> <li>• Sewage</li> <li>• Waste water treatment</li> <li>• Better housekeeping practices</li> <li>• Sanitation at public places</li> </ul>	<ul style="list-style-type: none"> <li>• Through active participation of children discussing waste water-causes, sewage and contamination of water</li> <li>• Students will be shown PPT and videos to explain waste water treatment.</li> <li>• Project method to understand housekeeping practices, sanitation and sewage disposal.</li> </ul>	<p>Students will know about</p> <ul style="list-style-type: none"> <li>• Sewage and contamination of groundwater by sewage.</li> <li>• Wastewater treatment.</li> <li>• Better housekeeping practices</li> <li>• Alternative arrangement for sewage disposal</li> <li>• Sanitation at public place</li> </ul> <p>Students will apply the knowledge in their daily life situations. They will apply better housekeeping practices at their homes and follow sanitation method at public places.</p>	<ul style="list-style-type: none"> <li>• <b>Core skills:</b> Awareness, Analytical skill, Logical thinking.</li> <li>• <b>Art integration:</b> * Organise a campaign ‘Keep your city Clean’. Make pamphlets and poster for the same. *The children will conduct a rally emphasizing sanitation - CLEAN INDIA</li> <li>• <b>Interdisciplinary linkage:</b> Geography, Environmental Sciences, Health Sciences.</li> </ul>