

Science Course Structure - Class VI (Theory)

1. Food (Periods - 20)

Sources of food

Questions	What are the various sources of our food? What do other animals eat?
Key Concepts	Plant parts and animal products as sources of food; herbivores, carnivores, omnivores.
Resources	Examples of food from different parts of plants and of food from animals sources.
Activities/Processes	Germination of seeds such as mung, chick pea etc.; preparing a chart on food habits of animals and food culture of different regions of India.

Components of food

Questions	What is our food made up of? Why do we eat a variety of food?
Key Concepts	Carbohydrates, fats, proteins, vitamins, minerals, fibres, their sources and significance for human health; balanced diet; diseases and disabilities due to food deficiencies.
Resources	Mid Day Meal; Charts, pictures/films of children suffering from food deficiencies and disabilities
Activities/Processes	Studying the variety of food in different regions in India; preparing a menu of balanced diet in the context of the diversity of foods eaten in different parts of the country. Classifying foods according to food components; test for starch, sugars, proteins and fats.

Cleaning food

Questions	How do we separate the grains after harvesting the wheat /rice crop?
Key Concepts	Threshing, winnowing, hand picking, sedimentation, filtration.
Resources	Talking to some elders about practices after harvesting the crop; kit materials.
Activities/Processes	Discussion on threshing, winnowing, handpicking; experiments on sedimentation, filtration. Separating mixture of salt and sand.

2. Materials (Periods - 26)

Materials of daily use

Questions	What are our clothes made of? How did people manage when there were no clothes? Are some of our clothes made of materials obtained from plants? In what kinds of places do these plants grow? Which parts of the plants are used for making clothes?
Key Concepts	Different types of cloth materials – cotton, wool, silk and synthetics. Development of clothing materials. Plant fibre, especially cotton and jute; production of cotton, jute and other locally available plant fibres; types of soil required for the growth of different fibrous plants.
Resources	Sharing of prior knowledge with parents and community. Archaeological and historical accounts. Sharing of prior knowledge with parents and community.
Activities/Processes	Whole class discussion. Simple activities to distinguish among different types of cloth. Whole class discussion. Field survey/ collecting information on locally available plant fibres (coconut, silk cotton, etc.)

Different kinds of materials

Questions	What kinds of things do we see around us?
Key Concepts	Grouping things on the basis of common properties.
Resources	Materials, kit items.
Activities/Processes	Collecting and grouping things on the basis of gross properties e.g. roughness, lustre, transparency, solubility, sinking/floating using prior knowledge, through experiments.

How things change/ react with one another

Questions	In what ways do things change on being heated? Do they change back on being cooled? Why does a burning candle get shorter? How much salt can be dissolved in a cup of water?
Key Concepts	Some changes can be reversed and others cannot be reversed. Solubility, saturated solutions. Amount of substance dissolving varies with temperature. At the same temperature amounts of different substances that dissolve varies.
Resources	Prior knowledge, kit items. Salt, sugar and other common substances, kit items.
Activities/Processes	Experiments involving heating of air, wax, paper, metal, water to highlight effects like burning, expansion/compression, change of state. Discussion on

other changes which cannot be reversed – growing up, opening of a bud, ripening of fruit, curdling of milk. Experiments for testing the solubility of commonly available substances. Experiments on the effect of heating and cooling on solubility. Comparison of solubilities of different substances using nonstandard units (eg. spoon, paper cone).

3. The World of the Living

Things around us

Questions	Are all things around us living? What is the difference between living and non-living? Are all living things similar? Do all living things move? Where do plants and animals live? Can we grow plants in the dark?
Key Concepts	Living/non-living characteristics; habitat; biotic, abiotic (light, temperature, water, air, soil, fire)
Resources	Recollection of diversity of living organisms and the habitat where they live.
Activities/Processes	Listing of things around us, listing of characteristics after making observations say on size, colour, shape etc., categorisation; observations on habitat; observing germination of seeds, also observing under dark conditions; growth and development of domestic animals, hatching of birds' eggs etc., developing drawing skills.

The habitat of the living

Questions	How does habitat affect plants and animals? How do fish live in water?
Key Concepts	Habitat varies – aquatic, deserts, mountains etc. plants and animals show adaptation; other plant part modifications like tendrils, thorns etc. Animals in deserts and water.
Resources	Potted plants or seeds, pots, etc; thermometer, any water plants, any xerophytic plants, Information on desert and aquatic plants and animals.
Activities/Processes	Listing the diverse set of living organisms around us; prepare herbarium specimens of different leaves, plants; studying modifications in plants and animals; observing how different environmental factors (water availability, temperature) affect living organisms;

Plants – form and function

Questions	What is the structure and function of various parts of the plants - stem, leaf and
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roots? How do different flowers differ from one another? How does one study flowers?

Key Concepts	Morphological structure and function of root, stem and leaves. Structure of the flower, differences.
Resources	Plants, flowers, blade, hand lens.
Activities/Processes	Studying plant parts types of stems, roots, leaves, seeds; experiment to show conduction by stem, activity to show anchorage by roots, absorption by roots. Study of any flower, counting number of parts, names of parts, cutting sections of ovary to observe ovules.

Animals – form and function

Questions	What is inside our bodies? How do animals move? Do all animals have bones in their bodies? How do fishes move? And birds fly? What about snakes, snails, earthworms?
Key Concepts	Structure and functions of the animal body; Human skeletal system, some other animals e.g. fish, bird, cockroach, snail.
Resources	Observation of nature; model of skeleton, X-rays of arms or legs, chest, hips, jaws, vertebral column (could be given in the textbook).
Activities/Processes	Activities to study X-rays, find out the direction in which joints bend, feel the ribs, backbone etc. Observation/ discussion on movement and skeletal system in other animals.

4. Moving Things, People and Ideas (Periods - 12)

Moving

Questions	How did people travel from one place to another in earlier times? How did they know how far they had travelled? How do we know that something is moving? How do we know how far it has moved?
Key Concepts	Need to measure distance (length). Measurement of length. Motion as change in position with time.
Resources	Everyday experience; equipment (scale etc.) to measure length. Stories for developing contexts for measuring distances.
Activities/Processes	Measuring lengths and distances. Observation of different types of moving

objects on land, in air, water and space. Identification and discrimination of various types of motion. Demonstrating objects having more than one type of movement (screw motion, bicycle wheel, fan, top etc.) Observing the periodic motion in hands of a clock / watch, sun, moon, earth.

5. How things work

Electric current and circuits

Questions	How does a torch work? Do all materials allow current to flow through them?
Key Concepts	Electric current: Electric circuit (current flows only when a cell and other components are connected in an unbroken loop) Conductor, Insulator.
Resources	Torch: cell, bulb or led, wires, key. Mica, paper, rubber, plastic, wood, glass metal clip, water, pencil (graphite), etc.
Activities/Processes	Activity using a bulb, cell and key and connecting wire to show flow of current and identify closed and open circuits. Making a switch. Opening up a dry cell. Experiment to show that some objects (conductors) allow current to flow and others (insulators) do not.

Magnets

Questions	What is a magnet? Where on a magnet do things stick? How is a magnet used to find direction? How do two magnets behave when brought close to each other?
Key Concepts	Magnet. Poles of a magnet. A freely suspended magnet always aligns in a particular direction. North and South poles. Like poles repel and unlike poles attract each other.
Resources	Magnet, iron pieces. Magnet, iron pieces, iron filings, paper. Bar magnet, stand, thread, compass. Two bar magnets, thread, stand.
Activities/Processes	Demonstrating how things are attracted by a magnet. Classification of objects into magnetic/non-magnetic classes. Activity to locate poles of a magnet; activity with iron filings and paper. Activities with suspended bar magnet and with compass needle. Activities to show that like poles repel and unlike poles attract.

6. Natural Phenomena (Periods - 26)

Rain, thunder and lightning

Questions	Where does rain come from? How do clouds form?
Key Concepts	Evaporation and condensation, water in different states. Water cycle.
Resources	Everyday experience; kit items.
Activities/Processes	Condensation on outside of a glass containing cold water; activity of boiling water and condensation of steam on a spoon. Simple model of water cycle. Discussion on three states of water.

Light

Questions	Which are the things we can see through? When are shadows formed? Do you get a shadow at night – when there is no light in the room, no moonlight or other source of light? What colour is a shadow? On what kinds of surfaces can we see images?
Key Concepts	Classification of various materials in terms of transparent, translucent and opaque. A shadow is formed only when there is a source of light and an opaque material obstructs a source of light. A shadow is black irrespective of the colour of the object. Reflecting surfaces; images are different from shadows.
Resources	Previous experience, candle/torch/lamp, white paper, cardboard box, black paper. Child's own experience, candle/torch/lamp, white paper, black paper, coloured objects. Experience, objects with polished surfaces, mirror etc
Activities/Processes	Discussion, observation; looking across different materials at a source of light. Discussion; observing shadow formation of various objects of different shapes, and of same shape and different colours; playing and forming shadows with the hands in sunlight, in candle light, and in a well lit region during daytime; making a pinhole camera and observing static and moving objects. Observing differences between the image and the shadow of the same object.

7. Natural Resources

Importance of water

Questions	What will happen to soil, people, domestic animals, rivers, ponds and plants and animals if it does not rain this year? What will happen to soil, people, domestic animals, plants and animals living in rivers and ponds, if it rains heavily?
Key Concepts	Importance of water, dependence of the living on water. Droughts and floods.

Resources	Experience, newspaper reports
Activities/Processes	Estimation of water used by a family in one day, one month, one year. Difference between need and availability. Discussion. Activity: plant growth in normal, deficient and excess water conditions.

Importance of air|

Questions	Why do earthworms come out of the soil when it rains?
Key Concepts	Some animals and plants live in water; some live on land and some live in upper layers of soil; but all need air to breath/to respire.
Resources	Experience.
Activities/Processes	Discussion.

Waste

Questions	Do you throw away fruit and vegetable peels and cuttings? Can these be reused? If we dump them anywhere, will it harm the surroundings? What if we throw them in plastic bags?
Key Concepts	Waste; recycling of waste products; things that rot and things that don't. Rotting is supported by animals/animal and plant products.
Resources	Observation and experience
Activities/Processes	Survey of solid waste generation by households; estimation of waste accumulated (by a house/ village/colony etc.) in a day, in a year; discussion on 'what is waste'; Activity to show that materials rot in soil, this is affected by wrapping in plastics.