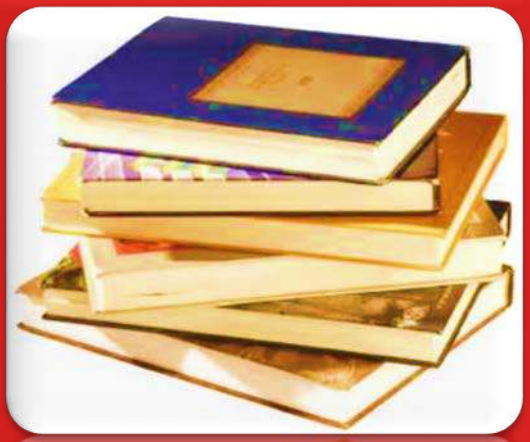
ICSE CLASS 7 SYLLABUS

ENGLISH

English



English language occupies a central place in the school curriculum because it is the medium for learning. Proficiency in the language is a pre-requisite for effective communication and knowledge acquisition. Language learning does not necessarily take place only in the language classroom. It cuts across the curriculum of different disciplines. English plays an important and integral role in the domains of education, medicine, business and international relations, judiciary, industry, etc. It is central to children's intellectual, social, and emotional growth and all round development.

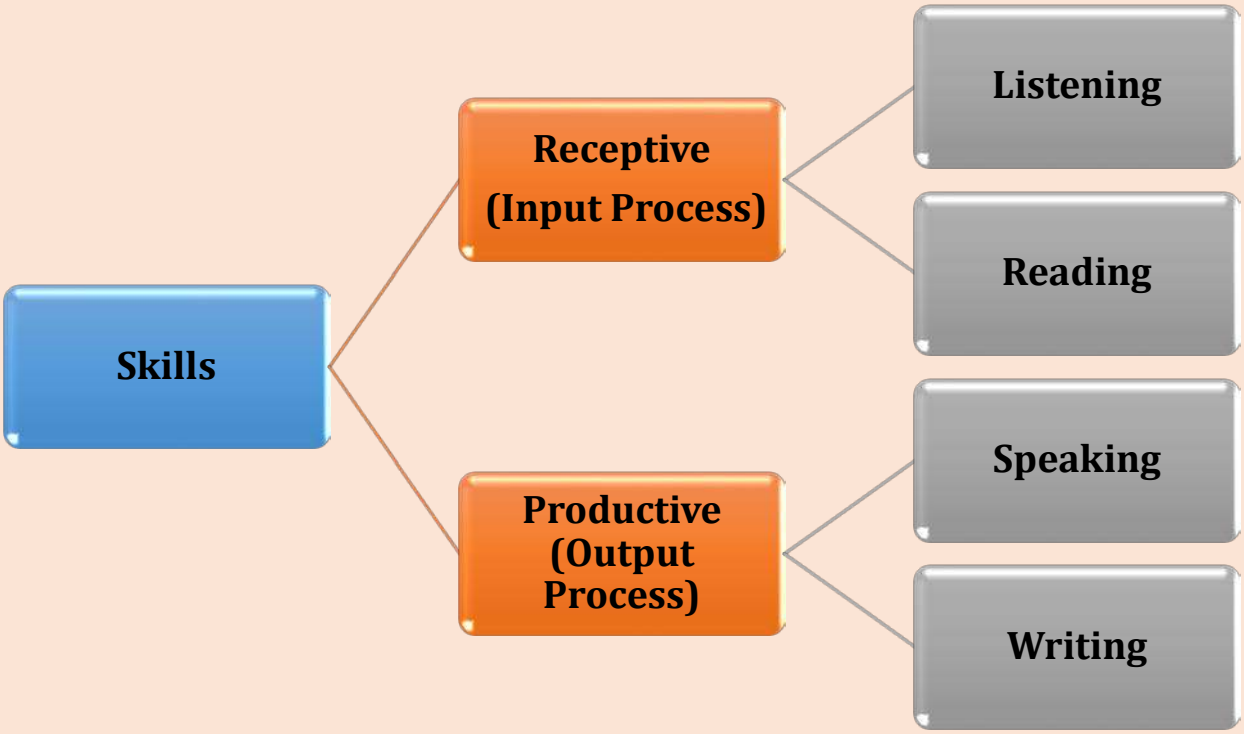
The content of the language curriculum should be broad enough to encompass the needs and interests of children. Classroom activities need to be linked to life outside the classroom. Socio-cultural contexts that encourage children to participate actively in understanding and creating appropriate communicative practices should be promoted through development of linguistic skills. English as a language should be developed progressively through meaningful experiences rather than a mere drill or rote exercise.

Children need to be able to use language to express their feelings, ideas and later to express their opinions based on extensive readings and research. As they gradually become aware of the various purposes for which language is used and the diverse forms it can take, they learn to use language appropriate to context. They also develop an awareness of how language is used in different formal and informal situations. Language is also the basis for thinking, communicating, learning and developing life skills. Children need language skills in order to comprehend ideas and information, interact socially, inquire into areas of interest and study, and express themselves clearly and fluently with confidence

Learning to communicate with clarity and precision, orally, in writing, and through a variety of media, helps children understand the world around them. Through a rich variety of literary, academic, and media related texts, children learn to read and reflect on the world around them and appreciate different worldviews and critically interpret a range of texts. Importantly, through language children can be sensitized to the physical and social environment, life skills and values.

Life skills such as communication skills, critical thinking, sharing, caring, becoming aware of the self, showing concern for others and developing sensitivity to the world around them, should be an inbuilt component of an English Classroom. It is important to nurture these life skills among children by giving them ample opportunities for experiencing such situations. Texts and tasks in the classroom need to have scope for developing the desired life skills as per the topic/theme, which may be linked across the curriculum.

Since language development refers to the skills used in expressing and communicating ideas, it involves the four basic aspects of listening, speaking, reading and writing, which would also inculcate elements of critical thinking.



At the primary level, children's process of learning gradually and progressively moves from hearing to listening, to speech to reading and finally writing. With progression of time children continue to develop and refine their skills in these aspects of language. The emphasis on the development of skills in a language class is not to be viewed as a mechanical activity devoid of life but as the cornerstone of experience, appreciation and creative expression. Feeling, expression and its application all move together, so when a child acquires proficiency in reading and writing, the door to literary appreciation and creativity is opened.

By the time they reach Class VI, children would have acquired basic proficiency in English language and hence opportunities must be provided to further hone their skills. They need to interact with social media, have diverse exposure and develop independent thinking. Their experiences need to be channelled as creative expressions in the English classroom.

The English language curriculum has been planned to develop language skills. The broad **objectives of language teaching and learning** are:

(a) To develop listening skills: Children learn to use verbal and non-verbal cues in a non-linear way to comprehend and draw inferences.

(b) To develop speaking skills: Children develop effective communicative skills and are able to engage in meaningful conversation in various situations. They engage in discussions in a logical, analytical, and creative manner.

(c) To develop reading skills: Children develop the habit of independent reading and are able to construct meaning by drawing inferences and relating the text to their previous knowledge. They also develop the confidence of reading the text critically and are able to pose questions accordingly.

(d) To develop writing skills: Children develop the confidence to express thoughts effortlessly and in an organized manner. They follow the process approach to writing that enables them to write for a variety of purposes and situations, ranging from informal to formal.

To achieve these objectives children are to be provided with an environment to facilitate language learning. This could take shape in the form of textbooks, story books, magazines, newspapers, audio/visual aids, children chosen texts etc. according to the interest, age and cognitive levels of children. All modalities like visual, auditory and kinaesthetic may be used in pedagogical processes. Care must be taken by teachers to provide support to differently abled children in the classroom transactional processes. For example, material in Braille for the sight impaired and sign language devices for hearing impaired children i.e. adopting and adapting the curriculum according to the learning abilities of children with special needs.

Though skills have been outlined and graded, textual material that are used at a school and the time spent at each level may vary. However, we urge teachers to maintain the experiential background of children and ensure the availability of materials. The curriculum provides space to teachers to use their initiative to supplement and substitute matter according to their contexts.

Guidelines for English language learning:

Content/ Themes

The language classroom is a place where contemporary concerns and issues can be included as the curriculum ranges from non-literary to literary texts, from local to global covering a wide range of areas like environmental issues, sustainable development, maintenance of resources, concern for animals and plants, human rights, etc. The selection of the materials can draw upon the following and additional themes in an integrated manner:

Self, family, home, friends, neighbourhood, environment, animals, plants, arts, culture sports, travel, tourism, mass media, science and technology, health and hygiene, peace, life skills etc.

Integrating Language Teaching with other Areas

Along with the above themes the choice of texts should also focus on myths, legends, and folktales to develop appreciation for socio-cultural and linguistic heritage. Translated texts from Indian languages and the other languages of the world may be included in classroom teaching to encourage children to experience the rich diversity of language.

(a) Guiding Principles for English language:

- Connecting learning to the outside world.
- Integrating English with other subjects across the curriculum
- Adopting multilingualism as a learning resource.
- Using contexts to develop language as a whole.
- Making assessment for learning a part of the teaching learning process.
- Ensuring an active participation of children by using a variety of activities and tasks.

(b) Suggested Generic Classroom tasks that can be included as classroom procedures (Classes VI to VIII)

LISTENING AND SPEAKING

- Circle time
- Picture/ photograph description, etc.
- Story narration
- Role play, dramatisation, mime
- Elocution/ Recitation - Singly and in a group
- Intra-class debates
- Group discussions on specified topics.
- Dramatisation of poems/ prose
- Music– to be used to teach poetry, speech and drama
- Language Games – Word building, Pictionary, dumb charades, Guess the word etc.
- Build and use a class library
- Puzzles and crosswords, Scrabble
- Project presentations (oral)
- Film and audio clips

READING AND WRITING

- Reading – Loud, Group and silent (Literature)
- Word Wall (Literature)
- Vocabulary tree
- Completing a story
- Picture composition
- Poetry writing – limerick, doggerel, haiku, cinquain, Tanka, jingle
- Poster making, slogan and caption writing
- Writing newspaper reports and travel brochures
- Writing advertisements/ posters/ notices
- Recording a process (How I taught someone to cook/ read/ cycle/ swim, etc.)
- Maintaining a diary/ journal/ log book

- Book Talk, book review (Literature)
- Film review
- Restaurant review
- Illustrations of characters from texts (Literature)
- Comprehension – Seen text (Literature) and Unseen text.
- Comprehension of poems - seen (Literature) and unseen.
- Music to be used as a stimulus for aural comprehension.
- Comprehension/ literature questions must allow scope for
  (i) inference,
  (ii) personal response. Dissenting voices must be encouraged.
- Spell Check
- Pictogram
- Word search
- Spot the differences, unscramble the scrambled words
- Mind mapping
- Word Games
- Contributions to School magazine / Newsletter / Soft boards / Newspaper

VOCABULARY AND GRAMMAR IN CONTEXT

- Grammar activities in context
- Worksheets to consolidate grammatical concepts in context.
- Use of internet as a resource

CREATIVE WRITING

It is recommended that children write 10 - 12 written assignments / tasks in an academic year.

- The stimuli could be a picture, object/s or a set of words.
- Picture compositions must be conducted at all levels. The Picture should be in colour and depict a story having a human interest appropriate to the class level. Each child should have access to the picture.
- All writing exercises must begin with a class level conversation and words arising from the discussion must be noted on the blackboard (The words may be suggested by children). This scaffolding as pre-teaching helps children undertake their written tasks independently.
- Argumentative essays to be introduced in Class VIII, on issues that the children can identify with (e.g. “School Uniforms must be abolished”, “Homework must be made compulsory”).
- Classes VI & VII to write informal letters. ***Topics for letters should be within the range of children’s experiences (example- letters to Parent, friends, relatives, neighbours etc.).***
- Formal letters to be introduced in Class VIII. ***Topics for letters should be within the range of children’s’ experiences (example- letters to Principal, Teacher, Editor, Librarian, community function, etc.).***

Listening and Speaking

Listen to different text across the curriculum, discourses (verbal & nonverbal) through various media and respond accordingly. Speak on a wide range of topics / situations both in school and outside.

Learning Outcomes:

Children will be able to:

- **listen** keenly, answer accurately and respond with appreciation to a variety of questions on a text (seen and unseen) for aural/ written comprehension;
- **participate** in group discussions taking on the role of leader, facilitator, or listener, with the ability to critique;
- **collate** ideas and seeks clarification to keep discussions relevant;
- **apply** strategies for making listening effective in the classroom;
- **record** / recollect the understanding of the flow of ideas by taking notes;
- compile information/ share ideas in texts, discussions, and uses class-level vocabulary to make a presentation;
- **display** analytical and persuasive skills through debates and discourse on contemporary issues or current affairs;
- use/ apply multi-media to make presentations on issues and social messages;
- **develop** techniques of becoming an effective speaker with the right modulation of voice, physical gestures, choice of words, informal/technical language.

Listening and Speaking

Suggested areas/Content	Suggested Transactional Processes	Suggested Learning Resources
▸ Listen to a variety of texts from different genres and registers such as story, poems, narratives, lecture, speech, dialogue etc for aural/written comprehension. ▸ Listen and comprehend issues/topics raised in spoken texts e.g. ☛ *speech* ☛ *lecture* ☛ *discourse* ☛ *debate* ☛ *discussion* ☛ *Group discussions,* ▸ Use of graphics, images, music, sound and visual displays in presentations. ▸ Analyse and evaluate use of language in different contexts (newspapers,	▸ Reviewing and building on previous learning ▸ Reading aloud/ playing audio recordings of poems, narratives, anecdotes, etc. and asking them to identify the main ideas (E.g. listen to an autobiography read aloud and create your own.) ▸ Providing issue based texts/ topics and encouraging children to have discussion on it. E.g. Child rights and privileges / Global warming ▸ Creating opportunities to lead/ facilitate group discussions etc. ▸ Creating situations that require children to identify the main ideas/ points based on text that is read out/ speech that is delivered. ▸ Providing opportunities for children to express their personal opinion/ views through activities such as role-play (assigning specific roles/ perspectives	▸ Listening to authentic themes / situations based on: ☛ *poetry, songs, stories etc.* ☛ *in contexts, (e.g. at the post office, at the railway station)* ☛ *speech, conversation, lecture.* ☛ *Group Discussion* ☛ *Role play, dramatization etc.* ☛ *Decoding difficult sounds (Pronunciation)* ▸ Use audio / video programmes (5 – 20 minutes' duration) ▸ Posters/ Models/ advertisements/ Charts etc. ▸ Articles, current affairs etc. from magazines,

Listening and Speaking

Suggested areas/Content	Suggested Transactional Processes	Suggested Learning Resources
television, billboards and advertising campaigns) and its interpretation. ▸ Speak in a variety of contexts and tasks e.g. ☛ *tone* ☛ *gestures* ☛ *stress* ☛ *facial expressions* ☛ *body language* ☛ *voice modulation* ☛ *choice of words* ▸ Collect and collate ideas and seeks clarification to keep discussions relevant. ▸ Use multi-media to make presentations on issues and social messages.	from which to approach the topic under discussion. E.g. 'Why do we need rules in school' – to be discussed from the point of view of the Principal/ teacher/ School leaders/ Students etc.). ▸ Introducing texts in different areas and focusing on developing positive attitudes, values and life skills. ▸ Encouraging children to use multi-media clips and inputs along with commentary to add depth and perspective to class presentations. ▸ Creating opportunities and situations for children to listen, respond and question/ challenge others' views in a well-reasoned/ logical and polite manner. ▸ Creating opportunities to question / challenge claims made by an author and put forward alternate views through class room discussions and debates. ▸ Ensuring children have ample opportunities to speak/debate/ express their opinions and thoughts in the class. ▸ Encouraging children to observe and emulate the body language/ intonation/ clarity etc. of effective speakers. ▸ *NOTE: The examples given above are intended merely as guidelines. The teachers are welcome to be as innovative as the classroom situation allows.* ▸ *The activities suggested above are not necessarily restricted to listening and speaking. As the language teacher is well aware, all four language skills are inter-related and often overlap.*	newspapers focusing on drug abuse, discrimination etc.

NOTE: Recitation should form an integral part of the school class-table and may be evaluated and included for Internal Assessment.

Reading

Children read, analyse and evaluate a range of texts (seen /unseen) and raise questions on pertinent issues and themes.

Learning Outcomes:

Children will be able to:

- **read, comprehend and analyse** literary/ non-literary texts, cull out salient points of what the writer states with textual evidence to support claims;
- **identify** central ideas in a text and **evaluate** the connections with less important issues dealt with in the text, collate those into an objective summary without personal opinion/judgment;
- **comment** on the choice of vocabulary/figurative language and tone/mood used in the text;
- **deconstruct** the textual piece into sections to enhance understanding of the structure used by author;
- **question** views expressed by authors and suggests an alternative argument.

Reading

Suggested areas/Content	Suggested Transactional Processes	Suggested Learning Resources
Literary/ non-literary texts on a wide range of themes covering different genres and registers. The themes may include: ☛ *Self, Family, Home, Friends and Pets* ☛ *Neighbourhood and Community at large* ☛ *The Nation – diversity (socio-cultural, religious and ethnic, as well as linguistic heritage* ☛ *Myths/legends/folktales)* ☛ *The World – India's neighbours and other countries (their cultures, literature and customs)* ☛ *Adventure and Imagination* ☛ *Sports and Yoga* ☛ *Issues relating to Adolescence (drugs, values, life skills)* ☛ *Science and Technology* ☛ *Peace and Harmony* ☛ *Travel and Tourism* ☛ *Mass Media* ☛ *Art and Culture* ☛ *Health and Reproductive health*	Reviewing and building on previous learning Introducing different types of texts such as prose, poetry, drama, travelogue, feature, autobiography, speech, article, etc. for comprehension and appreciation of different forms of literature. Providing opportunities for the learner to read, evaluate and objectively sum up the ideas expressed in the passage. Providing a range of texts to facilitate appropriate interpretation of mood / tone / use of figurative language / imagery etc. Encouraging children to raise questions based on their reading.	Activities for relating ideas of the text with their lives. Text types: Very short stories, poems and songs, texts with visuals, etc. Age appropriate magazines, newspapers, picture books, story books / tactile material etc. for reading and connect it to their own experiences. Realia / Flashcards / Posters / puppets / Charts etc. to stimulate language. Group/ pair work Build a class library

Reading		
Suggested areas/Content	**Suggested Transactional Processes**	**Suggested Learning Resources**
☛ *Famous Personalities & achievers,* ☛ *Environmental concerns – water conservation, cleanliness and sanitation, Safety –personal safety & awareness about child abuse, conservation of energy, Sustainable development* ➢ Extensive and intensive reading of the texts for comprehension, inference etc. ➢ Focus on choice of vocabulary/figurative language and tone/mood used in the text. ➢ Deconstruct the textual piece to enhance understanding of the structure used by author.		

Writing

Children develop a diverse and creative style of writing. They express themselves through stories, poems and anecdotal records, narratives, etc.

Learning Outcomes:

Children will be able to:

- **develop** different styles of writing with focus on adjusting to the task, purpose and audience;
- **analyse r**elevant ideas/ concepts; selects appropriate introductory strategies, develops logical arguments, give examples and use appropriate quotations to support arguments;
- **connect** relevant ideas and formulates appropriate conclusions;
- **focus** on the use of grade appropriate vocabulary, using precise phrases, sensory language to make the writing vivid and vibrant;
- **work** on small projects individually and in groups to provide opportunities for collaborative work and help foster greater interaction among students;
- **develop** age appropriate skills of writing on a range of disciplines;
- **apply** technology as a resource to enhance research work.

Creative writing

- **write a composition (**three or more paragraphs) of about 200 - 250 words at a more advanced level on any given topic;
- **write a short story, poem,** dialogues based on inputs provided in the class or through personal experience;
- **write narratives** that recount a well-elaborated event or short sequence of events; include details to describe actions, thoughts, and feelings;
- write notices for school, prepares posters etc.;
- **organise and structure** meaningful sentences in a sequential manner;
- **use linkers such as however, therefore etc.** to link sentences to indicate flow of ideas;
- draw from personal experiences or real life situations;
- prepare posters/ notices/ messages /informal letter/ invitation/ greetings etc.

Writing

Suggested areas/Content	Suggested Transactional Processes	Suggested Learning Resources
▸ Write messages, invitations, short paragraphs, letters (formal and informal) applications, ▸ Simple narrative and descriptive pieces, etc. ▸ Creative writing: stories, poems etc. ▸ Organize and structure thoughts in writing.	Reviewing and building on previous learning ▸ Creating situations/contexts to write letters /narratives/ first person accounts/ imaginative accounts/ e-mails/ etc. ▸ Providing rubric / checklists to revise and edit written material ▸ Discussing concepts such as rhyme, rhythm, metre, imagery, metaphors, simile etc. in a poem. ▸ Facilitating team work and	▸ Age appropriate activities / tasks/ Flashcards/ Posters/ Charts etc. to stimulate language. ▸ Newspaper/ magazines/ articles/ pictures/ advertisement etc. ▸ Group/ pair work

Writing		
Suggested areas/Content	**Suggested Transactional Processes**	**Suggested Learning Resources**
➢ Organise and structure meaningful sentences in a sequential manner. ➢ use of linkers such as however, therefore etc. to link sentences to indicate passage of time and provide a sense of closure. ➢ Age appropriate use of words and phrases ➢ Follow process approach to writing. planning, revising, reviewing editing, rewriting.	collaborative activity through assignments and projects that require children to work in groups and produce a written assignment. ➢ Providing opportunities to write on a specific topic to produce a well sequenced, cohesive piece of writing making appropriate use of linkers, grade appropriate vocabulary and register. ➢ Creating situations for children to write notices for school e.g. (informing students about debate competition, yoga classes etc.) ➢ Providing topics to prepare poster for social / global awareness. ➢ Providing Topics for the letters from the children' context such as letters to Parent, friends, family, relatives, neighbours etc.). ➢ Creating learning situations for children to be able to write greetings and invitation (e.g. inviting the Head teacher as a judge for class debate.)	

Grammar and Vocabulary in Context

Children use a varied range of vocabulary and grammar in context that reflects their complex use of language.

Learning Outcomes:

Children will be able to:

- **identify and understand** the difference between phrases and clauses in simple, compound and complex sentences;
- comprehend the difference in the function of an active and a passive voice. **demonstrate** the ability to transform from one voice to the other;
- **identify and classify synonym**, antonym and analogy in the right context;
- **demonstrate** a further understanding of figurative language, (e.g. irony, pun, personification, alliteration, metaphor, simile, assonance, onomatopoeia);
- **identify** connections/relationships; recognises literary allusions and their sources;
- **acquire** grade-appropriate words and phrases and domain-specific vocabulary to convey comprehension and clear expression;
- **use** language appropriate to context.

Grammar and Vocabulary in Context

Suggested areas/Content	Suggested Transactional Processes	Suggested Learning Resources
▸ Phrases and clauses in simple, compound and complex sentences. ▸ Active and passive voice. ▸ synonym, antonym and analogy in the right context. ▸ figurative language, (e.g. irony, pun, personification, alliteration, metaphor, simile, assonance, onomatopoeia). ▸ Age appropriate words and phrases and domain-specific vocabulary.	▸ Reviewing and building on previous learning ▸ Providing examples of grammar in context to make children understand various aspects of grammar such as phrases, clauses, active and passive voice (used in newspaper reporting/ in recording experiments in a science lab etc.) ▸ Creating activities/tasks for children to be able to use grammar in context/ identify and use figurative language (e.g. irony, pun, personification, alliteration, metaphor, simile, assonance, onomatopoeia). ▸ Providing audio visual aids and verbal clues to reinforce the use of grammar and develop language skills.	▸ Self / teacher created materials e.g. Activities on grammar in context. ▸ Audio, video, print / text / tactile form ▸ Authentic tasks and activities of short duration which would bring Vocabulary in context in an engagement with ☛ *words,* ☛ *word chunks,* ☛ *formulaic use* ☛ *collocations* ☛ *expressions in dialogue.* ☛ *Word / Languages games.* ▸ Posters/ puppets/ Charts etc. to stimulate language.

HINDI

हिंदी

परारंभिक सतर पर हिंदी भाषा अधिगम (द्वितीय भाषा)

किसी भी शिक्षा व्यवस्था में भाषा-शिक्षण का महत्वपूर्ण स्थान होता है। विभिन्न विषयों केसार्थक अधिगम के साथ-साथ बच्चोंकेसंवेगात्मक, संज्ञानात्मक और सामाजिक विकास केलिए भाषा बहुत महत्वपूर्ण होती है। भाषा की शिक्षा बच्चों में मूल्यों का विकास करती है और उनकी स्वाभाविक सृजनात्मकता एवं कल्पना का पोषण करती है। भाषा विकास से बच्चों में स्वतंत्र चिंतन, मत प्रकाशन और घटनाओं केतार्किक विश्लेषण की योग्यता उत्पन्न होती है। भाषा किसी भी बच्चे केपास, किसी भी समय पर, ज्ञान का सबसे समृद्ध स्रोत भी होती है।

भारत एक बहुभाषी देश है जिसमें बहुत-सी क्षेत्रीय भाषाएँ रची-बसी है। यूँ तो भारत की सभी भाषाएँ समान रूप से महत्वपूर्ण हैं और देश केसभी नागरिकों को उनका सम्मान करना चाहिए, किंतु हिंदी की स्थिति सर्वथा भिन्न है। हिंदी को भारतीय संविधान के अनुसार भारत संघ की राजभाषा का दर्जा दिया गया है। यही नहीं, जनसंचार केमाध्यमों समाचार पत्र, सिनेमा, प्रोद्योगिकी, रेडियो, टेलीविज़न आदि द्वारा प्रचार-प्रसार से आज हिंदी बड़ी तीव्र गति से संपर्कभाषा केरूप में विकसित हो रही है और देश की सार्वजनीन भाषा बनती जा रही है, अतः प्राथमिक स्तर पर अंग्रेज़ी भाषा या क्षेत्रीय भाषा के प्रथम भाषा केरूप में सिखाए जाने केसाथ-साथ हिंदी भाषा का द्वितीय भाषा के रूप में सिखाना महती आवश्यकता बन गया है। कक्षा एक से ही द्वितीय भाषा केरूप में हिंदी शिक्षण अधिगम प्रारंभ किया जाए ताकि पूरे भारत में परस्पर संवाद और संचार के रास्ते खुलें।

उच्च प्राथमिक स्तर पर हिंदी (द्वितीय भाषा) शिक्षण-अधिगम केउद्देश्य

उच्च प्राथमिक स्तर पर हिंदी भाषा केशिक्षण-अधिगम काक मुख्य केंद्र बिंदु भाषा की विभिन्न दक्षताओं और कौशलों के उत्तरोत्तर विकास एवं संवर्धन केसाथ-साथ बच्चों में साहित्य केप्रति रुचि उत्पन्न करना और उन्हें साहित्य केतत्वों से परिचित करना है ताकि वे एक उत्सुक और जिज्ञासु पाठक बनें और उनमें सृजनशीलता का विकास हो।

कक्षा 6 – 8

उच्च प्राथमिक स्तर पर हिंदी शिक्षण अधिगम केउद्देश्य हैं –

- दैनिक जीवन में हिंदी में समझने-बोलने के साथ-साथ लिखने / सृजनात्मकता का विकास करना।
- विभिन्न संदर्भों में प्रयुक्त होने वाली शब्दावली का विकास करना।
- बाल साहित्य, समाचार पत्र व पत्रिकाओं को पढ़कर समझ जाना और उसका आनंद उठाने की योग्यता का विकास करना।
- औपचारिक विषयों और संदर्भों में बातचीत में भाग ले पाने की क्षमता का विकास करना।

- हिंदी भाषा में अपने अनुभव संसार को लिखकर सहज अभिव्यक्ति की क्षमता विकसित करना।
- संचार के विभिन्न माध्यमों (प्रिंट और इलेक्ट्रॉनिक) में प्रयुक्त हिंदी के विभिन्न रूपों को समझने की योग्यता का विकास करना।
- कक्षा में बहुभाषिक, बहुसांस्कृतिक संदर्भों के प्रति संवेदनशील सकारात्मक सोच बनाना।
- अपनी मातृभाषा और परिवेशगत भाषा को साथ रखकर हिंदी की संरचनाओं की समझ बनाना और मौखिक तथा लिखित अभिव्यक्ति में व्याकरण सम्मत भाषा का प्रयोग करना।
- साहित्य के विविध रूपों से परिचित होना।

हिंदी भाषा के विषय / क्षेत्र

यह पाठ्य चर्या हिंदी भाषा सीखने-सिखाने के 'समग्र भाषा पद्धति' के दृष्टिकोण पर आधारित है। यह पाठ्य चर्या अनुशंसा करती है कि हिंदी शिक्षण अधिगम का दायरा इतना विस्तृत, व्यापक एवं वैविध्यपूर्ण हो कि बच्चे हिंदी के व्यापक और विविध स्वरूप के प्रति गहरी समझ बना सकें।

हिंदी शिक्षण अधिगम केवल भाषा की कक्षा तक ही सीमित नहीं होता। किसी भी विषय को सीखने का मतलब है उसकी अवधारणाओं को सीखना, उसकी शब्दावली को सीखना, उसके बारे में आलोचनात्मक ढंग से चर्चा करना और उसके बारे में लिखना। अतः हिंदी शिक्षण अधिगम एकांगी न हो अपितु अन्य पाठ्य चर्यक विषयों से सह संबंध बनाते हुए भाषा का विकास करने वाला हो। इसके लिए बच्चे भिन्न-भिन्न विषयों की पुस्तकों का अध्ययन करें।

हिंदी कक्षा में समसामयिक विषयों, मुद्दों व सरोकारों जैसे पर्यावरणीय चिंता, संसाधनों का संरक्षण, प्राणी जगत व वनस्पति जगत की सुरक्षा व संरक्षण, मानव अधिकार आदि को पाठ्यचर्या में सम्मिलित किया जाना आवश्यक है। घर-परिवार, मित्र, पड़ोसी, पर्यावरण, पशु-पक्षी, पेड़-पौधे, कलाएँ, खेल, त्योहार आदि कुछ सुझावित विषय हैं जिनसे संबंधित पठन सामग्री उपलब्ध कराई जा सकती है। पाठ्य सामग्री में हिंदी से इतर भाषाओं की हिंदी में अनूदित रचनाओं का भी समावेशन हो जिससे बच्चों को अनुवाद की दुनिया में पाँव पसारती हिंदी के स्वरूप का रसास्वादन करवाया जा सके। पाठ्य-सामग्री बच्चों के मानसिक स्तर रुचियों और अनुभवों के अनुकूल होनी आवश्यक है। इसके अतिरिक्त लोककथाएँ, काल्पनिक व पौराणिक कथाएँ, परी कथाएँ भी पाठ्य सामग्री में समाविष्ट हो ताकि बच्चे देश की सामाजिक – सांस्कृतिक व भाषिक विरासत का आनंद ले सकें।

अन्य विषयों के साथ भाषा शिक्षण का समन्वय

मूल्य और जीवन कौशल

- हिंदी शिक्षण में वे तत्व अवश्य निहित होने चाहिए जो आवश्यक मूल्यों का पूर्ण रुप से संचार करें। मूल्यों की शिक्षा किसी विषय के रूप में पढ़ाकर या उपदेश देकर नहीं दी जा सकती। बल्कि पठन सामग्री और कक्षा के क्रियाकलाप इस प्रकार नियोजित होने चाहिए कि सच्चाई, ईमानदारी, संवेदनशीलता, सहायता, सहयोग, कल्याण भावना, सेवा, कार्य ही पूजा है जैसे मूल्य निष्पादित हो सकें। उपयुक्त विषयों, कथानकों और जीवनियों पर आधारित सांस्कृतिक कार्यक्रम और नाटकों का आयोजन किया जाए। मानव जाति के साथ-साथ अन्य प्राणियों और प्रकृति की सेवा का दृष्टिकोण विकसित हो जिसके लिए सभी शिक्षकों को अपने व्यवहार से ही आदर्श प्रस्तुत करना होगा।
- शिक्षा का वास्तविक उद्देश्य बच्चों को जीवन की चुनौतियों का सामना करने के लिए तैयार करना है। इसके लिए ज़रूरी है कि शिक्षा विभिन्न जीवन कौशलों से जुड़ी हो। जीवन कौशल जैसे– समस्या निवारण, आलोचनात्मक सोच, संप्रेषण, आत्म चेतना, तनाव से विचलित न होना, निर्णय लेना और सहानुभूति आदि सफल जीवन जीने तथा एक जिम्मेदार नागरिक बनने के लिए / बहुत ही महत्वपूर्ण हैं। भाषिक खेलों, गतिविधियों और क्रिया कलापों के द्वारा बच्चों को जीवन कौशलों को विकसित करने का अवसर मिलता है।

शिक्षण अधिगम प्रक्रिया

द्वितीय भाषा के रूप में पढ़ाई जा रही हिंदी भाषा का स्तर पढ़ने और पढ़ाने दोनों ही दृष्टियों से मातृ भाषा सीखने की तुलना में कुछ धीमी गति से चलेगा। यह गति धीरे-धीरे बढ़ सके, इसके लिए शिक्षकों को धैर्यपूर्वक शिक्षण अधिगम प्रक्रिया के कार्यक्रम को नियोजित करना होगा।

- किसी भी द्वितीय भाषा में निपुणता प्राप्त करने-कराने के लिए आवश्यक है कि बच्चों की सहजात भाषिक क्षमता तथा उनके अनुभवों का भरपूर उपयोग किया जाए। बच्चों को स्वतंत्र अभिव्यक्ति के अधिक-से-अधिक अवसर दिए जाएँ। मौखिक भाषिक अभ्यास के लिए परस्पर बातचीत, कहानी सुनना- सुनाना, घटना वर्णन, चित्र वर्णन, संवाद, वाद-विवाद, अभिनय, भाषण, आशुभाषण, कविता पाठ और अंत्याक्षरी जैसी गतिविधियों का सहारा लिया जाए।
- निवेश समृद्ध संप्रेषण का वातावरण भाषा अधिगम की आवश्यक शर्त है। निवेश के अंतर्गत आते हैं – पाठ्य पुस्तकें, बच्चों द्वारा चुने गए पाठ और कक्षा पुस्तकालय जिसमें अनेक विधाओं के लिए जगह हो, मुद्रित सामग्री, मीडिया सामग्री (पत्र-पत्रिकाएँ, समाचार पत्रों के स्तंभ, रेडियो, ऑडियो कैसेट और प्रामाणिक सामग्री)।
- वृत्तचित्रों और फ़ीचर फ़िल्मों को भाषा सीखने की सामग्री के तौर पर प्रयोग करने की आवश्यकता है। इनके माध्यम से भाषा के प्रयोग की विशिष्टता की पहचान कराई जा सकती है और अलग-अलग हिंदी की छटा दिखाई जा सकती है।
- भाषा व्यवहार से सीखी जाती है। शिक्षक स्वयं शब्दकोश, साहित्यकोश और संदर्भ ग्रंथों के प्रयोग का प्रदर्शन करें। इससे बच्चे भी प्रेरित होंगे और अनुमान के आधार पर निकटतम अर्थ तक पहुँचकर ही संतुष्ट नहीं होंगे बल्कि अधिक अर्थ खोजने का प्रयास करेंगे। वे शब्दों के अर्थ में बारीक अंतरों को समझेंगे और उसी के अनुरूप अपनी भाषा में प्रयोग करेंगे।
- चुनौती पूर्ण और विशेष आवश्यकता वाले बच्चों की भाषा-शिक्षण संबंधी आवश्यकताओं को समझकर पाठ्यचर्या अनुकूलन किया जाए। सीखने-सिखाने की प्रक्रियाओं में उनकी सहभागिता को समान रूप से प्रोत्साहित किया जाए।
- कक्षा में हर प्रकार की विभिन्नताओं के प्रति सकारात्मक और संवेदनशील वातावरण निर्मित किया जाए।
- कक्षा में बच्चों द्वारा किए गए प्रयासों को सराहा जाए और उनके रचनात्मक / सृजनात्मक कार्यों को प्रदर्शित किया जाए।

थीम 1: सुनना और बोलना

बच्चे टीवी पर प्रसारित गोष्ठियों, परिचर्चा आदि को सुनकर भली-भाँति समझते हैं और उसपर अपनी बेबाक राय प्रस्तुत करते हैं। **विशिष्ट संदर्भों में प्रयुक्त विशेष शब्दावली को समझने लगते हैं और ग्रहण करते हैं**। जानकारी साझा करते हैं। अपनी बात को आत्मविश्वास से कह सकते हैं।

अधिगम उपलब्धियाँ (Learning outcomes):

- पढ़ी, सुनी या देखी बातों जैसे – सामाजिक घटनाओं, कार्यक्रमों, मुद्दों, सामाजिक सरोकारों आदि पर बेझिझक चर्चा कर सकेंगे।
- टीवी पर प्रसारित चर्चा, संगोष्ठी, सोशल मीडिया और इंटरनेट की दृश्य-श्रव्य सामग्री का अर्थ-ग्रहण कर सकेंगे। आवश्यकता अनुरूप अपनी प्रतिक्रिया प्रकट कर सकेंगे।
- रेडियो, टीवी, आदि पर सुनी देखी बातों और ख़बरों को अपनी भाषा में अभिव्यक्त कर सकेंगे।
- विविध कलाओं, जैसे – हस्तकला, वास्तुकला, नृत्य कला आदि में प्रयुक्त भाषा के शब्दों को समझ सकेंगे।
- नए शब्दों को जानने के लिए खोजबीन करेंगे।
- वक्ता के विचारों से असहमत होते हुए भी उसकी उसकी बात ध्यानपूर्वक शिष्टाचार के साथ सुन सकेंगे और उसके दृष्टिकोण को समझ सकेंगे।
- अपने विचारों को आत्मविश्वास से प्रस्तुत कर सकेंगे।
- प्रश्नों को सुनकर समझेंगे और उनके अनुरूप उत्तर दे सकेंगे।
- **विभिन्न संदर्भों में प्रयुक्त भाषा-शैली को समझते हुए उसका आनंद ले सकेंगे।**
- **साहित्यिक अंशों का सुनकर आनंद ले सकेंगे और अर्थ-ग्रहण कर सकेंगे।**
- लिंग / वचन का सही प्रयोग करते हुए अपनी बात कह सकेंगे।
- मल्टी-मीडिया (ग्राफ़िक्स, तस्वीरें, संगीत, ध्वनि आदि) का प्रयोग करते हुए दृश्य-सामग्री प्रस्तुत कर सकेंगे।
- अपनी आयु के अनुरूप विषयों पर आशुभाषण प्रस्तुत कर सकेंगे।

सुनना और बोलना

सुझावित विषय / क्षेत्र	सुझावित शिक्षण-अधिगम प्रक्रिया	सुझावित अधिगम स्रोत
▸ पाठ्य सामग्री पर आधारित विविध प्रकार के प्रश्न। ▸ सामूहिक चर्चा - विषय – ☛ *लड़का-लड़की एक समान* ☛ *मोबाइल फ़ोन* ☛ *परीक्षाएँ नहीं होनी चाहिए* ▸ अपनी कक्षा के स्तर की शब्दावली	▸ ऑडियो सुनवाएँ और प्रश्न पूछें। विविध विधाओं की भाषा सुनवाने के लिए परिस्थितियाँ / अवसर प्रदान करें और विविध कार्यक्रम करवाएँ। ▸ अतिथियों द्वारा वक्तव्य के अवसर दें, मल्टीमीडिया सामग्री सुनाकर – दिखाकर विद्यार्थियों को अपनी प्रतिक्रिया देने के अवसर दें। कक्षा में सद्य भाषण और वाक् प्रस्तुति करने के अवसर दें।	▸ आमंत्रित अतिथियों के द्वारा वक्तव्य ▸ विविध प्रकार की ऑडियो/ वीडियो सामग्री ▸ साहित्यिक लेख (अख़बार, पत्रिकाओं से)

सुनना और बोलना

सुझावित विषय / क्षेत्र	सुझावित शिक्षण-अधिगम प्रक्रिया	सुझावित अधिगम स्रोत
▸ पी०पी०टी० या वीडियो द्वारा प्रस्तुत सामग्री ▸ सूचनाएँ, जानकारियाँ ▸ विभिन्न संदर्भों, सामाजिक, सांस्कृतिक, ऐतिहासिक, राजनीतिक आदि में भाषा की समझ और विश्लेषण ▸ समाचार-पत्र, टी०वी०, विज्ञापन आदि की भाषा ▸ विभिन्न संदर्भों, जैसे – भाषण, वाद-विवाद आदि में प्रयुक्त भाषा ▸ मल्टीमीडिया का प्रयोग करते समय विभिन्न अंगों (जैसे – ग्राफ़िक्स, तस्वीरें, संगीत, ध्वनि आदि) का दृश्य सामग्री में प्रस्तुति ▸ विषय – ☛ *आदिवासी जीवन* ☛ *किसी वैज्ञानिक का जीवन* ☛ *साहित्यकार का जीवन* ☛ *किसी खिलाड़ी का जीवन*	▸ श्रुतभाव-ग्रहण के लिए अलग-अलग अभ्यास करवाने के अवसर प्रदान करें। ▸ सक्रिय और जागरूक बनाने वाली रचनाएँ, अखबार के लेख, फिल्म, ऑडियो, वीडियो सामग्री को देखने, सुनने और समझने के अवसर दें। ▸ अपने परिवेश, समय और समाज से जुड़े विषयों पर रचनाएँ उपलब्ध करवाएँ। ▸ कल्पनाशीलता और सृजनशीलता को विकसित करने वाली गतिविधियों जैसे – अभिनय, कविता – पाठ, वाक् प्रस्तुति के आयोजन करें। ▸ साहित्य और साहित्यिक तत्वों की समझ बढ़ाने के अवसर दें। ▸ मल्टीमीडिया का प्रयोग करते हुए परियोजना का कार्य करवाएँ।	▸ पुस्तकालय में प्रासंगिक और तात्कालिक/ समसामयिक पुस्तकें ▸ नेट सुविधा/ मल्टीमीडिया ▸ श्रुतभाव- ग्रहण की सामग्री / प्रपत्र

थीम 2: पढ़ना एवं लिखना (पठन एवं लेखन कौशल)

बच्चे अपनी पाठ्य-सामग्री के अतिरिक्त पत्र-पत्रिकाओं को पढ़कर स्वयं अपनी समझ बनाते हैं। **नए शब्दों के विविध अर्थ और प्रयोग जानने के लिए शब्दकोश एवं थिसारस का प्रयोग करते हैं**। कविता, कहानी, नाटक, रिपोर्ट आदि विधाओं में रचनात्मक लेखन करते हैं। लेखन में व्याकरण सम्मत भाषा का प्रयोग करते हैं।

अधिगम उपलब्धियाँ (Learning outcomes):

- पत्र-पत्रिकाओं, पुस्तकों आदि से सामग्री को पढ़कर समसामयिक संदर्भों में उसका अर्थ समझ सकेंगे।
- किसी **विशिष्ट उद्देश्य को ध्यान में रखते हुए उससे संबंधित विशेष स्थल को पहचान कर पढ़ सकेंगे**। शीर्षक एवं उपशीर्षक दे सकेंगे।
- पाठ के सार एवं विचार सारणी को ग्रहण कर सकेंगे।
- **शब्दकोश को देखकर अर्थ ढूँढ़ सकेंगे**।
- अपने विचारों से अलग पाठ्य-सामग्री के मूलभूत तथ्यों को पहचान सकेंगे।
- विभिन्न प्रकार के प्रश्नों को पढ़कर समझेंगे और उनके अनुकूल उत्तर लिख सकेंगे।
- शब्दों, मुहावरों और पदबंधों का अपने लेखन में प्रभावशाली और उपयुक्त प्रयोग कर सकेंगे।
- विद्यालय की पत्रिका के लिए कहानी, कविता, चुटकुले, लेख, रिपोर्ट आदि लिख सकेंगे।
- विभिन्न प्रिंट और डिजिटल माध्यमों से जानकारी प्राप्त करके अपने लेखन में उसका उपयोग कर सकेंगे।
- प्रभावशाली शैली, तार्किक और व्याकरण सम्मत भाषा में अपनी बात लिखकर अभिव्यक्त कर सकेंगे।

पढ़ना एवं लिखना

सुझावित विषय / क्षेत्र	सुझावित शिक्षण-अधिगम प्रक्रिया	सुझावित अधिगम स्रोत
▸ विविध प्रकार के प्रश्न ▸ पाठ्य सामग्री के केंद्रीय-भाव का अनुमान ▸ काव्य रचना की समझ और भाव-ग्रहण ▸ अपनी व्यक्तिगत राय से भिन्न पाठ्य-सामग्री के मूलभूत तथ्यों की पहचान ▸ संदर्भ के अनुरूप शब्द, मुहावरे और पदबंध ▸ पाठ्य-सामग्री को टुकड़ों में बाँटकर अपनी समझ का संवर्द्धन ▸ वास्तविक, काल्पनिक अनुभव	▸ कल्पना, अनुमान लगाने और खुले अंत वाले प्रश्नों के उत्तर लिखवाएँ और उनपर चर्चा करें। ▸ विभिन्न विधाओं जैसे – कविता, कहानी, एकांकी आदि को भावपूर्ण ढंग से पढ़वाएँ। आदर्श वाचन प्रस्तुत करें और विद्यार्थियों को ऐसे अवसर प्रदान करें जिसमें वे विभिन्न विधाओं को उपयुक्त शैली में पढ़ सकें और लिख सकें। ▸ कहानी को एकांकी में प्रस्तुत करवाएँ। ▸ वाक् प्रस्तुति करवाने के अवसर प्रदान करें। ▸ सक्रिय और जागरूक बनाने के लिए समसामयिक लेख पढ़ने को दें और उन पर अपनी प्रतिक्रिया लिखने को कहें। ▸ कल्पनाशीलता और सृजनशीलता को	▸ साहित्यिक - सामग्री के लिए पुस्तकें और पत्रिकाएँ ▸ प्रासंगिक, तात्कालिक/ समसामयिक पुस्तकें। ▸ नेटसुविधा/ मल्टीमीडिया ▸ लेखन- प्रतियोगिताएँ ▸ समाचार-पत्र

पढ़ना एवं लिखना

सुझावित विषय / क्षेत्र	सुझावित शिक्षण-अधिगम प्रक्रिया	सुझावित अधिगम स्रोत
▸ विभिन्न प्रिंट एवं डिजिटल माध्यमों से प्राप्त उपयुक्त जानकारी ▸ विभिन्न भाषा शैलियों के उदाहरण – व्यंग्यात्मक, विचारात्मक, भावात्मक आदि ▸ साहित्य की विभिन्न विधाएँ – कहानी, एकांकी, कविता, लेख, निबंध आदि का पठन एवं लेखन	विकसित करने के लिए अतिरिक्त अध्ययन के लिए प्रेरित करें। ▸ अपने परिवेश, समय और समाज से जुड़े विषयों पर रचनाएँ उपलब्ध करवाएँ और लेखन के अवसर भी दें। ▸ पुस्तकें उपलब्ध करवाएँ तथा ऐसी गतिविधियों का आयोजन करें जिसमें पढ़ने और लिखने की क्षमता का विकास हो। ▸ भाषा-खेलों का आयोजन करें। ▸ सांस्कृतिक कार्यक्रमों का आयोजन करें जिसमें संयोजक (एंकर) द्वारा प्रस्तुति, धन्यवाद ज्ञापन, अतिथि – परिचय आदि के लेखन का अवसर दें। ▸ किसी परिचित से साक्षात्कार करने के लिए प्रश्न निर्माण करवाएँ और जानकारी को दर्ज करने के लिए कहें।	

थीम 3: व्याकरण और भाषा

बच्चे भाषा की कुछ जटिल संरचनाओं को समझने लगते हैं। व्यवहार में लिखित और मौखिक अभिव्यक्ति में व्याकरण सम्मत भाषा का प्रयोग करते हैं। निबंध व पत्र के अतिरिक्त डायरी, विज्ञापन आदि भी लिखते हैं।

अधिगम उपलब्धियाँ (Learning outcomes):

- हिंदी भाषा में प्रयुक्त विभिन्न प्रकार के शब्दों को पहचान सकेंगे और अपनी भाषा में उनका प्रयोग कर सकेंगे।
- उपसर्ग - प्रत्यय का तात्पर्य समझ सकेंगे और मूल शब्दों में जोड़कर नए शब्द बना सकेंगे।
- संज्ञा के तीन भेद – व्यक्तिवाचक संज्ञा, जातिवाचक संज्ञा और भाववाचक संज्ञा को पहचान सकेंगे और भाववाचक संज्ञाओं का निर्माण कर सकेंगे।
- सर्वनाम के भेदों की पहचान और उसका सही प्रयोग कर सकेंगे। भेद – पुरुषवाचक सर्वनाम, निश्चयवाचक, अनिश्चयवाचक, प्रश्नवाचक, संबंधवाचक, निजवाचक का स्पष्टीकरण।
- विशेषण तथा विशेषण के चार भेदों - गुणवाचक विशेषण, परिमाणवाचक विशेषण, संख्यावाचक विशेषण, सार्वनामिक विशेषण पहचान सकेंगे और उसका प्रयोग कर सकेंगे। अन्य पदों से विशेषण बना सकेंगे।
- क्रिया - कर्म के आधार पर दो भेद - अकर्मक क्रिया और सकर्मक क्रिया की पहचान कर सकेंगे।
- **क्रिया विशेषण और उसके चार भेदों – रीतिवाचक क्रिया विशेषण, परिमाणवाचक क्रिया विशेषण, कालवाचक क्रिया विशेषण और स्थानवाचक क्रिया विशेषण की पहचान कर सकेंगे।**
- व्यावहारिक भाषा में लिंग और वचन का सही प्रयोग कर सकेंगे।
- काल व काल के तीन भेदों – भूतकाल, वर्तमान काल और भविष्यत् काल का समुचित प्रयोग कर सकेंगे ।
- कारक -चिह्नों को समझ कर अपनी भाषा में सही प्रयोग कर सकेंगे।
- **वाक्य भेद – अर्थ के आधार पर वाक्यों को पहचान सकेंगे। परस्पर परिवर्तन कर सकेंगे।** भेद – विधानवाचक – निषेधवाचक, प्रश्नवाचक, विस्मयादिबोधक, आज्ञावाचक, इच्छावाचक, संदेहवाचक और संकेतवाचक। वाक्य-शोधन भी करते हैं।
- (क) विराम -चिह्नों को पहचान सकेंगे और उनका सही प्रयोग कर सकेंगे।
- (ख) 'की' और 'कि' तथा 'रि' और 'ऋ' के अंतर, अनुस्वार 'र' के विभिन्न रूपों को ठीक से समझते हुए लेखन में सही प्रयोग कर सकेंगे।
- शब्द-भंडार - विलोम, पर्यायवाची, अनेक के लिए एक शब्द, समरूपी भिन्नार्थक शब्द, अनेकार्थी शब्दों का अपनी भाषा में प्रयोग करते हैं।
- मुहावरों को वाक्यों और भाषा में समझ कर प्रयुक्त कर सकेंगे।
- अपठित अनुच्छेद पढ़कर समझ सकेंगे और अपनी भाषा में संक्षिप्त उत्तर लिख सकेंगे।
- पत्र-लेखन का प्रारूप समझते हुए औपचारिक और अनौपचारिक पत्र लिख सकेंगे।
- निबंध-लेखन द्वारा अपने विचारों को अभिव्यक्त कर सकेंगे। भाषा शैली, प्रस्तुति का क्रमशः विकास हो सकेगा।
- चित्र देखकर अपनी कल्पनाशीलता और भाषा का प्रदर्शन करते हुए विभिन्न विषयों पर अभिव्यक्ति कर सकेंगे।
- विज्ञापन लेखन – छोटे-छोटे विज्ञापन बना सकेंगे।
- व्यक्तिगत अनुभवों को डायरी विधा में लिख सकेंगे।

पढ़ना एवं लिखना

सुझावित विषय / क्षेत्र	सुझावित शिक्षण-अधिगम प्रक्रिया	सुझावित अधिगम स्रोत
▸ वर्ण विचार ▸ भाषा विचार ▸ शब्द विचार – उपसर्ग – प्रत्यय ▸ संज्ञा, लिंग, वचन, कारक, सर्वनाम, विशेषण, क्रिया, काल तथा उनके भेद ▸ वाक्य भेद – अर्थ के आधार पर ▸ विराम चिह्न ▸ 'की' और 'कि', 'रि' और 'ऋ' का अंतर ▸ शब्द भंडार – विलोम, पर्यायवाची, अनेक के लिए एक शब्द, समरूपी भिन्नार्थक शब्द, अनेकार्थी शब्द ▸ सामान्य मुहावरे ▸ रोचक अपठित गद्यांश / पद्यांश (स्तारानुकूल) ▸ पत्र लेखन – औपचारिक और अनौपचारिक पत्र ▸ निबंध लेखन (150 से 180 शब्दों में) ▸ विज्ञापन लेखन ▸ डायरी लेखन	▸ स्वरों और व्यंजनों के अंतर को स्पष्ट करें। अब 'ऑ' हिंदी के स्वर के रूप में मान्य है, जानकारी दें। डॉक्टर, कॉलेज, बॉल आदि उदाहरणों से स्पष्ट करें। इ, उ और अ की मात्रा के प्रयोग पर ध्यान दिलाएँ – रू और रु, रूप, ज़रूरत, रुपया, रुकना, रुचि आदि उदाहरणों से समझाएँ। सयुंक्त व्यंजन के रूपों को बताएँ – क्ष, त्र, ज्ञ, श्र। ▸ मौखिक रूप पहले आया, क्यों ? आदि पर चर्चा करें। दोनों रूपों को स्पष्ट करें। ▸ तत्सम – तद्भव रूप को समझाएँ। नवीन सोच की ओर भी संकेत किया जा सकता है कि 'तत्सम' शब्द वे हैं जो किसी अन्य भाषा से ज्यों के त्यों ले लिए गए हैं, जैसे – अग्नि, अस्थि, मॉल, रॉकेट, कॉलेज, इडली, ज़रूरत आदि। 'तद्भव' वे हैं जिन्हें हिंदी भाषा के अनुरूप ढाल लिया गया है, जैसे – दूध, हाथ, त्रासदी, अलबम आदि। ▸ पाठ के शब्दों का चयन कर संज्ञा भेदों को बताएँ। उदाहरण – पेड़ – जातिवाचक संज्ञा, आगरा – व्यक्तिवाचक संज्ञा, सौंदर्य – भाववाचक संज्ञा। भाववाचक संज्ञा निर्माण – ऊँचा से ऊँचाई। ▸ पाठ्य – सामग्री से सर्वनाम छाँटकर उनके भेदों को पहचानने के लिए कहें। ▸ सर्वनाम के भेदों की पहचान और उनके सही रूप का प्रयोग करने का अभ्यास करवाएँ। (भेद – पुरुषवाचक सर्वनाम, निश्चयवाचक, अनिश्चयवाचक, प्रश्नवाचक, संबंधवाचक, निजवाचक)। ▸ जब सन्दर्भ के साथ यह, वह, इन्हें, उन्हें, उसे आदि का प्रयोग हो तब तो निश्चयवाचक सर्वनाम मान सकते हैं। जब संदर्भ न हों तब सर्वनाम पुरुषवाचक भी हो सकता है और निश्चयवाचक भी, इसका निर्णय कैसे लें ? इसे	▸ कार्य पत्र ▸ कार्य पत्र ▸ कार्य पत्र (कुछ तत्सम और तदभव शब्दों की सूची) ▸ शब्द-परिवार के लिए कार्यपत्रक या भाषा-खेल ▸ डाकखाना भ्रमण, पोस्ट कार्ड, अंतर्देशीय पत्र, लिफ़ाफ़ा, ▸ सुन्दर चित्र ▸ विज्ञापनों के नमूने पत्र पत्रिकाओं से ▸ डायरी लेखन की कुछ पुस्तकें o अनौपचारिक पत्र अपना पता तिथि संबोधन विषय वस्तु _____ _____ अपना नाम

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	इस प्रकार समझा जा सकता है कि यदि व्यक्ति के लिए यह, वह का प्रयोग हुआ है तब तो वह पुरुषवाचक सर्वनाम होगा और वस्तु, घटना आदि के लिए आया है तो निश्चयवाचक सर्वनाम होगा। इससे समस्या का काफ़ी हद तक समाधान हो जाएगा। जैसे – ☛ **उसे** समझा दो / **वह** वहाँ खड़ी है/ **यह** तो यहाँ ही बैठी है। इन वाक्यों में उसे, वह, यह व्यक्तियों के लिए आया है यह विभिन्न क्रियाओं से स्पष्ट है। इन्हें पुरुषवाचक माना जाएगा। ☛ **यह** यहाँ रख दो। **वह** वहीं पड़ा रहने दो। **उसे** उठा लाओ। इन वाक्यों में यह, वह, उसे वस्तुओं के लिए ही प्रयुक्त हुआ है अतः इन्हें निश्चयवाचक मानना चाहिए। ☛ कुछ अन्य वाक्य देखिए– ☛ **उन्हें** भी बुला लो / **उन्हें** रखा रहने दो / **उन्हें** रहने दो - पहले वाक्य में 'उन्हें 'व्यक्तियों के लिए ही प्रयुक्त हुआ है जबकि दूसरे वाक्य में वस्तुओं के लिए और तीसरे में व्यक्ति भी हो सकते हैं और वस्तु भी। ऐसी स्थिति में दोनों संभव है। संदर्भ ज्ञात हो तो उसी के अनुरूप भेद किया जा सकता है अन्यथा दोनों भेद माने जा सकते हैं। ➢ पाठ्य-सामग्री से विशेषण छाँटकर अभ्यास करवाएँ। सार्वनामिक विशेषण को समझना आवश्यक है। ☛ **यह** घर साफ़ है और **वह** कितना गंदा। इस वाक्य में 'यह' घर की विशेषता बता रहा है इसलिए सार्वनामिक विशेषण है और 'वह' घर के लिए आया है इसीलिए सर्वनाम है। ☛ सर्वनाम और सार्वनामिक विशेषण दोनों रूप रचना के स्तर पर समान होते हैं केवल वाक्य प्रयोग के स्तर दोनों में अंतर होता है। जो शब्द संज्ञा के स्थान पर प्रयुक्त होते हैं वे सर्वनाम होते हैं लेकिन जब कोई सर्वनाम किसी संज्ञा (विशेष्य) के साथ लगकर संज्ञा	○ औपचारिक पत्र अपना पता तिथि जिसके लिए है उसका पद पता विषय संबोधन विषय वस्तु _____ _____ भवदीय अपना नाम दिनांक..... स्थान..... समय

पढ़ना एवं लिखना

सुझावित विषय / क्षेत्र	सुझावित शिक्षण-अधिगम प्रक्रिया	सुझावित अधिगम स्रोत
	की विशेषता बताता है तो सार्वनामिक विशेषण होता है। जैसे - **कुछ** बच्चे पौधे रोप रहे हैं, **उस** लड़की को बुलाओ। ▸ विशेषण बनवाएँ, जैसे – सुगंध – सुगंधित, कौन – कैसा, गर्मी – गर्म। ▸ क्रिया-कर्म के आधार पर दो भेद - अकर्मक और सकर्मक की पहचान करवाएँ। प्रायः कर्म के साथ सकर्मक क्रिया आती है। उदाहरणों द्वारा स्पष्ट करें। इस स्तर पर मिश्रित, संयुक्त और प्रेरणार्थक क्रियाओं के उदाहरणों से बचा जाए तो बेहतर है। ▸ उपसर्ग-प्रत्यय को स्पष्ट करें। यह शब्दांश होते हैं। भाषा की छोटी इकाई जिसका कोई अर्थ नहीं होता लेकिन शब्द में जोड़ कर नए अर्थ प्रदान करती है, शब्दांश कहलाती है। उपसर्ग शब्द के पूर्व जुड़ते हैं और प्रत्यय शब्द के बाद। जैसे - सु + पुत्री, वि + भाग, अ + कारण, सुंदर + ता, विज्ञान + इक, खट्टा + ई। एक ही शब्द में उपसर्ग प्रत्यय दोनों लिख सकते हैं और एक से अधिक उपसर्ग – प्रत्यय भी हो सकते हैं, जैसे – निस्वार्थी = निः+ स्व + अर्थ + ई; तैराकी = तैर + आक + ई। ▸ क्रिया विशेषण के भेदों की पहचान के लिए क्रिया के साथ कैसे, कितना, कब और कहाँ लगाकर स्पष्ट किया जा सकता है। पाठ्य पुस्तक से उदाहरण छँटवाकर अभ्यास करवाया जा सकता है। ▸ लिंग और वचन का अभ्यास करवाएँ। हिंदी में निर्जीव वस्तुओं के लिए भी स्त्रीलिंग या पुल्लिंग निर्धारित होता है और कभी-कभी मातृभाषा से प्रभावित होकर लिंग भेद देखा जा सकता है जैसे पंजाब में ट्रक **आती** है जबकि हिंदी क्षेत्र में ट्रक **आता** है। इसका संकेत किया जा सकता है और प्रयोग विद्यार्थी पर छोड़ा जा सकता है। परीक्षा में ऐसे अपवादों को पूछने से बचना चाहिए। प्रयोग के आधार पर अभ्यास	

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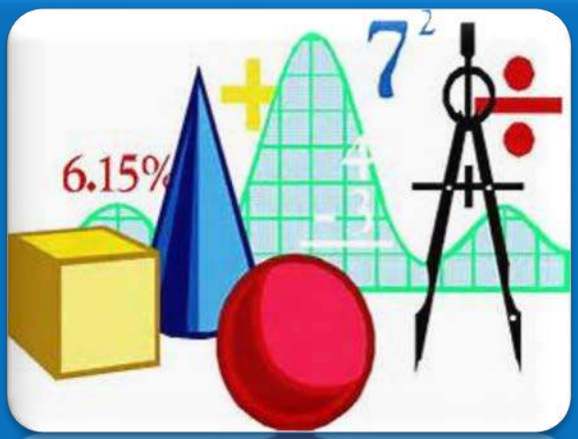
	करवाया जाए। वचन को भी स्पष्ट करें। कभी-कभी शब्द के रूप में एकवचन और बहुवचन समान होते हैं लेकिन प्रयोग या क्रिया आदि से एकवचन या बहुवचन का निर्धारण होता है, जैसे – फूल **लगा** है। फूल **लगे** हैं। इन वाक्यों में 'फूल' का रूप दोनों वाक्यों में समान है जबकि पहले वाक्य में एकवचन है जबकि दूसरे में बहुवचन। इसका पता क्रिया से लगा। इस प्रकार के उदाहरण देकर स्पष्ट करें। कार्यपत्रों के माध्यम से अभ्यास करवाएँ। ▸ नित्य पुल्लिंग / स्त्रीलिंग या नित्य एकवचन / बहुवचन विद्यार्थी की जिज्ञासा को संतुष्ट करने के लिए ही स्पष्ट करना बेहतर होगा। ▸ काल के तीन भेद– भूतकाल, वर्तमान काल, भविष्यत् काल का अभ्यास करवाएँ। परस्पर परिवर्तन का अभ्यास करवाएँ। मैं लिखती थी। मैं लिखती हूँ। मैं लिखूँगी। रोचक कार्यपत्रों द्वारा पहचान करवाएँ। ▸ कारकों के भेद प्रयोग द्वारा स्पष्ट करें। सामान्य कारक-चिह्नों के प्रयोग का अभ्यास करवाएँ। ▸ अर्थ के आधार पर वाक्य-भेद की पहचान करवाएँ। परस्पर रूपांतरण करने पर अर्थ भी बदल जाता है, अतः इसका रूपांतरण अपेक्षित नहीं है, फिर भी कहीं-कहीं दिया जाता है अतः अर्थ बदलेगा – इसे समझाएँ। जैसे – वह सुंदर है। (विधानवाचक) ☛ इसका निषेधवाचक होगा – वह सुंदर नहीं है। ☛ न कि वह असुंदर नहीं है। ▸ विराम चिह्नों का प्रयोग करवाएँ। पूर्ण-विराम, प्रश्न चिह्न, अल्पविराम, उद्धरण चिह्न, कोष्ठक, विस्मयादिबोधक, योजक चिह्नों का प्रयोग स्थल बताएँ और अभ्यास करवाएँ। ▸ विद्यार्थियों द्वारा अनजाने में की गई 'की' और 'कि', 'रि' और 'ऋ' की अशुद्धियों की ओर ध्यान दिलवाएँ।	

पढ़ना एवं लिखना

सुझावित विषय / क्षेत्र	सुझावित शिक्षण-अधिगम प्रक्रिया	सुझावित अधिगम स्रोत
	▸ शब्द भंडार – विलोम, पर्यायवाची, अनेक शब्दों के लिए एक शब्द, समरूपी भिन्नार्थक शब्द और अनेकार्थी शब्दों का प्रयोग करवाएँ। पाठ्य-सामग्री से ऐसे शब्दों को चुनने का अभ्यास करवाएँ। (स्तर को ध्यान में रखते हुए प्रति सत्र 15-20 शब्दों की सूची देकर भी अभ्यास करवाया जा सकता है। सूची की सीमा के कारण विद्यार्थी तैयारी अच्छी कर पाते हैं। छठी की सूची सातवीं में जोड़ कर पूछें और आठवीं में छठी, सातवीं जोड़कर)। ▸ पाठ्य-सामग्री में आए मुहावरों का अपने वाक्यों में प्रयोग करवाएँ। रचनात्मक लेखन में उसका प्रयोग करने के लिए प्रेरित करें। ▸ रोचक अपठित गद्यांश और काव्यांश देकर प्रश्न अभ्यास करवाएँ । सामग्री को स्वयं समझकर उत्तर देने की क्षमता विकसित करें। ▸ पत्र लेखन – औपचारिक और अनौपचारिक पत्रों के प्रारूप को स्पष्ट करें। यह भी स्पष्ट करें कि पता, तिथि, विषय, संबोधन और समाप्ति की आवश्यकता क्यों है? भाषा शैली पर विशेष ध्यान दिलवाएँ। अति संक्षेप या अनावश्यक विस्तार से बचने की प्रेरणा दें। ▸ निबंध लेखन के लिए विद्यार्थियों को उनके स्तर के अनुकूल समसामयिक, उनसे संबद्ध और रोचक विषय दें। निबंध का प्रारंभ, मुख्य विषय-वस्तु और उपसंहार को स्पष्ट करें। यह निबंध वर्णनात्मक, कल्पनात्मक आदि हो सकते हैं। ▸ विज्ञापन लेखन – विभिन्न उत्पादों पर छोटे छोटे विज्ञापन लिखने का अभ्यास करवाएँ। ▸ डायरी लेखन – विशेष दिवस / अवसर / घटनाओं पर डायरी लिखवाई जा सकती है। उसका प्रारूप भी स्पष्ट करना उचित होगा।	

MATHEMATICS

Mathematics



Mathematics is one of the most important subjects which is used in daily life and other branches of knowledge. George Polya, a Hungarian Mathematician, describes two kinds of aims for school mathematics: '*A narrow aim, that of turning out employable adults who (eventually) contribute to social and economic development; and A higher aim, that of developing the inner resources of the growing child with regard to school mathematics*'.

The narrow aim specifically relates to numeracy and is taken care at beginning of learning mathematics i.e. elementary schools. The Primary school curriculum focuses on teaching of numbers and operations on them, measurement of quantities, fractions, percentages and ratios: all these are important for numeracy.

The higher aim focuses on developing a child's inner resources, in which the role that mathematics plays is mostly about thinking. Development of inner resources also means equipping children to evolve their own ways of solving problems and generating better algorithms. Clarity of thought and pursuing assumptions to logical conclusions is central to the mathematical enterprise. There are many ways of thinking, and the kind of thinking one learns in mathematics is an ability to handle abstractions.

More importantly, what mathematics offers is a way of doing things: to be able to solve mathematical problems, and more generally, to have the right attitude towards problem solving and to be able to deal with all kinds of problems in a systematic manner.

Problems in teaching and learning of mathematics

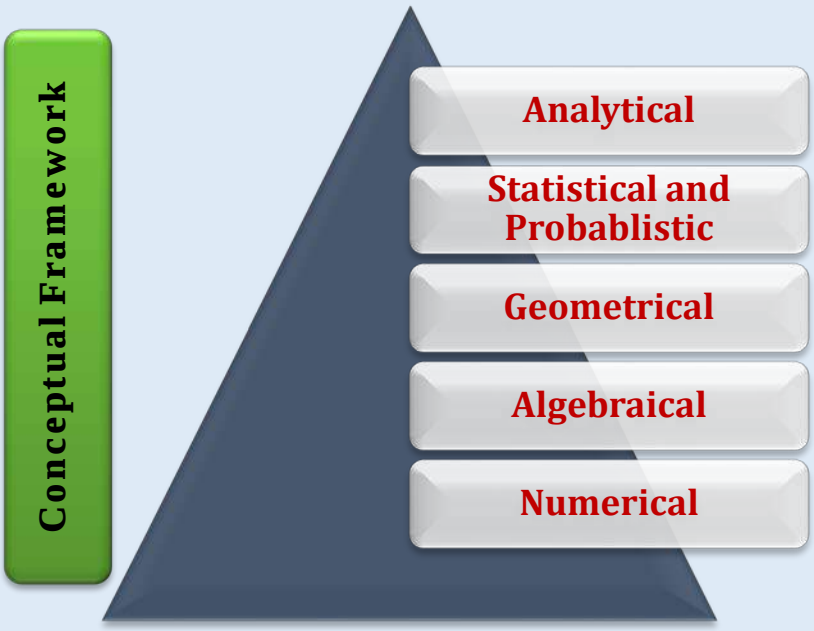
Various researches have highlighted upon some problems that hamper learning of mathematics in schools. The following four problems have been identified to be in the fore front and are the core areas of concern for teachers and practitioners:

1. Most of the children do not find mathematics learning joyful therefore fear mathematics.
2. Curriculum is disappointing for talented minority as well as the non-participating majority in the class i.e not catering to learning needs.
3. Assessment encourages perception of mathematics as mechanical computation and reproduction of learnt facts and algorithms, and
4. Pre service and in- service teacher education and support in the teaching of mathematics is totally inadequate.

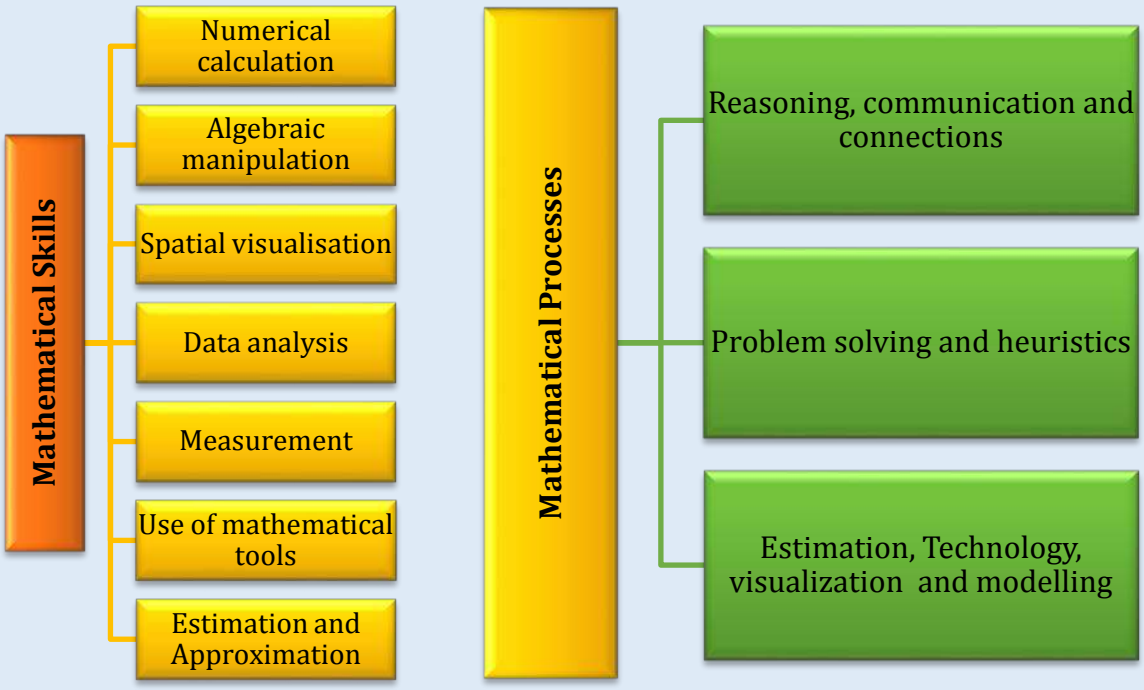
These issues are required to be addressed through the curriculum as and wherever possible. These also need to be expanded on, since they concern the curriculum in essential ways. Concerted efforts therefore, are required to improve learning of mathematics in schools. Major reforms are suggested right from the early to terminal school classes.

Keeping in view the present dismal picture of mathematics learning in schools, it is envisioned that the school mathematics should be such that children:

- enjoy learning of mathematics.
- learn importance of mathematics that is much more than a few formulas and mechanical procedures of solving problems. Understanding when and how a mathematical technique is to be used is always more important than recalling the technique from memory (which may easily be done using a book), and the school needs to create such understanding.
- see mathematics as something to talk about, to communicate, to discuss among themselves, to work together on. Making mathematics a part of children's life experience is the best mathematics education possible.
- pose and solve meaningful problems.
- use abstractions to perceive relationships, to see structure, to reason about things, to argue the truth or falsity of statements.
- understand the basic structure of mathematics: Arithmetic, algebra, geometry and trigonometry, the basic content areas of school mathematics, all offer a methodology for abstraction, structuration and generalization.
- are expected to be engaged by teacher in class.



The present Mathematics curriculum at the upper primary level aims to develop a number of mathematical skills and processes among children in Classes VI-VIII as presented in the diagram below:



Mathematics at Upper Primary Stage

Mathematics is amazingly compressible: one may struggle a lot, work out something, perhaps by trying many methods, but once it is understood, and seen as a whole, it can be filed away, and used to move forward when needed. The insight that goes into this compression is one of the great joys of mathematics. A major goal of the upper primary stage is to introduce the child to this particular pleasure.

The compressed form lends itself to application and use in a variety of contexts. Thus, mathematics at this stage can address many problems from everyday life and offer tools for addressing them and using it for solving problems. Indeed, the transition from mostly the concrete presentation of mathematics to its exact abstract form and arithmetic to algebra, at once is both challenging and rewarding and is best if seen in this light.

Major Themes

The major themes that will be covered at the Upper Primary stage are highlighted below:

Arithmetic and Algebra

A consolidation of basic concepts and skills learnt in arithmetic in classes at the primary level is necessary from several points of view. Firstly, for ensuring numeracy in all children which is an important aspect of Universalization of Elementary Education(UEE). Secondly, moving from number sense to number patterns, seeing relationships between numbers and looking for patterns in the relationships develops useful life skills in children. Ideas of prime numbers, odd and even numbers and tests of divisibility etc. offer scope for such exploration.

Algebraic notation, introduced at the upper primary stage, is best seen as a compact language, a means of succinct expression. Use of variables, setting up and solving linear equations, identities and factoring are means by which students gain fluency in using the new language. The set theory and its notations need to be introduced here as an important tool to represent most of the mathematics.

The use of arithmetic and algebra in solving daily life problems can be emphasized. However, engaging children's interest and offering a sense of success in solving such problems is essential.

Shape, space and Measures

A variety of regular shapes are introduced to children at this stage: triangles, circles, quadrilaterals, etc. They offer a rich new mathematical experience in at least four ways. Children start looking for such shapes in nature, all around them, and thereby discover many symmetries and acquire a sense of aesthetics. Secondly, they understand how many seemingly irregular shapes can be approximated by regular ones, which becomes an important technique in science. Thirdly, they start comprehending the idea of space: for instance, that a circle is a path or boundary which separates the space inside the circle from that outside it. Fourthly, they start associating numbers with shapes, like area, perimeter etc., and this technique of quantization, or arithmetization, is of great importance. This also suggests that mensuration is best when integrated with geometry. An informal introduction to geometry is possible using a range of activities like paper folding and dissection, and exploring ideas of symmetry and transformation. Observing geometrical properties and inferring geometrical truth is the main objective here. Formal proofs will be dealt with at a later stage.

Visual learning

Data handling, representation and visualization are important mathematical skills which are taught at this stage. They are of immense use as "life skills". Students can learn to appreciate how railway time tables, directories and calendars organize information compactly. Data handling should be suitably introduced as tools to understand process, represent and interpret day-to-day data. Use of graphical representations of data should be encouraged. Formal techniques for drawing linear graphs can be taught. Visual Learning fosters understanding, organization, and imagination. Instead of emphasizing on two-column proofs, students should also be given opportunities to justify their own conclusions with less formal, but nonetheless convincing, arguments. Students' spatial reasoning and visualization skills should be enhanced. The study of geometry should make full use of all available technology. A child when given visual scope to learning remembers pictures, diagrams, flowcharts, formulas, and procedures.

Mathematics and Mathematicians

At all stages of the curriculum, an element of humanizing the curriculum is essential. The development of mathematics has many interesting stories to be told, and every student's daily life includes many experiences relevant to mathematics. Bringing these stories and accounts into the curriculum is essential for children to see mathematics in perspective. Lives of mathematicians and stories of mathematical insights are not only endearing; they can also be inspiring.

Mathematics has been an important part of Indian history and culture, and students can be greatly inspired by understanding the seminal contributions made by Indian mathematicians in early periods of history. Similarly, contributions by women mathematicians from all over the world are worth highlighting. This is important, mainly to break the prevalent myth that mathematics has been an essentially male domain, and also to invite more girls to the mathematical enterprise.

Thus specific emphasis should be given on highlighting the contribution of Indian mathematicians. An appreciation of such contributions will help students see the place of mathematics in our culture.

The discussion on the above aspects and having a clear understanding is essential for every teacher. The curriculum should focus on discussion that will lead to enhancement in pedagogical content knowledge and teaching strategies that conform to the constructivist approach of teaching as emphasised in the National Curriculum Framework- 2005.

Curricular Expectations

- Moves from number sense to number patterns.
- See relationships between numbers and look for patterns in relationships.
- Gain proficiency in using newer language of mathematics like, variables, expressions, equations, identities, etc.
- Use arithmetic and algebra to solve real life problems and pose meaningful problems.
- Discover symmetries and acquire sense of aesthetics by looking around regular shapes like triangles, circles, quadrilaterals, etc.
- Comprehend the idea of space as region enclosed with in boundaries of a shape.
- Relate numbers with shapes in terms of perimeter, area and volume and uses them to solve everyday life problems.
- Provide reasoning and convincing arguments to justify their own conclusions particularly in mathematics.
- Collect, represent (graphically and in tables) and interprets data/information from her/his life experiences.
- Handle abstraction in mathematics.

Theme 1: Number System

In this theme the rules developed by children for addition and subtraction of integers will be extended to the formation of rules for their multiplication and division by using patterns and generalization.
Another important type of number called rational number will also be introduced in this class. This exposure will develop children's understanding about various kinds of numbers as a system and a structure. At this stage a relationship will also be established between fractions and rational numbers for which children will extend the rules used for performing operations on fractions to integers. This is also the time when children will be enabled to understand that fractions are not only representing part of a whole but also a number that operates on quantities. Extension of fractions and rational numbers is further done to decimal fractions. Once children understand that decimal notation of numbers is another convenient way of writing fractions with denominator as 10, 100, 1000 etc, they will be able to form rules for operating decimal fractions too. Children's exploration on properties of natural numbers through a play way method will help in learning exponential form of numbers, divisibility rules, LCM and HCF. The learning of Sets and their types and use in daily life is further extended in this class.

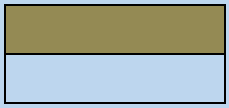
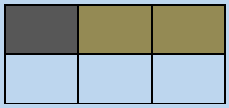
Learning Outcomes:

Children will be able to:

- multiply integers by using patterns and generalize the rules to multiply a positive integer by a negative integer, a negative integer by a positive integer and two negative integers;
- divide integers by using patterns and forms rules to perform division in integers;
- get a feel of necessity of rational numbers (through representation on number line);
- perform operations on rational numbers (addition, subtraction, multiplication and division);
- solve daily life problems involving rational numbers (all operations);
- observe patterns in multiplication tables and forms divisibility rules;
- understand and use fraction as an operator;
- find reciprocal of a fraction;
- multiply fractions by using patterns/paper folding/pictures and form general rules;
- divide fractions by using patterns/visualization/picture and forms rules;
- solve word problems involving mixed fractions and operations on them;
- represent rational number as a decimal and vice-versa;
- multiplication and division of decimal fractions;
- use exponential form and their rules to solve problems related to repeated multiplication;
- revise idea of sets;
- define equal, equivalent, and universal sets;
- find and use cardinality of finite sets.

Number System

Key Concepts	Suggested Transactional Processes	Suggested Learning Resources
• Multiplication and division of integers • Properties of operations on integers: Commutativity, associativity, existence of identity and inverse and distributivity • Problem solving using operations on integers • Solution of word problems involving integers (all operations) • Introduction to rational numbers (with representation on number line) • Word problems on rational numbers (all operations) • Decimal representation of rational numbers • Problem solving using operations on rational numbers and decimal fractions • Fraction as an operator • Reciprocal of a fraction • Multiplication and division of decimal fractions • Exponents only natural numbers. • Laws of exponents (through observing patterns to arrive at generalisation.) • Application of laws of exponents in simple daily life problems • Revision idea of sets • Equal, equivalent, universal sets • Cardinal property of sets	• Revising previous concepts learnt by children. • Building on children's previous learning. • Involving children in discussion to find their own ways of multiplying integers using their understanding about the rules for multiplication and division of whole numbers • Providing enough time to children to use patterns in multiplying a negative integer by another integer as this may be a new idea. Up till now they have learnt that multiplication is repeated addition or an operator in case of fractions. Sufficient time should be given to children to appreciate why the product of two negative integers is positive. • Encouraging children to explore and use the concept of dividing a natural number by another by simply finding the number which when multiplies the divisor gives the dividend as product. So to find -4÷ -2 we have to find the number which on multiplication with -2 gives the result -4. Many children will be able to infer that the required number must be +2. Many such examples will help the child to make their own rule like +ve ÷ -ve = -ve, -ve ÷+ve= -ve and –ve÷-ve=+ve. • Involving children in classification of numbers on the basis of their properties like even, odd, multiples and factors. These numbers can be used to classify numbers in to various categories • Introducing divisibility rules using patterns, and then different division problems could be discussed to show their use. For example, let children form multiplication tables of different numbers like 2, 3, 4, etc. and then from the multiplication facts ask them to identify the pattern like multiple of 3 has sum of its digits divisible by 3,	• Shapes used in daily life (*for demonstrating number system, algebra, geometry mensuration and data handling)* • Geoboard with rubber bands (*for demonstrating various shapes and Charts*) • Brief life history of mathematicians with their contributions at elementary level. • Maths Kit

Number System		
Key Concepts	**Suggested Transactional Processes**	**Suggested Learning Resources**
	multiple of 5 has either 5 or zero in its one's place etc. • Utilising children's knowledge about describing multiplication of fractions as operator 'of" and explain by paper folding, shading parts of whole etc. for example $\frac{1}{2} \times \frac{1}{3}$ is one-third of one-half which can be shown as:   The double shaded region is one-sixth of the whole which shows that $\frac{1}{2} \times \frac{1}{3} = \frac{1}{6}$. • Solving of sums by children and observing the pattern that in all cases the product of fractions can be obtained by multiplying their numerators and their denominators • Providing opportunities to children to observe and find through pictures that $\frac{1}{2} \div \frac{1}{4}$ means the number of one-fourths in one-half. Simple visualization is required to find that one-half contains two one-fourths. Let children observe the patterns and find their own ways of dividing a fraction by another fraction • Conducting discussion with children to observe and generalise that to divide a fraction by another fraction (non-zero) can be done by multiplying the dividend by reciprocal of the divisor. • Involving children in exploring their own ways of writing repeated multiplication in a short form as repeated addition is represented by multiplication. With discussion let the children reach the conclusion of writing repeated multiplication in exponent form.	

Life Skills: Solving daily life problems

Theme 2: Ratio and Proportion

This theme will focus on developing children's ability to solve higher problems on the use of ratio and proportion in daily life in this class. Children are enabled to use ratio, proportion and their properties appropriately in problem solving. The idea of percentage, unitary method, simple interest, time, work and speed are also introduced through simple daily life problems. Children will appreciate that this is the part of mathematics that they can use the most in their daily lives.

Learning Outcomes:

Children will be able to:

- recall ratio and proportion done in early classes;
- solve problems using unitary method (getting feel of how formulae for calculation of simple interest and understand percentage as a fraction with denominator 100;
- re write fractions and decimals into percentage and vice-versa;
- solve problems related to profit and loss (single transaction only);
- apply simple interest (time period in complete years) in daily life situations;
- solve problems related to speed, distance and time.

Ratio and Proportion

Key Concepts	Suggested Transactional Processes	Suggested Learning Resources
▸ Ratio and proportion (revision) ▸ Unitary method continued, consolidation, general expression for unitary method ▸ Percentage- an introduction. ▸ Understanding percentage as a fraction with denominator 100 ▸ Converting fractions and decimals into percentage and vice-versa. ▸ Application to profit and loss (single transaction only) ▸ Application to simple interest (time period in complete years). ▸ Speed, distance, time	▸ Revising previous concepts learnt by children. ▸ Building on children's previous learning. ▸ Children know about many ways of comparing quantity. Utilise their experiences to conclude that ratio is another way of comparing quantities. Percentages and their applications are also in child's daily life experiences which can be used to form various formulae and solving problems using them.	▸ Maths Kit

Life Skills: Solving daily life problems

Theme 3: Algebra

Children in class VI were exposed to and were enabled to understand that algebra is an extension and generalization of arithmetic. Letters for numbers are to be seen as a compact language to express situations in expressions. The basic idea of various terminologies that form the language to learn algebra is also to be communicated to children in a gradual manner. Children should get a feel that algebra is just extension of numbers and quantities. They should also gain fluency in mathematical language through operations on algebraic expressions and solving linear equations.

Learning Outcomes:

Children will be able to:

- identify terms related to algebra like constants, variable, terms, coefficient of terms, like and unlike terms etc.;
- generate algebraic expressions involving one or two variables/unknowns;
- add and subtract algebraic expressions;
- express situations in simple linear equations and find solution of related problems;
- find solution to simple inequalities (< or >) in one variable.

Algebra

Key Concepts	Suggested Transactional Processes	Suggested Learning Resources
▸ Terms related to algebra like constants, variable, terms, coefficient of terms, like and unlike terms, etc. ▸ Generate algebraic expressions ▸ Performs operations (addition and subtraction) on algebraic expressions with integral coefficients only ▸ Simple linear equations in one variable (in contextual problems) with two operations. ▸ Inequalities and solution of simple inequalities in one variable	▸ Revising previous concepts learnt by children. ▸ Building on children's previous learning. ▸ Use child's context and encourage them to generate algebraic expressions by proper choice of variable/unknown and operations. ▸ Child's daily life experiences like adding/subtracting a group of 2 notebooks and 5 pencils to/from another group of 3 notebooks and 8 pencils etc. Let children form their own rule that like terms can only be added or subtracted. ▸ Involve children in groups of three or four to explore situations which can be expressed by simple equations and solve them. Textbooks have many such examples.	▸ Notebooks, pencils, pens, etc. ▸ Textbooks

Skills: pursuing assumptions to logical conclusions

Theme 4: Geometry

Children in this class will be enabled to perceive relationships between properties of figures. The children will develop the ability to give the minimum number of properties, eliminating redundancies and formulate meaningful definitions and understand inclusion relationships such as every square is a special type of rectangle, but not every rectangle is a square. Note that if a student is requiring to "know a definition" before attaining this level, it will be a memorized definition with little meaning to the student. Their concept definition is likely not to match their concept image.

Learning Outcomes:

Children will be able to:

- identify pairs of angles like linear, supplementary, complementary, adjacent and vertically opposite and find one when the other is given;
- hypothesize the relationship between pairs of angles out of eight angles formed by a transversal with two parallel lines;
- verify angle sum and other properties of triangles and use these properties to find unknown elements of a triangle;
- appreciate the rotational symmetry of various shapes and figures;
- read simple maps and construct own maps like home to school, map of her village, house etc.;
- establish congruence criterion for triangles and circles;
- construct simple triangles when three out of six elements are given (like three sides, two sides and included angle, a side and two angles etc.).

Geometry

Key Concepts	Suggested Transactional Processes	Suggested Learning Resources
Understanding shapes: ☛ Pairs of angles (linear, supplementary, complementary, adjacent, vertically opposite) ☛ Properties of parallel lines with transversal (alternate, corresponding, interior, exterior angles) **Properties of triangles:** ☛ Angle sum property ☛ Exterior angle property ☛ Pythagoras Theorem (Verification only)	Revising previous concepts learnt by children. Building on children's previous learning Using diagrams to help children in visualizing the relationship between various pairs of angles when a transversal cuts two lines (parallel and non-parallel), angles of triangle and relationship among its sides. Involve children in experimentation with measurement of sides of right angled triangles and recognition of pattern to hypothesize the Pythagorean relation. Conducting activities with children that are given in textbooks (paper folding and observing diagrams) and encouraging them to visualize symmetry and criterion for rotational symmetry of various shapes.	Maths Kit Geoboard with rubber band Geometry box

Geometry		
Key Concepts	**Suggested Transactional Processes**	**Suggested Learning Resources**
Symmetry ☛ Recalling reflection symmetry ☛ Idea of rotational symmetry, observations of rotational symmetry of 2-D objects. (90^0, 120^0, 180^0) **Representing 3-D in 2-D:** ☛ Identification and counting of vertices, edges, faces, nets (for cubes cuboids, and cylinders, cones). ☛ Mapping the space around approximately through visual estimation. **Congruence** ☛ Congruence through superimposition ☛ Extend congruence to simple geometrical shapes e.g. triangles, circles. ☛ Criteria of congruence **Construction** ☛ Construction of a line parallel to a given line from a point outside it ☛ Construction of simple triangles.	Assigning group work to children with traced copies of various shapes and superimposing one above the other help them in establishing congruence criterion. Adopting exploration, problem-solving and hands-on experiences with children, to engage in discussions and activities with them that address many of the dimensions of geometry (spatial relationships, properties of geometric figures, constructions, geometric modelling, geometric transformations, coordinate geometry, the geometry of measurement, informal geometric reasoning, and geometric connections to the physical world). Teachers will explore two- and three-dimensional shapes, paper folding and origami, tessellations and geometric designs, and the use of other manipulatives to develop geometric understanding. Through these activities, it is anticipated that teachers will develop new techniques that are sure to enhance student achievement in their classroom.	

Skill: Identify, visualise and quantify measures of shapes and objects

Theme 5: Mensuration

This theme will focus on developing children's understanding and ability on measurement of area, volume and capacity. This begins with children finding rules/ forming formulae for standard figures like cube, cuboid, cylinder etc. The major focus will be on finding the area of 2-D shapes and surface area of 3-D shapes. It is also expected that children will be able to learn to write measurement in smaller and larger units with conversion.

Learning Outcomes:

Children will be able to:

- measure approximate area of simple regular and irregular closed shapes by using unit square grid sheet;
- form formulae to find area of the region enclosed in a rectangle and a square as a better way of counting the number of unit squares that fill them completely.

Mensuration

Key Concepts	Suggested Transactional Processes	Suggested Learning Resources
▸ Revision of perimeter and Idea of Circumference of Circle ▸ Area ☛ Concept of measurement using a basic unit area of a square, rectangle, triangle, parallelogram and circle, rings and combined figures.	▸ Revising previous concepts learnt by children. ▸ Building on children's previous learning ▸ Involving children in activities targeted to measurement of region enclosed by closed figures on a plan surface and encouraging them to come to the conclusion that a unit is required. ▸ Conducting activities related to measuring units squares within a figure drawn on a square grid and to compare the various regions.	▸ Maths Kit

Theme 6: Data Handling

Finding a representative value for a given set of observations called data is a necessary requirement in most of the daily life situations, like one number for heights of the children in a class, number of children in a class when numbers of total children in all classes of the school is known etc. This theme aims at developing children's understanding about the meaning and use of averages like mean, median and mode of simple data not having more than 15 observations. They will also be able to represent data as bar graphs and interpret them.

Learning Outcomes:

Children will be able to:

- find various representative values (Mean, Median and mode) for simple data from her daily life;
- represent data by simple bar graphs and interpret them.

Data Handling

Key Concepts	Suggested Transactional Processes	Suggested Learning Resources
▸ Collection and organisation of data – choosing the data to collect for a hypothesis testing ▸ Mean, median and mode of ungrouped data – understanding what they represent ▸ Constructing and interpreting bar graphs ▸ Feel of probability using data through experiments. Notion of chance in events like tossing coins, dice etc. Tabulating and counting occurrences of 1 through 6 in a number of throws. Comparing the observation with that for a coin. Observing strings of throws, notion of randomness.	▸ Revising previous concepts learnt by children. ▸ Building on children's previous learning ▸ Utilizing children's daily life experiences and contextual problems to test hypothesis by collection and organization of data. Situations like finding a representative value to data help in understanding the idea of finding mean, median and mode of ungrouped data. Staring with small sets of numbers will be easier to visualize and represent it by bar graphs. ▸ Involving children in drawing inferences for future events from the existing data	▸ Maths Kit

Integration: Arts Education

Life Skills: Understanding and interpreting data, drawing inferences

HISTORY, CIVICS
&
GEOGRAPHY

History, Civics and Geography (HCG)

The curriculum of History, Civics and Geography has been developed with an objective to make children understand the working of the world around them. This particular area of study equips the children with the knowledge and understanding of the past, which is necessary for coping with the present and planning for the future. The curricular area of Civics makes them aware of the socio-political life, whereas Geography connects them directly to their environment. The area of History will help them understand how their present has evolved from centuries of development.

The focus of this area of the curriculum is to help children acquire and develop the ability to make interconnections between processes and events; between developments in the past and the present; and between one curricular area to another. Learning opportunities have been provided to help children understand how geographical conditions of a place have affected the socio-political life of the people.

Objectives of teaching History, Civics and Geography

To enable children to:

- learn about the past by creating a sense of historical diversity;
- understand time lines and historical maps;
- compare the developments of one region in relation to other parts of the world;
- become aware of national perspectives with that of global ones in the process of development;
- creating a strong a sense of human values, namely freedom, trust, mutual respect and respect of diversity;
- make connections between political, social and economic issues and recognize the ways in which politics affects their daily lives.
- imbibe the values of the Indian Constitution and their significance in everyday life.
- understand about the earth as the habitat of humans and other forms of life.
- become familiar with one's own region and realise the interdependence of various regions (local to global).
- understand the normative dimensions like issues of equality, justice and dignity in society and polity.

Skills	Learning Outcomes
Observing and reporting: Observing, exploring, comparing, analysing, discussing and reporting, expressing, drawing conclusions and reflecting in behaviour.	
Discussion and debate: Brainstorming expressing, discussing good and bad effects, listening and appreciating varied opinions, synthesising ideas and information.	
Analysing and critical thinking: Defining situations/events, identifying and predicting possible causes, analysing results and consequences, comparing and drawing results.	
Questioning and reasoning*:* Demonstrating curiosity, logical understanding of facts, raising critical questions.	
Communication*:* Listening, expressing, articulating thoughts and ideas, writing.	
Classification: Identifying similarities and dissimilarities, sorting/grouping with reasoning and understanding.	
Interpersonal and Intrapersonal skills*:* Motivation from the great personalities and their lives, helping, cooperating and working as a team.	
Appreciation*:* Showing respect towards other people's opinions, ideas, beliefs and ways of life.	
Understanding: The responsibility towards institution, society and environment, adaptation by humans to changing circumstances, the role of invention and discoveries of past in the present-day world, value and importance of national festivals.	
Concern for justice and equality*:* Sensitivity towards the marginalised, less privileged, people with disability, gender sensitivity and care and concern for environment.	
Map and globe skills*:* Understanding concept of direction, using signs, symbols and keys, interpreting maps of various types.	
Charts and graphs skills: Collecting systematically and recording data, presenting it in the form of bar graphs, pie charts, diagrams, analysing and interpreting it.	
Time skills: Sequencing events, observing a calendar and marking important dates on it, constructing timelines and marking important dates on it, marking and understanding AD and BC on it, understanding time zones.	
Citizenship skills: Identifying rights and duties of citizens, appreciating the cultural aspects of various religions, languages, regional and ethnic groups, recognising and accepting equality of all human beings, irrespective of gender, caste and creed.	
Critical thinking and problem solving: Sound reasoning, making complex choices and decisions, understanding interconnections among systems, framing, analysing and synthesizing information.	
Collaboration: Demonstrating ability to work effectively with diverse teams, exercising flexibility and willingness to be helpful in making necessary compromises to accomplish a common goal, assuming shared responsibility for collaborative work.	
Information literacy: Accessing information efficiently and effectively, evaluating information accurately and creatively. Processing a fundamental understanding of the ethical and legal issues regarding access and use of information.	
Media and ICT literacy: Understanding the construction of media messages, interpretation of messages, influence of media on views beliefs and behaviour, fundamental understanding of ethical and legal issues related to access and use of information.	
Flexibility and adaptability: Adopting varied roles and responsibilities, working effectively in a climate of ambiguity and changing priorities.	
Initiative and self-direction: Utilizing time effectively, updating skills, defining and prioritizing tasks, demonstrating initiatives, demonstrating commitment towards work.	
Social and Cross-Cultural Skills: Working appropriately and productively with others, leveraging the collective intelligence of groups, bridging cultural differences.	
Leadership and Responsibility*:* Using interpersonal and problem skills, leveraging strengths of others to accomplish a common goal, demonstrating integrity and ethical behaviour, acting responsibly with the interests of the larger community in mind.	

History and Civics

The present curriculum in History and Civics should be comprehended critically so that children understand and participate effectively in their world and use critical moral and mental energy against social forces that threaten democratic values and respect for diversity in their country. The curriculum areas in History provide an understanding of those aspects of past which are crucial to understand present day global world. Interesting pedagogies will help children grow as responsible civic citizens in a secular democracy.

Core concepts of History and Civics for Classes VI-VIII are as under:

Class VI

The Ancient World

The River Valley Civilizations

The Vedic Civilization

Mahavira & Buddha – Great Preachers

Rise of Kingdoms & Republicans

The Mauryan Empire

The Golden Age – Gupta Empire

Civics

The Rural Local Self Government

Urban Local Self Government

Class VII

The Medieval World

Medieval Europe – Rise and Spread of Christianity

Rise and Spread of Islam

The Delhi Sultanate

The Vijayanagar and Bahamani Kingdoms

The Mughal Empire

Making of Composite Culture

Civics

The Constitution of India

Directive Principles of State Policy

Class VIII

The Modern World

A Period of Transition

The Growth of Nationalism

India in the 18th Century

Traders to Rulers

British Policies and Impacts

The Great Uprising of 1857

Socio-Religious Reforms

India's Struggle for Freedom

Civics

The Three main organs of the Indian Government: Legislature, Executive, Judiciary

United Nations

The Medieval World

Theme 1: Medieval Europe – Rise and Spread of Christianity

'Medieval Europe – Rise and Spread of Christianity' aims at exposing and providing children information to be able to understand the transition of Europe from the Ancient Roman Empire to the Medieval Byzantium Empire. The rise and spread of Christianity will broaden their perspectives on beliefs across the globe.

Learning outcomes:

Children will be able to:

- trace the origin and spread of Christianity;
- reflect on the basic principles and teachings of Christianity;
- identify similarities in the good teachings of the various forms of Religion;
- discuss and analyse the relevance of Christ's teachings in the present-day context;
- analyse the relationship between the decline of the Roman empire and the spread of Christianity;
- study the impact of crusades in Europe;
- analyse the influence of the church on the life of the people in Europe.

Medieval Europe – Rise and Spread of Christianity

Key Concepts / Concerns	Suggested Transactional Processes	Suggested Learning Resources
▸ Meaning of the term 'Medieval', tracing the beginning of the Medieval period in the world and India on the basis of evidences. ▸ Socio / political circumstances. ▸ Birth of Christianity. ▸ Roman conquest of Palestine. ▸ Birth of Jesus in Bethlehem. ▸ Main Teachings of Jesus. ▸ Jesus's opposition with Jewish leaders. ▸ Crucifixion of Jesus. ▸ Role of Emperor Constantine in spreading Christianity. ▸ Emergence of Constantinople as a new Christian Capital.	▸ **Mind mapping** of the European society during the medieval period and the circumstances that led to the rise of Christianity. ▸ **Organising** discussions with children on: ☛ sharing their previous knowledge (if any) about Christianity. ☛ appreciating the good teachings that various religions offer. ☛ constructing a time line on the rise and spread of the Roman Empire. ☛ analysing the reasons and impact of the Barbarian and Byzantium invasions. ☛ explaining the meaning and the impact of the crusades. ▸ **Showing** Audio Visuals on: ☛ practices in Christianity – Crusades and Sacred journeys. ☛ suggested film – Greatest Story ever told as a movie experience. ☛ related videos on the medieval society- the three orders, Barbarian	▸ Related films, videos and documentaries. ▸ Role play ▸ Mind mapping ▸ Flowcharts ▸ Quizzes ▸ Children's illustrated Bible and Encyclopaedia. ▸ PPTs. ▸ Heritage walks – to a Church ▸ Outline map of the world ▸ Newspapers clippings and articles.

Medieval Europe – Rise and Spread of Christianity

Key Concepts / Concerns	Suggested Transactional Processes	Suggested Learning Resources
Medieval Europe. ▸ Decline of the Ancient Roman Empire. ▸ Barbarian Invasions by Goths, Vandals and Franks; its impact on Europe. ▸ Byzantium: birth of a new empire. ▸ Emergence of the Turks and the Crusades. ▸ Monasteries and their impact.	invasions and crusades followed by discussions. ▸ **Enactment** of scenes by children from the life of Jesus Christ through role plays / skits. ▸ **Organising** a visit to a church and discussing what was seen. ▸ **Conducting** activities related to: ☛ celebrating Christmas in School. ☛ organising 'a day of Selfless Service' in school. ☛ designing web charts and flow charts (individually and in groups) on the rise and spread of Christianity. ☛ class presentations on the common features of different religions. ☛ Flow chart of chronology of events ▸ **Creating** an imaginary role of a monk or a nun living in a monastery during the medieval period – writing an account of his/her daily routine. ▸ **Showing** on an outline map of the world, the routes taken by the crusaders and marking the countries in which Christianity is the official religion.	

Theme 2: Rise and Spread of Islam

The theme 'Rise and Spread of Islam' aims at enabling the children to understand a major turning point in the history of mankind with the emergence of a new faith that spread across many continents and affected the politics, life and culture of many places. The theme will generate an awareness and provide the children with an insight into the conditions and processes that led to the rise and spread of Islam. The Pedagogies will help the children to appreciate the 'welfare of mankind' as the basis of all religions.

Learning outcomes:

Children will be able to:

- trace the emergence and spread of Islam in Saudi Arabia;
- discuss the basic principles and teachings of Islam;
- report on observations related to some other beliefs and practices;
- appreciate a humanitarian approach as the basis of all religions.

Rise and Spread of Islam

Key Concepts / Concerns	Suggested Transactional Processes	Suggested Learning Resources
▸ Pre-Islamic times - conditions in Saudi Arabia ▸ Birth of Prophet Mohammad ▸ Early life teachings and five basic principles of Islam ▸ Migration of Prophet Mohammad to Medina- Hizrat ▸ Prophet Mohammad's return to Mecca (Mecca and Medina – the two holy places for Muslims) ▸ Death of Prophet Mohammad and the beginning of the Caliphate ▸ Spread of Islam ▸ The Abbasid and Umayyad Dynasties	▸ **Organising discussions on:** ☛ the socio-political conditions responsible for the rise and spread of Islam. ☛ appreciating the similarities in the basic teachings and principles of all the religions. ☛ inculcating a sense of compassion, empathy and welfare among humans that forms the basis of all religions. ▸ **Showing** documentaries on - the cities of Mecca and Medina, Haj, Eid celebrations. This may be followed by discussions. ▸ **Narrating** / reading stories from "illustrated Quran Stories', followed by discussions. ▸ **Undertaking** a visit / trip to a Mosque. ▸ **Conducting** activities: ☛ celebrating the festival of Eid in school. ☛ making a project (by children) on the holy cities of Mecca and Medina, and the celebration of Ramzan and Eid. ☛ Writing a report on the month of Ramzan explaining the significance of this special month; describing the main events of Eid-ul-Fitr.	▸ Documentary on "Sacred Journeys – Haj' ▸ Mosque ▸ Timeline ▸ Mind mapping ▸ Films and documentaries. ▸ Subject-related videos and PPTs ▸ Books, magazines and encyclopaedias ▸ Flash cards – Pillars of Islam – Words, Symbols and actions

Theme 3: The Delhi Sultanate

'The Delhi Sultanate' will provide children with an insight of the period and enable them to understand the rule of the Sultanate period in Delhi, their capital, administration, achievements and socio-cultural developments. Interesting pedagogy will motivate children to discuss, explore, compare and analyse the information on this period and relate it to present day life. It will help children to understand how the past has helped in shaping the present.

Learning outcomes:

Children will be able to:

- discuss the emergence of Delhi as a seat of power;
- name the five dynasties that ruled Delhi;
- analyse the influence and impact of notable rulers on the Sultanate;
- evaluate the key features of the different dynasties of the Delhi Sultanate;
- draw out a comparative analysis between the policies of the different dynasties;
- evaluate the reasons for the decline of the Delhi Sultanate.

The Delhi Sultanate

Key Concepts / Concerns	Suggested Transactional Processes	Suggested Learning Resources
▸ The Turkish invasions ▸ The rule of the five dynasties of Delhi Sultanate ▸ Time line exercise, (expansion of empire, administration, significance of court, nobility and land control). ▸ A case study of the Tughlaqs ▸ A comparative study between the Tughlaqs and the Khaljis. ▸ Art and architecture, socio-cultural development during this period	▸ **Organising** discussions with children on: ☛ interpreting the meaning of "Sultanate". ☛ analysing the reasons and the impact of invasions. ☛ familiarising with the capital, administration, achievements and court rooms of Sultans ☛ reflecting on the art, architecture and poetry of this period. ▸ **Organising** a time-line and a mind-mapping exercise on the spread of Islam in different parts of the World. ▸ **Showing** Audio visuals on: ☛ the Impact of the Sultanate period ☛ the invasions of Mahmud of Ghazini and his plunder of temples. ☛ "Bharat ek Khoj'. ☛ the Episodes on the rulers of Delhi Sultanate. ▸ **Organising** Heritage walks and interaction with guides – or walk coordinators ▸ **Encouraging** children to prepare a power point presentation on the architectural development of this period.	▸ Charts, Maps ▸ Flowchart ▸ Related Videos, films, documentaries and slide shows. ▸ Written expression ▸ Books, Comics, Encyclopaedias and plays (Tughlaq). ▸ Illustrations made by learners. ▸ Bulletin Board. ▸ Puppets. ▸ Coins, Costumes – images or actual. ▸ Museums.

The Delhi Sultanate

Key Concepts / Concerns	Suggested Transactional Processes	Suggested Learning Resources
	▷ **Making** a Flow chart activity on Sultans of Delhi ▷ **Enactment/ role plays/skits** on: ☛ the failed experiments of Muhammad bin Tughlaq. ☛ an actual transfer of Class to comprehend Muhammad bin Tughlaq's transfer of capital. ☛ creating a simulation of markets in the Khilji dynasty and designing market policies. ▷ **Organizing** a debate on the views of historians on Muhammad bin Tughlaq (wisest fool/way ahead of his time) ▷ **Written assignments** may include: ☛ designing a Delhi Sultanate Newspaper ☛ creating a royal officials account in Ghiyasuddin Balban's Court – Giving an account of their observations of the usual day to day proceedings in the Royal court. ☛ comparative study between the Tughlaqs and the Khaljis ☛ timeline exercise on the Sultans of Delhi. ▷ **Conducting** Activities relating to: ☛ narrating events based on the Delhi Sultanate. ☛ preparing flannel boards (Basic scene of Delhi Court, with different rulers as characters as the background) that has the teacher narrating the sequence of events. ☛ reading excerpts from the play "Tughlaq" by Girish Karnad ☛ designing a class bulletin board on the Monuments of the Delhi Sultanate. ☛ writing a historian's account of any one of the policies introduced in the Delhi Sultanate and the impact it caused. ▷ **Organising** visits to Historical buildings, monuments and Museum related to the period of the Delhi Sultanate, followed by discussions.	

Theme 4: The Vijayanagar and Bahamani Kingdoms

'The Vijayanagar and Bahamani Kingdoms' theme deals with two of the most prominent kingdoms that existed in South India. Decline and disintegration of the Tughlaq Empire paved the way for the rise of these two Kingdoms. Interesting pedagogies will help children to appreciate the development of art and architecture of the Vijayanagar and the Bahamani Kingdoms. This understanding is critical for our children to feel proud of the rich cultural heritage of our country.

Learning outcomes:

Children will be able to:

- identify the location of the kingdoms;
- assess the reasons for the emergence of the Vijayanagar and the Bahamani Kingdoms;
- understand and discuss the major achievements of the Kingdoms;
- appreciate the architectural legacy left behind.

The Vijayanagar and Bahamani Kingdoms

Key Concepts / Concerns	Suggested Transactional Processes	Suggested Learning Resources
▸ Disintegration of Tughlaq empire – causes ▸ Rise of the Vijayanagar and the Bahamani Kingdoms ▸ Case study of Krishandeva Raya ▸ Mahamud Gawan – the founder of Bahamani Kingdom ▸ Achievements, Administration, Art and Architecture – special mention of Hampi and Gol Gumbaz	▸ **Organising** discussions on: ☛ Explaining the reasons for the rise of the prominent kingdoms of the South. ☛ Encouraging children to share stories of Krishnadeva Raya. ☛ Depicting the extent of the kingdoms of Vijayanagar and Bahamani and discussing the achievements of various kings. ▸ **Showing films/documentaries** on: ☛ The Architectural marvels of the Vijayanagar and the Bahamani Kingdoms/ ☛ Hampi followed by discussions. ▸ **Enactment /role play** of stories from Tenali Raman ▸ **Written** work could include: ☛ A comparative study of life and conditions of people during the rule of the Vijayanagar Kings and the Bahamani Kings. ☛ Tracing the location of the Vijayanagar and Bahamani Kingdoms on an outline map of India. ▸ **Organising** a visit to Hampi / a museum and encouraging children to share their experiences by writing a report.	▸ Learners' experiences ▸ Audio – Visual aids; Videos, films, Power Point presentations ▸ Books and Encyclopaedia

Theme 5: The Mughal Empire

The theme will expose children to the Mughal Empire and enable them to understand why and how it became the most important Empire of the later period of Medieval Indian History. The Empire stretched over a vast area of the Indian subcontinent and had a rich diversity of people and cultures. The children will also be able to appreciate the Mughal Art and Architecture which form a part of the rich heritage of India.

Learning outcomes:

Children will be able to:

- trace the emergence of the Mughal dynasty in India;
- identify the factors that led to the conquest of India by Babur;
- analyse the achievements and failures of Mughal emperors;
- discuss the impact of Sher Shah Suri on the Mughal empire;
- discuss and appreciate the administration, foreign policy, relation with regional kings and Din-e-Illahi of Akbar;
- discuss Jahangir and Shah Jahan as the patrons of art and architecture;
- evaluate the influence of the legacy this period left behind;
- examine the rise of regional powers posing a threat to the Mughal empire.

The Mughal Empire

Key Concepts / Concerns	Suggested Transactional Processes	Suggested Learning Resources
▸ An overview of the Mughal Empire. ▸ The first battle of Panipat and establishment of Mughal Empire. ▸ Babur and Humayun ▸ Sher Shah Suri – The great administrator. ▸ A case study of Akbar and his times. (relation with other rulers, administration, revenue system, religious policy). ▸ Jahangir and Nur Jahan. ▸ Jahangir's and Shah Jahan's patronage of architecture. ▸ Aurangzeb and his Deccan policy. ▸ Decline of the Mughal Empire	▸ **Organising** discussions on: ☛ the origin of the Mughals. ☛ difference in the origins of the Mughals and the rulers of the Delhi Sultanate. ☛ analysing the reasons for the defeat of Ibrahim Lodi in the first battle of Panipat and the establishment of the Mughal Empire. ☛ the main features of administration of Sher Shah Suri and evaluating the same. ☛ tracing the patterns of political developments and military conquests of the Mughal Emperors. ☛ Akbar's policy towards Indian rulers with special reference to the Rajputs and his Din-E-Illahi ☛ The political developments and military conquests during the times of Akbar, Jahangir, Shah Jahan and Aurangzeb. ☛ role of Jahangir and Shah Jahan as patrons of art and architecture. ☛ the varied types of monumental architecture, wide range of materials, skills and styles used and resources required for building these monuments	▸ Flannel Board ▸ Interactions ▸ Interaction with guests ▸ Pictures of Mughal era. ▸ Videos and films. ▸ Illustrations made by children ▸ Visits and trips ▸ Games designed by children. ▸ Books and encyclopaedia's ▸ Creating a Mughal newspaper ▸ Organising art festivals, Mughal festivals. ▸ Pictorial depictions ▸ Diary recording ▸ Quizzes. ▸ Web chart, flow charts

The Mughal Empire		
Key Concepts / Concerns	**Suggested Transactional Processes**	**Suggested Learning Resources**
	▷ **Audio Visual** shows on: ☛ the Mughal rulers and their achievements ▷ **Narrating** stories of this period through printed / published material that is age appropriate. ▷ **Enactment/ Role Plays** by children on: ☛ a simulation of Diwan-i-aam, where the class resolves their conflict on different issues. ☛ Akbar - Birbal stories. ☛ any one ruler of the Mughal dynasty – Babur, Humayun, Akbar, Jahangir, Shah Jahan, Aurangzeb ☛ Ad- acting on the rich legacy of the Mughal era – art, culture, language, jewellery, dresses, and many more. ▷ **Conducting** activities based on: ☛ integrating Mughal art in art classes (miniature paintings) ☛ organising art festivals for exploration of the variety of Mughal art. ☛ creating a class bulletin board – elect and create 'Hall of fame'. ☛ interaction with artists who specialise in contemporary Mughal art. ☛ organising heritage walks/visits to sites of historical significance- Agra, Delhi, etc. ☛ visit to a museum. ☛ organising a 'Mughal festival" that showcases the rich art, culture, dress, and cuisine based on that era. ▷ **Written assignments** may include: ☛ launching a Newspaper based on events of the Mughal era. ☛ devising Web charts and flow charts ☛ assembling a 'Recipe book of Mughal Cuisine. ▷ **Creating** a Newspaper Ad- Games inviting membership to Designing Board Games Din – I - Illahi. ☛ achievement of rulers. ☛ a diary recording of Shah Jahan's plight when imprisoned in the Agra Fort.	

Integration: Arts Education

Theme 6: Making of Composite Culture

'Making of Composite Culture' will enable children to understand and appreciate the legacy of the Bhakti and Sufi movements that have evolved in India since the eighth century. The period after the thirteenth saw a strong wave of the Bhakti movement when Islam, Brahmanical Hinduism, Sufism and many other different strands of Bhakti influenced one another. The teachings of Bhakti and Sufi saints will develop and inculcate a sense of humanity among children. The Pedagogy used will help them to appreciate common features of all religions for the welfare of mankind.

Learning outcomes:

Children will be able to:

- analyse and appreciate the ideas of Bhakti and Sufi saints;
- discuss their influence on making of a composite culture;
- compare and list the similarities in ideas of the Bhakti and Sufi saints;
- list the similarities and dissimilarities between the Alwars and the Nayanars;
- appreciate and narrate the contribution of the Bhakti and Sufi saints.

Making of Composite Culture

Key Concepts / Concerns	Suggested Transactional Processes	Suggested Learning Resources
▸ Bhakti and Sufi Movements (Causes, significant features, role of saints). ▸ Teachings of Kabir, Guru Nanak Dev, Shankara, Jananeswara. ▸ Alwars and Nayanars. ▸ Sufi saints and their teachings. ▸ Impacts on society	▸ **Organising** discussions on: ☛ different religions - beliefs and practices. ☛ sharing views on the teachings of Bhakti and Sufi Saints. ☛ analysing and comparing the teachings of Bhakti and Sufi Saints. Similarities between the two movements. ▸ **Audio-Visual shows** on: ☛ famous Gurudwaras and Gurubani. ☛ Bijak and dohas of Kabir. ☛ famous Dargahs and Qawwalis. ☛ prominent exponents of Sufi music ☛ Alwars, Nayanars, Shankara Jananeswara etc ▸ **Organising** Role Plays/ Recitation/ Musical concerts on: ☛ Gurubani, Bhajans, Qawwalis and dohas of the saints. ☛ life and teachings of any of the Bhakti saints. ☛ Sufi-Bhakti music. ▸ **Written** assignments may include: ☛ reasons for the rise and growth of the Bhakti and Sufi movements. ☛ making of a Composite culture. ☛ similarities between the teachings of Bhakti and Sufi Saints. ➢ **Organising** a visit to a Gurudwara or a Dargah followed by class discussion.	▸ Musical concert ▸ Related videos / PPTs / Audio tapes ▸ Books like Bijak and Guru Granth Sahib. ▸ Books on the lives of famous Bhakti & Sufi Saints. ▸ Itinerary for tour and visits. ▸ Dargahs, Gurudwaras and interaction with the preachers. ▸ Books containing Dohas of Kabir, Bhajans, poetry etc. of other saints.

Theme 1: The Constitution of India

The theme 'The Constitution of India' aims at providing information and an insight to children into the supreme law of India containing the fundamental rules governing its politics and society as a whole. Children will also be able to discuss and understand the need and main features of a Constitution. This understanding is necessary for them to grow into responsible citizens in a secular democracy.

Learning outcomes:

Children will be able to:

- infer and illustrate the idea of a Constitution and its purpose;
- discuss the role of the Constituent Assembly;
- understand the Preamble, its aims and objectives;
- appreciate the contribution of great Indian thinkers in framing the Constitution of India.

The Constitution of India

Key Concepts / Concerns	Suggested Transactional Processes	Suggested Learning Resources
▸ The Constitution – its meaning. ▸ The role of the Constituent Assembly. ▸ The Preamble. ▸ The nature of State – Sovereign, Socialist, Secular, Democratic, Republic. ▸ The other objectives of the Constitution: Justice, Equality, Fraternity and Liberty.	▸ **Organising** discussions on: ☛ the meaning of 'Constitution'. ☛ purpose of a Constitution ☛ the important elements of the Preamble ☛ the ideas of the Indian Constitution ☛ the role of Dr B.R. Ambedkar - architect of the Constitution. ▸ **Audio Visual shows**: ☛ Documentary - Tryst with Destiny ☛ the making of India's Constitution Parts 1 -2. ▸ **Organising** visits/ trips to the Parliament House museum / local museum followed by class discussion. ▸ **Enactment/ Role Plays** by children on: the practice of Justice, Liberty, Equality and Fraternity in our lives. ▸ **Conducting** a mock Parliament in the class and understanding the functions of its constituents. ▸ **Inviting** a judge or an advocate and organising a talk and discussion on the salient features of the Constitution.	▸ A copy of the Indian Constitution. ▸ Videos and Films. ▸ Experts/ Judge/Advocate

Theme 2: Directive Principles of State Policy

'Directive Principles of State Policy' will enable children to understand the principles that direct the State to create opportunities for the welfare of all citizens. Pedagogies help children grasp the interconnectedness between political, social and economic issues. This understanding in turn will help them grow as sensitive, deliberative, responsible and transformative citizens.

Learning outcomes:

Children will be able to:

- discuss the meaning of the Directive Principles of State Policy;
- examine the features of a welfare state;
- enlist welfare activities conducted by the concerned local authorities;
- assess the importance of the Directive Principles;
- analyse the welfare activities performed by various kings in the Indian history;
- compare the welfare activities in the past with the welfare activities in the present day.

Directive Principles of State Policy

Key Concepts / Concerns	Suggested Transactional Processes	Suggested Learning Resources
▸ Welfare state – Features. ▸ Directive Principles of State Policy – Meaning. ▸ Principles promoting economic equality: general principles, Gandhian principles. ▸ Difference between Fundamental Rights and Directive Principles.	▸ **Organising** discussions on: ☛ need for a welfare state. ☛ rulers in history who believed in and created welfare states. ☛ a comparative study of a welfare state of earlier times with that of today. ▸ **Conducting** a class debate on: ☛ The Directive Principles of state policy – A dream or a reality. ▸ **Audio Visual shows**: ☛ short documentaries on initiatives started by Government. ☛ building toilets ☛ removal of child labour. ☛ promotion of Cottage Industries. ▸ **Enactment/ Role plays** by children on: An effective Village Panchayat' which can resolve daily problems of villagers and help them towards establishing a welfare state. ▸ **Written** Assignments may include: ☛ writing a letter to the DM giving suggestions for fixing the street lights in your area. ☛ a 'welfare school' plan ☛ a case study on repair of roads in the child's colony (they can write applications and fix meetings with	▸ Discussions/Debate ☛ *News Paper articles* ☛ *Magazine articles and Images.* ☛ *Films/videos and Documentaries.* ☛ *Experts.* ▸ Visits and Excursions to ☛ *Visit to a local village.* ☛ *Visit to an NGO* ☛ *NGOs* ☛ *Local Village* ▸ Audio – visuals ▸ Project work

Directive Principles of State Policy		
Key Concepts / Concerns	**Suggested Transactional Processes**	**Suggested Learning Resources**
	the concerned authorities to provide a solution). ▷ **Undertaking** a visit to: ☛ an NGO and understanding how it supports the government in its vision of a welfare state. ☛ a local village and enlisting the needs of the people in order to promote the vision of a welfare state. ☛ a local village and meeting members of the village panchayat, exploring/finding solutions to their problems. ▷ **Preparing** a project report – (by children, individually or in groups), based on a survey/ research conducted on local craftsmen and the help provided to them by the government / NGOs.	

Geography

The Geography Curriculum deals with the development of children's understanding and appreciation of the world through a continuous interaction and exploration of the natural and human environment. It aims at encouraging children to appreciate the interdependence of individuals, groups and communities and promotes a healthy respect for different types of cultures and ways of life of people around the world. The curriculum brings about a focus on developing geographical skills that enables children to make informed judgements at local, national and international levels. It brings to the fore the influence of Geographical phenomenon in terms of changes in temperature, climate and weather, availability of resources and material etc. and their impact on our daily lives.

Core concepts of Geography for Classes VI-VIII are as under:

Class VI

Representation of Geographical Features

Landforms

Water Bodies

Agriculture

Minerals

Study of Continents: North America and South America

Class VII

Representation of Geographical Features

Atmosphere

Weather and Climate

Weathering and Soil Formation

Industries

Energy and Power Resources

Study of Continents: Europe, Africa, Australia, Antarctica

Class VIII

Representation of Geographical Features

Population Dynamics

Migration

Urbanisation

Natural and Man-made disasters

Asia: The Largest Continent

India: Geographical Features

India - Human Resources

Theme 1: Representation of Geographical Features

This theme aims at developing in children the ability to interpret topographical sheets by identifying directions, colours and conventional symbols. They will also be able to measure distances using a scale.

Learning outcomes:

Children will be able to:

- identify purpose of using different colours scheme on the map;
- use different signs and symbols on the map;
- identify features on a topographical sheet on the basis of colours;
- use scales for measurement of distance;
- identify conventional signs and symbols used on a topographical sheet.

Representation of Geographical Features

Key Concepts	Suggested transactional processes	Suggested Learning resources
▸ Use of colours on Topographical sheets Blue – Water body Red – Settlements Yellow – Agriculture Brown – High relief Green – Forests ▸ Use of scales for measurement: types of scales (representative fraction, linear scale). ▸ Measuring distance on the map using scales (straight line, curved line). ▸ Conventional signs & symbols (based on topographical sheets of Survey of India).	▸ Engaging children in a group activity for identifying features on topographical maps. ▸ Asking children to prepare individual maps on plain paper showing roads, settlements, water bodies, etc. with colours and conventional symbols. ▸ Engaging children in observing and using different types of scales. This is to be followed by a discussion on the scales and their uses. ▸ Organising activities like measuring the classroom, playground, corridor, etc. using a scale. ▸ Organising a visit to the office of Survey of India and observing cartographers at work. ▸ Organising a talk with a cartographer on the uses of colours, scale, signs and symbols on maps. ▸ Demonstrating the use of thread for measurement of curved line on the map e.g. length of the river. Asking children to do the same in pairs.	▸ Power point presentation and Blackboard/whiteboard/ interactive boards. ▸ Mind mapping ▸ Hands on activity ▸ Atlas and maps. ▸ Visits ▸ Experts.

Integration: Mathematics, Arts Education

Theme 2: Atmosphere

This theme aims at enabling children to understand the importance and composition of gases found in the atmosphere. Children will also be made aware and sensitised towards global warming and its impact on humans.

Learning outcomes:

Children will be able to:

- describe the importance of gases that comprise the atmosphere;
- describe the composition of different gases in the atmosphere;
- highlight importance of layers of atmosphere to sustain life on the earth;
- draw diagram to show the structure of atmosphere;
- discuss causes for global warming and ways to reduce it;
- understand the impact of global warming on life on earth;
- analyse the reasons for the depletion of the ozone layer and suggest ways to reduce it.

Atmosphere

Key Concepts	Suggested transactional processes	Suggested Learning resources
▸ Introduction ▸ Composition of the Atmosphere ▸ Structure of the Atmosphere (brief description of Troposphere, Stratosphere (ozone layer), Thermosphere, Mesosphere, Exosphere). ▸ Green House Effect: meaning and causes. ▸ Global warming: ☛ Introduction ☛ Causes of ozone depletion (Greenhouse gases, deforestation, burning of fossil fuels); ☛ Impact of global warming (Melting of Ice caps & sea level rise, changing patterns of distribution of precipitation and temperature, etc.) ▸ Ways to reduce global warming (in general).	▸ Encouraging children to: ▸ collect information and data about weather from various sources such as newspapers, articles and internet. ▸ develop models /diagrams to show structure and composition of atmosphere. ▸ prepare posters or charts to show the causes and consequences of global warming. ▸ Participate in awareness campaigns and preparing materials for the same. ▸ Discussing the changing patterns of distribution of rainfall in the country. ▸ Modelling the greenhouse effect in a bottle. ▸ Organising poster making and slogan writing competition on 'Save Trees, Save Environment'. ▸ Sensitising children towards global warming and organising awareness campaign on it.	▸ Clay models for the structure ▸ Weather station, Weather report from the website of IMD. ▸ Weather crossword puzzle. ▸ Graphs and statistical data from internet resources to study the changes in the variation of temperature and precipitation ▸ Awareness campaigns

Integration: Biology, Chemistry, Languages
Life Skills: Environmental Conservation

Theme 3: Weather and Climate

This theme will enable children to understand the elements that affect the weather of a place and also differentiate between weather and climate. They will know about instruments used for measurement of rain, temperature, atmospheric pressure, etc.

Learning outcomes:

Children will be able to:

- list the elements that affect the weather of a place;
- distinguish between weather and climate;
- identify different instruments used to measure elements of weather;
- describe isohytes and isotherms through diagrams.

Weather and Climate

Key Concepts	Suggested transactional processes	Suggested Learning resources
▸ Elements of Weather: ☛ Temperature ☛ Atmospheric pressure ☛ Humidity ☛ Precipitation (rain, dew, hail, snow) ☛ Winds ☛ Cloud (different types) ▸ Difference between Weather and Climate. ▸ Weather Instruments: ☛ Thermometer ☛ Rain gauge ☛ Barometer ☛ Hygrometer ☛ Anemometer and wind vane (Brief explanation with diagrams) ▸ Isohytes and Isotherms - meaning and diagrams only.	▸ Encouraging children to: ☛ discuss the weather conditions of the place they live in with their peers. ☛ collect information and data about weather from various sources such as newspapers, articles and internet and then writing a report on it. ▸ Demonstrating the use of weather instruments to understand the measurement of different elements of weather. ▸ Encouraging children to draw diagrams of weather instruments and discussing how to use them with peers.	▸ Weather station, Weather report from the website of IMD. ▸ Newspapers, articles and internet. ▸ Report writing ▸ Diagrams.

Integration: Languages, Physics, Chemistry

Theme 4: Weathering and Soil formation

This theme aims to introduce children to weathering and its types and how it contributes to soil formation. Children will also understand the importance of soil profile and the need to conserve soil.

Learning outcomes:

Children will be able to:

- list the different types of rocks;
- discuss the different types of weathering;
- analyse the factors that affect weathering;
- relate weathering to soil formation;
- discuss the importance of soil conservation and describe ways to conserve it.

Weathering and Soil formation

Key Concepts	Suggested transactional processes	Suggested Learning resources
▸ Types of rocks (igneous, metamorphic, sedimentary): formation with examples; ▸ Weathering: meaning; factors affecting weathering; ▸ Types of weathering (mechanical, chemical, biological): brief explanation; soil formation as a result of weathering; ▸ Soil profile; importance of soil conservation, methods of soil conservation.	▸ Showing different types of rocks through Videos/PPTs. ▸ Promoting children to collect samples of different types of soil and rocks and then discuss the type of crops cultivated with them. ▸ Discussing reasons for weathering and the importance of tree plantation. ▸ Discussing the types of soils in India and showing the regions where these are found on a wall or a digital map. ▸ Asking children (individually/in groups/in pairs) to make a models of soil profile using rock, silt and clay. ▸ Showing films on terrace farming and the Chipko movement.	▸ Rocks, silt and clay to make a soil profile. ▸ Films on terrace farming and the Chipko movement. ▸ Videos. ▸ PPTs. ▸ Maps. ▸ Charts. ▸ Samples of different types of soil and rocks.

Integration: Biology, Languages, Chemistry
Life Skill: Sensitivity towards environment

Theme 5: Industries

This theme aims to develop children's understanding of how geographical and other factors are responsible for the location of industries. Children will also develop the ability to classify industries on the basis of inputs such as capital, labour and raw materials used. They will also be made aware and sensitised towards pollution caused by industries and measures that need to be taken to prevent the same.

Learning outcomes:

Children will be able to:

- differentiate large scale, small scale and cottage industries;
- discuss our dependence on industries for fulfilment of our daily needs;
- identify agro based industries and their raw materials;
- discuss factors responsible for localisation of industries.
- name some important industrial centres of the world;
- discuss how industries contribute towards environmental pollution and suggest ways to prevent the same.

Industries

Key Concepts	Suggested transactional processes	Suggested Learning resources
▸ Introduction ▸ Need for industries in the world. ▸ Types of industries: large scale, small scale, cottage industries; agro based industries. ▸ Factors related to establishment of an industry. ▸ Important industries of the world: Iron and Steel, Cotton Textile, Information Technology, Sugar Industry, ship building, fishing, automobile; important centres of these industries and their location on world map. ▸ Pollution due to industries and its prevention.	▸ Mind mapping and familiarising children with the kind of resources required for industrial development through audio-visuals and interactive board. ▸ Organising a visit to a nearby industry to understand the process of production and use of human resource in an industry. ▸ Facilitating children interviewing a factory/ industry owner and discussing various issues like availability of raw material, labour, machines, marketing, etc. ▸ Organising group activity where children prepare a poster or model to display industrial pollution. ▸ Tracing the journey of any item from raw material to finished product (e.g.: your shirt from a cotton field to your wardrobe). ▸ Organising a role play on life without machines.	▸ Wall maps and Atlas. ▸ Internet resources. ▸ Visuals and Articles from Newspapers, journals, magazines, etc. ▸ Industries/Factories in the neighbourhood. ▸ Posters and models.

Life Skills: Conservation of environment
Integration: Biology, Languages, Chemistry

Theme 6: Energy and Power Resources

Energy and power resources play an important role in the development of any area. This theme will enable children to understand the difference between renewable and non-renewable energy resources. Children will also be made aware and sensitised towards the conservation of energy resources in their daily life.

Learning outcomes:

Children will be able to:

- describe sources of energy;
- classify renewable and non – renewable energy resources;
- describe characteristics of solar power, hydro power and wind power;
- critically analyse distribution of energy resources among various sections of society;
- reflect on the judicious use and conservation of energy resources.

Energy and Power Resources

Key Concepts	Suggested transactional processes	Suggested Learning resources
▸ Introduction: sources of energy; renewable and non-renewable energy resources; ▸ Renewable Energy Sources (Solar Power, Hydro-Power and Wind Power). ▸ Non-renewable Energy Sources (coal and petroleum). ▸ Hydroelectric projects: names of the major hydroelectric power projects in India with the names of the river and the state in which they are located. Locating on a map. ▸ Conservation of energy and power resources.	▸ Promoting discussion amongst children on distribution and consumption of energy resources in their own home/ among various sections of society/ different parts of the country/ rural and urban areas. ▸ Conducting a survey by children in groups to understand the consumption of energy in the school/ own home and suggesting measures to reduce the consumption. ▸ Finding out the consumption of electricity at home over a period of time. Depicting the same graphically. ▸ Displaying major hydroelectric projects on a wall map of India and providing brief information about them to children. ▸ Organising activities to make 3D models to show river and multipurpose projects. ▸ Discussing the impact of building large hydroelectric projects on the environment and life of people. ▸ Organising a visit of children to a nearby dam or hydroelectric project and writing a report on the observations made. ▸ Demonstrating methods to show generation of electricity with the help of a magnet. ▸ Inculcating the habit of switching off fans, A.C.s, lights at home and in school. ▸ Giving project/ Case Study on rural electrification in India.	▸ Pie chart – energy consumption. ▸ Magnet and wires ▸ Questionnaire. ▸ Models ▸ Online resources ▸ Reports. ▸ Case Study. ▸ Wind Farms and Hydroelectric projects.

Integration: Biology, Physics, Chemistry, Languages
Life Skills: Environmental conservation

Theme 7: Study of Continents: Europe, Africa, Australia and Antractica

In the previous class, as a part of the Study of Continents, children were given an overview of North and South America. In this class the theme will take the study of different Continents further as children will be introduced to the Continents of: Europe, Africa, Australia and Antarctica. As in the previous class, children will also get an opportunity to undertake case studies.

Learning outcomes:

Children will be able to:

- locate Europe, Africa, Australia and Antarctica on the world map;
- identify the countries in Europe, Africa and Australia;
- locate the major physical features of these continents on the map;
- analyse why Antarctica is a human free zone.
- understand how the geography of a place affects the life of people through case studies.

Study of Continents: Europe, Africa, Australia and Antarctica

Key Concepts	Suggested transactional processes	Suggested Learning resources
▸ Europe, Africa, Australia: ☛ Introduction ☛ Location ☛ Boundaries ☛ Political divisions (countries with capitals) ☛ Major Physical features ☛ Locating the above on the world map. ▸ Case Studies: ☛ Tourism in Switzerland (Europe) ☛ Cocoa cultivation in Ghana (Africa) ☛ Sheep rearing in Australia (or any other) ▸ Antarctica – the uninhabited continent ☛ Location ☛ Boundaries ☛ Climate ☛ Human void zone	▸ Mind mapping and encouraging children to locate Europe, Africa, Australia and Antarctica on the World map. ▸ Locating the different countries of Europe, Africa, Australia and Antarctica on the political map. ▸ Providing opportunities to children to share their experiences if they have visited any countries in the 4 Continents being focussed on in the theme and make flags of a few countries of Europe, Africa and Australia. ▸ Encouraging discussions on the life of people in these continents. ▸ Making a scrap book (individually/groups) about the people of different continents. ▸ Making a Project on changing climatic conditions and their impact on the climate of the world (reference to melting of ice sheets in Antarctica).	▸ Map of Europe, Africa, Australia and Antarctica ▸ Mind mapping ▸ Flags ▸ Scrap book ▸ Political outline map ▸ Project Work

Integration: Biology, Languages, history, Arts Education
Life Skills: Sensitivity towards environment

SCIENCE

Science

Science is an organised body of knowledge about physical and biological environment around us. It has developed out of our attempt to understand things and events in nature, through systematic observation. Science is dynamic in nature, with many old concepts being modified or discarded with the advent of new findings. Science is also multidimensional.

For a long time, the emphasis of teaching-learning of Science has been on only one dimension, that is, the content of Science. However, over the years, researches in Science education have improved our understanding of Science and Science education. According to Prof. Robert E. Yager, Emeritus Professor of Science Education, University of Iowa, USA, Science consists of six domains: Concepts, Processes, Applications, Attitudes, Creativity and Worldview (Nature of Science).

(i) *Concept Domain:* It includes facts, concepts, laws or principles, hypotheses and theories. Understanding of these concepts is important for successful teaching and learning. These concepts are further classified and organised into different topics. For example, matter, energy, plant development, animal behaviour. As Science develops, our understanding about things and events in nature grows, new concepts are added; old ones are sometimes redefined or rejected. In fact, this domain presents our current understanding of a particular subject or topic.

(ii) *Process Domain:* "Experiment is the sole source of truth", wrote Henry Poincare in his famous book, *Science and Hypothesis* (1905). Scientists use processes to investigate. Some processes are: Observing and describing, classifying and organising, measuring and charting, communicating, predicting and inferring, hypothesizing, hypothesis testing, identifying and controlling variables, interpreting data, constructing instruments, simple devices and physical models. Development of process skills among children is a primary aim of Science education. This helps them to understand Science or investigate a problem scientifically. Hands-on/minds-on activities have been integrated in the Science curriculum so that children master these process skills.

(iii) *Creativity Domain*: Scientific activities related to this domain include: visualizing - producing mental images, combining objects and ideas in new ways, producing alternative and unusual uses for objects, solving problems and puzzles, designing devices and machines, and producing unusual ideas. Creativity is required when we attempt to answer, "what, how and why"

about things or events around us. Special efforts should be made to provide opportunities to children which bring out creativity in them.

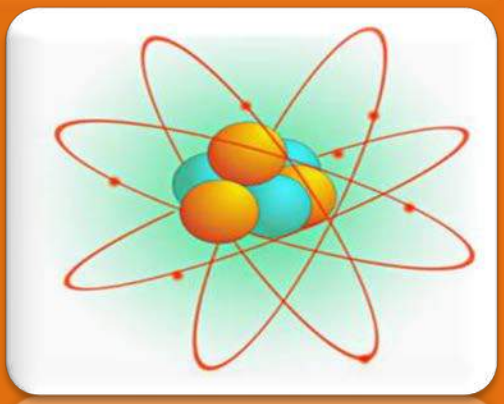
(iv) ***Attitude Domain:*** This domain includes developing positive attitudes towards Science in general; development of positive attitude towards oneself (as "I can do it" attitude), exploration of human emotions, develop sensitivity to, and encourage respect for the feeling of other people, expression of personal feelings in a constructive way, decision- making about personal values and decision- making about social and environmental issues. A positive attitude towards Science not only helps children in learning Science but also encourages them to seek answers for their own problems. 'Attitude towards Science' is not the same as 'Scientific attitude'. The latter refers to 'open-minded', 'honesty' or 'scepticism'.

(v) ***Application Domain*:** Children should be able to apply learning of Science in new situations. This includes recognising instances of scientific concepts in everyday life experiences; application of science concepts and skills learnt to everyday technological problems; understanding scientific and technological principles involved in common technological devices; using scientific processes in solving problems that occur in everyday life; understanding and evaluating mass media reports of scientific developments; making decision related to personal health, nutrition and life-style based on knowledge of scientific concepts rather than on hearsay and emotions; integrating science with other subjects (interdisciplinary). Science knowledge must be associated with the social and living experiences of children.

(vi) ***Worldview Domain*:** Teaching-learning of Science should present the nature of Science, as a whole. The development of Science is through the process of validating old concepts, discarding/modifying old concepts based on new experimental evidences and evolving theories to explain different phenomena. This domain should help children develop understanding of the ways in which the scientific knowledge is created; the nature of research processes; the meaning of basic concepts of scientific research (e.g., hypothesis, assumptions, controls, replication); the history of development of scientific ideas; the ways scientists work, organise and work as a team; the interaction among science, economics, politics, history, sociology, philosophy.

The present science curriculum follows a disciplinary approach. Science has been presented as Physics, Chemistry and Biology. Instructional material and teaching-learning processes in each subject, should pay due attention to all six domains of Science, as described above.

Physics



Physics is the study of matter, energy and its interactions. It attempts to explain how nature works using the language of mathematics. Physics generates fundamental knowledge which is needed for the future technological advancements. Study of Physics is essential for inspiring young children and expanding their knowledge of other disciplines.

The Core concepts of Physics for Classes VI – VIII are as follows:

Class VI

- Matter
- Physical Quantities and Measurement
- Force
- Energy
- Light
- Magnetism

Class VII

- Physical Quantities and Measurement
- Force and Pressure: Motion
- Energy
- Light Energy
- Heat
- Sound
- Electricity and Magnetism

Class VIII

- Matter
- Physical Quantities and Measurement
- Force and Pressure
- Energy
- Light Energy
- Heat Transfer
- Sound
- Electricity

Theme 1: Physical Quantities and Measurement

In the earlier classes, teaching-learning emphasised on the measurement of length, mass, time and temperature using devices made for such measurements and how a particular unit and symbol are used to express the result of measurement of each physical quantity. In continuity, this theme aims at enabling children to develop the ability to measure volume and determine the density of a regular solid. They will be introduced to the concept of speed, that contains simple problems to provide an idea of the speed of objects around us and also to know how fast or slow an object is moving.

Learning outcomes:

Children will be able to:

- define volume;
- express volume of an object in a proper unit with proper symbols;
- measure volume of a liquid using a graduated cylinder and a graduated beaker;
- estimate the area of an object of irregular shape using a graph paper;
- measure the volume of an irregular solid using a graduated cylinder /a graduated beaker;
- define density and write its formula;
- express density in a proper unit and symbol;
- measure density of a regular/irregular solids;
- express result of measurement in a proper unit with proper symbol;
- define speed and write its formula;
- express speed in proper units with proper symbol;
- solve simple numerical problems based on formulas of density and speed.

Physical Quantities and Measurement

Key Concepts	Suggested Transactional Processes	Suggested Learning resources
▸ Measurement of Volume (3D concept): ☛ Concept of unit volume ▸ Measurement of Area: ☛ Estimate the Area of irregular shape using a Graph paper ▸ Measurement of Density of regular solids: ☛ Basic concept ☛ Formula ☛ Simple Numericals (SI units not required) ▸ Calculation of Speed: ☛ Basic Concept ☛ Formula ☛ Simple Numericals (SI units not required).	▸ Demonstration of graduated cylinder and graduated beaker ▸ Explanation of process of measurement of volume ▸ Explaining use of graph paper to measure area of irregular shape ▸ Explanation of process of measurement of density of a regular solid ▸ Explanation of concept of speed with examples from daily life ▸ Explaining calculation of speed ▸ Engaging children in activities involving measurement of volume, area, and density. ▸ Engaging children in simple problem solving involving the concepts of density and speed.	▸ Graduated cylinder ▸ graduated beaker in activities ▸ a small piece of stone ▸ a regular object ▸ objects of irregular shape ▸ use of graph papers ▸ video on volume measuring devices ▸ video on motion and speed

Integration: Chemistry, Technology in daily life
Life Skills: Creative thinking, Problem-solving

Theme 2: Force and Pressure: Motion

An object is said to be in motion if its position changes with time. When walking, running or cycling or when a bird is flying, there is motion involved. Various objects have different types of motion. They can be classified into translatory motion, circular motion and oscillatory motion. Motion of an object can also be classified as periodic and non-periodic. If an object travels equal distance in equal time, its motion is said to be uniform, if not, the motion is said to be non-uniform. A physical quantity used to distinguish between uniform and non-uniform motion is average speed.

Learning outcomes:

Children will be able to:

- define motion;
- identify objects in motion and at rest;
- describe different types of motion, with examples from daily life;
- define uniform and non-uniform motion with examples from daily life;
- define the concept of speed (average speed);
- calculate average speed of objects based on data provided;
- define weight;
- relate weight of an object with its mass.

Force and Pressure: Motion

Key Concepts	Suggested Transactional Processes	Suggested Learning resources
▸ Motion as a change in position of an object with respect to time. ▸ Types of motion: ☛ Translatory ☛ Circulatory ☛ Oscillatory ☛ Repetitive (Periodic and Non Periodic) ☛ Random ▸ Uniform and Non Uniform Motion: concept of distance and speed (average speed) ▸ Weight: ☛ Concept ☛ Differences between Mass and Weight.	▸ Demonstrating objects at rest and in motion. ▸ Demonstrating different types of motion. ▸ Asking children to work in groups and list objects in different types of motion in a table. ▸ Demonstrating motion of a pendulum as case of a periodic motion. ▸ Demonstrating uniform and non-uniform motion using examples from daily life ▸ Explaining the concept of speed; unit of speed. Simple numericals for calculating average speed of objects in daily life. ▸ Explaining the concept of weight. ▸ Explaining the difference between mass and weight.	▸ A ball. ▸ A stop watch. ▸ A bob with hook. ▸ Thread. ▸ Laboratory stand. ▸ Video on motion and types of motion. ▸ Video on uniform and non-uniform motion. ▸ Video on speed of objects in daily life. ▸ Videos on ocean currents, cyclones/ anti cyclones, atmospheric pressure

Integration: Mathematics, Chemistry, Geography, Technology in daily life.
Life Skills: Problem-solving, Cooperation and working together.

Theme 3: Energy

This theme aims at enabling children to know about energy and the different its forms namely, kinetic energy, potential energy, heat energy and electrical energy. They will also understand that one form of energy can be converted into another form and that this is known as transformation of energy. Energy is conserved during transformation. This is known as the law of Conservation of Energy.

Learning outcomes:

Children will be able to:

- define energy;
- express energy in proper units;
- discuss about different forms of energy;
- describe conversion of energy from one form to another in different situations;
- state law of conservation of energy, with examples.

Energy

Key Concepts	Suggested Transactional Processes	Suggested Learning resources
▸ Energy: ☛ Energy as capacity to do work. ☛ Units of energy (joule and calorie). ☛ Different forms of energy. ☛ Inter-conversion of energy ▸ Law of Conservation of Energy: ☛ Real world examples.	▸ Explanation of the term Energy and encouraging children to share their experiences with examples from daily life. ▸ Explanation of relation between Work and Energy. ▸ Discussion with children about the different forms of Energy, with examples. ▸ Demonstration of inter-conversion of Energy, examples from daily life ▸ Demonstration of the conservation of Energy ▸ Providing examples of different applications of conservation of energy (Roller coaster, production of hydroelectricity etc.) and encouraging children to carefully make energy conversion diagrams and deduce that energy is conserved.	▸ A simple pendulum. ▸ Charts showing different forms of energy. ▸ Video/s showing interconversion of different forms of energy.

Integration: Chemistry, Biology, Technology in daily life.
Life Skills: Cooperation and working together, problem-solving.

Theme 4: Light Energy

Light travels in a straight line. Light from an object can move through space and reach the human eye which enables one to see this page, or a face in a mirror. This process is known as reflection. It obeys a law known as law of reflection. Light travels in air at a constant speed of 3 x 10^8 m/s or 3 lakh kilometre per second. In other mediums, like glass or water, it slows down. Light from sun is composed of seven colours. The colours of objects fascinates everybody, Physicists have found that all colours can be explained as addition of three primary colours. The primary colours are red, green and blue. Colours that is seen on a TV or computer screen arise due to combination of these primary colours. Appearance of colour of an object is due to process of absorption and reflection of different colours by the object.

Learning outcomes:

Children will be able to:

- explain the phenomenon of reflection;
- define the terms, plane, normal to the plane, point of incidence, angle of incidence and angle of reflection;
- state the law of reflection;
- describe reflection of light from a plane mirror;
- use law of reflection to show formation of image by a plane mirror;
- describe the characteristics of image formed by a plane mirror;
- state the value of speed of light;
- state primary colours;
- describe formation of secondary colours by addition of primary colours;
- explain the observed colour of an object based on reflection and absorption of light of different colours from the object.

Light Energy

Key Concepts	Suggested Transactional Processes	Suggested Learning resources
▸ Reflection: ☛ Definition and Examples. ☛ Terms related to reflection - normal, plane, point of incidence, angle of incidence, angle of reflection. ▸ Laws of Reflection. ▸ Plane mirror: ☛ Uses. ☛ Ray Diagram (no mention of virtual image). Characteristics of the image formed (Lateral Inversion, same size, distance is preserved). ▸ Speed of light (3 x 10^8 m/s). ▸ Primary colours (RGB). ▸ Formation of secondary colours by colour addition. ▸ Appearance of colour of an object (based on reflection and absorption) ▸ Colour subtraction.	▸ Demonstrating on plane mirror and reflection of light. Explaining the point of incidence, normal, angle of incidence and angle of reflection. ▸ Engaging children in activities to show reflection of light. ▸ Helping children to draw a diagram to show a reflection by mirror. ▸ Demonstrating primary colours and formation of secondary colours using primary colours and asking children to do the same in pairs/groups. ▸ Explaining the colour of an object based on absorption and reflection. ▸ Showing children a video on primary colours and mixing of primary colours and then discussing the same with them. ▸ Explaining to children how rainbow is formed.	▸ A plane mirror. ▸ Reflecting surfaces. ▸ A laser pencil pointer. ▸ Pencil, scale, eraser, marker. ▸ White paper sheet. ▸ A set of primary colours. ▸ A set of colour filters. ▸ A source of white light. ▸ Interactive video on primary colours and mixing of primary colours. ▸ Picture/ video on rainbow.

Integration: Art, Mathematics, Technology in daily life.
Life Skills: Cooperation and working together, problem-solving.

Theme 5: Heat

Heat is a form of energy. Sunlight carries heat that gives warmth when exposed to it. When water is heated, its energy in the form of heat increases and becomes hot. When heat energy of an object increases, it can result in (i) change of temperature, (ii) change in size and/or (iii) change in state of an object. Some materials like aluminium are good conductors of heat and some, like wood are bad conductors of heat. Heat from a hot object is transferred to a cold object in three different ways- conduction, convection and radiation. Previous learning included topics on temperature and its measurement in degree Celsius. Further, two other frequently used temperature scales, Fahrenheit scale and Kelvin scale have been introduced in this theme for a better understanding of concepts related to temperature.

Learning outcomes:

Children will be able to:

- define heat as energy;
- define units of heat;
- describe temperature scales: degree Celsius, Fahrenheit and Kelvin;
- describe different effects of heat;
- explain different modes of heat transfer;
- decide about conductor and insulator of heat in different applications;
- describe construction and working of thermos flask.

Heat

Key Concepts	Suggested Transactional Processes	Suggested Learning resources
▸ Heat as a form of energy and its units, joule(J) and calorie (cal). ▸ Different units of Temperature (°C, °F, K). ▸ Effects of Heat: ☛ Change in Temperature. ☛ Change in Size (Expansion and contraction). ☛ Change in State. ☛ Good Conductors and Bad Conductors of Heat and their examples. ☛ Choice of conductors and insulators in day to day life (Pan handles, metal cooking utensils etc.) ▸ Methods of Heat Transfer: ☛ Conduction ☛ Convection ☛ Radiation ▸ Thermos Flask: (Application of Heat Transfer) ☛ Construction ☛ Working	▸ Demonstration and explanation of use of Thermometers marked in F. ▸ Engaging children in activity to measure temperature of water in F. ▸ Demonstration of heat transfer through different modes, conduction, convection and radiation. ▸ Children have to deduce where conduction, convection and radiation is taking place in some real world applications. ▸ Children use thermocol and other materials to make a cooling pack (emphasizing on the process of heat transfer). ▸ Explanation of the construction and working of a thermos flask.	▸ Thermometer graduated in ˚C and ˚F. ▸ Water in beaker. ▸ A tripod with mesh screen. ▸ A burner for heating. ▸ A set up to show heat transfer by conduction. ▸ A round flask. ▸ Potassium Permanganate Crystals. ▸ Test tube. ▸ Test tube holder. ▸ Thermos flask. 

Integration: Geography, Biology, Technology in daily life.

Life Skills: Cooperation and working together, problem-solving.

Theme 6: Sound

Sound is produced by the vibration of objects and different types of instruments are used to produce sound. In humans, sound is produced by the voice box or larynx. Sound needs a medium to propagate hence in vacuum it is not possible to hear one another. Sound wave is a longitudinal wave. A wave is characterised by an amplitude and a frequency. Like light, sound is also reflected from a surface. Sound is also absorbed by a medium. Therefore, walls of a theatre are lined with layers of materials that absorb sound. Sound travels with different speeds in different mediums and travels fastest in solids. This theme will enable children to know and understand 'Sound', different sources of sound and how it travels.

Learning outcomes:

Children will be able to:

- identify different sources of sound;
- describe sound as a longitudinal wave;
- define amplitude and frequency of sound;
- demonstrate that sound requires a medium to transmit;
- list examples of reflection and absorption of sound;
- analyse the relative speed of Sound in different mediums;
- design a sound-proof box.

Sound

Key Concepts	Suggested Transactional Processes	Suggested Learning resources
▸ Sources of sound. ▸ Sound as a longitudinal wave. ▸ Characteristics of a sound wave: Amplitude (Relate amplitude with loudness) and Frequency. ▸ Sound needs a medium to propagate. ▸ Reflection and Absorption of sound. ▸ Relative speed of sound in different mediums.	▸ Demonstration of production of sound using simple objects within the classroom followed by discussion ▸ Children place their hand on their throats and when they speak they feel vibration. ▸ Explanation of the characteristics of sound. ▸ Demonstration that sound needs a medium to propagate. ▸ Engaging children in design of an activity to show that sound need a medium to propagate, using two mobiles and a tumbler. ▸ Demonstration of reflection of sound ▸ Demonstration of absorption of sound ▸ Explanation of relative speed of sound in solid, liquid and gas. ▸ Design of sound proof box.	▸ Different sources of sound. ▸ A setup to show that sound need a medium to propagate. ▸ Materials for reflecting sound. ▸ Materials for absorbing sound. ▸ Videos on sound, sources, need of a medium, characteristic, reflection, absorption.

Life Skills: Cooperation and working together, Problem solving, Critical thinking.
Integration: Music, Mathematics, Technology in daily life.

Theme 7: Electricity and Magnetism

The basic law of electromagnetism states that "Like poles of magnets repel one another and unlike poles attract". When an electric current is passed through a coil, the coil behaves like a magnet. This magnet is called an electromagnet. The strength of this magnet is increased by inserting a core of suitable material. Many objects around us, like electric bell, electric motor, loudspeaker, etc. have electromagnets in them. A cell is a source of electricity and are used in torches, watches, calculators, etc. When connected to a device like bulb, it sends current through the bulb and the bulb lights up. Flow of charges constitute current. Materials that allow current to flow through them are called conductors whereas materials that do not allow passage of current through them are called insulators. Children will learn how electric components are arranged in simple series and simple parallel arrangements.

Learning outcomes:

Children will be able to:

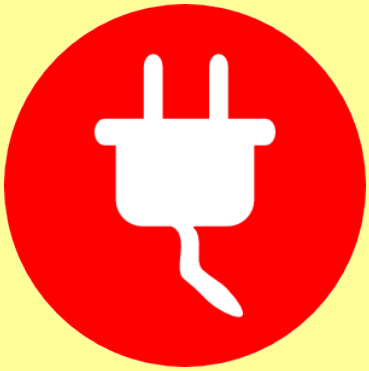
- state the Law of Magnetism;
- describe test for a magnet;
- explain the phenomenon of electromagnetism;
- describe an electromagnet and its uses;
- explain construction and working of an electric bell;
- relate current to flow of charge;
- recognize electric cell as a source of electricity;
- define resistors as the component that opposes the flow of current;
- represent different components like cell, battery, key, bulb, connecting wire, resistor by standard symbols;
- make simple series circuits and simple parallel circuits;
- recognize battery as series combination of cells;
- define conductors and insulators of electricity.

Electricity and Magnetism

Key Concepts	Suggested Transactional Processes	Suggested Learning resources
Law of Magnetism Test for a magnet (by repulsion) Electromagnetism, Electromagnets and their applications- Electric bell Electric current as a flow of charges Electric cell as source of electricity Resistors as components that oppose the flow of current. Symbolic representation of electrical components (key,	Revisiting previous concepts. Building on children's previous learning. Demonstrating and explaining the law of electromagnetism. Demonstrating simple electromagnets. Engaging children to demonstrate electromagnets. Description of use of electromagnets. Demonstrating the construction and working of electric bells. Demonstrating electric cell and explanation of its working. Familiarizing children with symbols for electric components.	Two bar magnets Laboratory stand Thread and hook for magnet An iron nail A cell A coil of wires A compass Core for electromagnet Dry cell Key Connecting wires Three bulb Banana clips

Electricity and Magnetism		
Key Concepts	**Suggested Transactional Processes**	**Suggested Learning resources**
battery, bulb, conducting wire, resistor) - Simple electric circuit- Series and Parallel - Battery as a collection of cells connected in series. - Good and Bad conductors of electricity	- Explaining the role of key in electric circuits. - Explaining the precautions to be taken before an electric circuit is switched-on. - Engaging children in making simple electric circuits. - Engaging children in practical tasks involving Series and Parallel combinations. - Engaging children in design of activity to test whether a given object is good or bad conductor of electricity. - Showing video on earth's magnetic declination from the true north.	- Video showing electromagnets and electric bells - Video showing series and parallel circuits - Video on earth's magnetic declination

Integration: Chemistry, Geography, Technology in daily life.
Life Skills: Problem-solving, Critical thinking, Cooperation and working together.

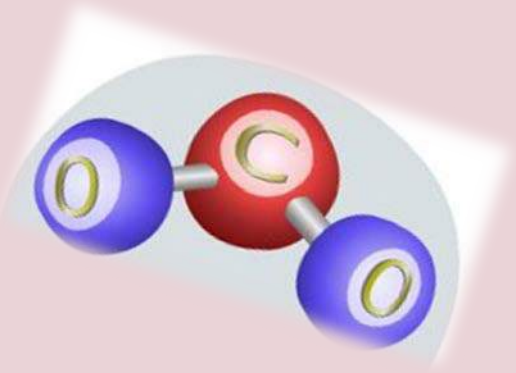


Chemistry

Chemistry is an important branch of Science which is related to the study of composition, structure, properties, reactions, synthesis and uses of different materials. Chemistry forms an integral part of general science at the primary level. However, due to a vast number of terms, facts, concepts, laws, theories, principles, processes and applications, it has been taken up as an independent subject from the upper primary level. Children at the primary level can recognise and recall tangible objects. However, at the upper primary level they start to establish cause-effect relationships, which forms an essential component of the study of the subject.

While teaching the subject at the upper primary level, the historical perspective of the development of Chemistry and the scope of career options should be highlighted to generate interest amongst children. Important applications of Chemistry in the area of health and hygiene, food, building materials and environment should be discussed to help children understand how Chemistry applies to various aspects of day to day life. Some activities to show different chemical changes or phenomena could be performed by children so that they can develop scientific skills such as, observation, measurement, analysis, interpretation, drawing conclusions, etc.

In the present scenario of the world, where technology has boosted our performance and our understanding of the world affairs, many are focussing their thoughts to the environmental issues. Chemists all around the world are looking into solutions for proper waste disposal, biodegradable products, fuel efficiency. Children too must be sensitised towards environmental concerns. Use of chemicals in the form of pesticides, insecticides, fertilisers and their effect on the environment must be highlighted in class.



The Core concepts of Chemistry for Classes VI – VIII are as follows:

Class VI

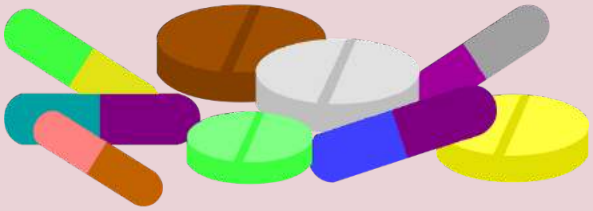
- Introduction to Chemistry
- Elements, Compounds and Mixtures
- Matter
- Water
- Air and Atmosphere

Class VII

- Matter and its Composition
- Physical and Chemical Changes
- Elements, Compounds and Mixtures (experimental-techniques)
- Atomic Structure
- Language of Chemistry
- Metals and Non-Metals
- Air and Atmosphere

Class VIII

- Matter
- Physical and Chemical Changes
- Elements, Compounds and Mixtures
- Atomic Structure
- Language of Chemistry
- Chemical Reactions
- Hydrogen
- Water
- Carbon and its Compounds



Theme 1: Matter and its Composition

This theme focuses on informing and making children aware of the different types of matter/objects found in their surroundings such as stones, water, soil, oil, sugar, air. Some of them have common characteristics in terms of states, some are solids, liquids and some are gases. These states vary in their shape, volume and texture. All these are made up of some materials which have mass and occupy space. Children will also realize that the study of their composition is of great importance in their daily lives.

Learning Outcomes:

Children will be able to:

- describe matter;
- discuss the constituents (atoms/molecules) of matter;
- explain the forces which keep atoms/molecules in matter together.

Matter and its Composition

Key Concepts / Concerns	Pedagogy/ Transactional Strategies*	Suggested Learning Resources
▸ Definition of matter. ▸ Matter has mass and occupies space - Explanation. ▸ Composition of matter – brief introduction	▸ Demonstrating that air in a balloon occupies space. It can be shown that any matter like a solid or liquid has mass. ▸ Discussing that matter is made up of tiny particles. They are tightly packed in solids, loosely packed in liquids and have random motion in gases. The intermolecular attraction between the particles keeps them together (reference: solids, liquids and gases). ▸ Asking children to prepare charts showing above.	▸ Samples of solids, liquids and examples of gases. ▸ Charts. ▸ Experiments.

Integration: Physics

Life skills: Cooperation and working together, drawing conclusion.

Theme 2: Physical and Chemical Changes

The theme focuses on informing children and making them aware about the different types of changes physical and chemical that are regularly observed occurring in the environment. Some occur on their own and some are caused due to human activities to meet their requirements. Keeping in view the unending role of these changes, it becomes worthwhile that children learn about them.

Learning Outcomes:

Children will be able to:

- differentiate between physical and chemical changes;
- perform activities related to physical and chemical changes;
- classify changes such as respiration, preparation of solution of sugar, burning of paper ripening of fruit, spoiling of food materials as physical and chemical changes;
- discuss that in a chemical change, a new substance with different properties is formed.

Physical and Chemical Changes

Key Concepts / Concerns	Pedagogy/ Transactional Strategies*	Suggested Learning Resources
▸ Physical and chemical changes. ▸ Chemical change - formation of a new product with new properties. ▸ Differentiating between physical and chemical change. ▸ Classification as physical & chemical change. ▸ Types of change involved when there is a change of state of matter. ▸ Types of change involved when there is a change of energy.	▸ Asking children to classify the following changes as: (i) Desirable and Undesirable (ii) Physical and Chemical change: drying of clothes; melting of ice; evaporation of water as physical changes; rusting of iron; burning of fuels & fireworks; curd from milk; reaction of iron powder with sulphur powder as chemical changes. Discussing about the formation of a new compound in a chemical change. ▸ Conducting demonstrations/ experiments and discussing with children to classify changes: respiration, burning, dissolution of sugar, boiling an egg, other daily life examples into physical and chemical changes. ▸ Conducting simple experiments with children and asking them to observe and study the interchange of state of water, sublimation of ammonium chloride or iodine. ▸ Demonstrating and discussing the processes of: melting, boiling, reversible, irreversible, dissolution of quick lime in water, ammonium chloride in water, burning of match stick, etc.	▸ Experiments to show that changes in state, colour, size, shape, evolution of heat, light, gases and change in taste indicate physical and chemical changes. ▸ Assembly of apparatus. (*to show sublimation of ammonium chloride.*) ▸ Paper, common salt, chalk, iron, sulphur, ice, copper.

Integration: Physics, Geography, Biology
Life skills: Problem solving, critical thinking

Theme 3: Elements, Compounds and Mixtures (experimental techniques)

This theme will enable children to understand that the earth mainly consists of mixtures containing elements and compounds. These are of different types and many a times the separation of components of mixtures is required for practical utility. They will also know about and discuss the different techniques for separation of the components of a mixture to get the pure components.

Learning Outcomes:

Children will be able to:

- identify elements and compounds on the basis of their properties and the type of atoms present in them;
- differentiate between mixtures and compounds on the basis of their properties and composition of constituents;
- provide examples of elements, compounds and mixtures from daily life;
- discuss different techniques for separation of components of mixtures;
- justify the reason for the use of a particular technique in separation of a mixture;
- explain chromatography and its importance.

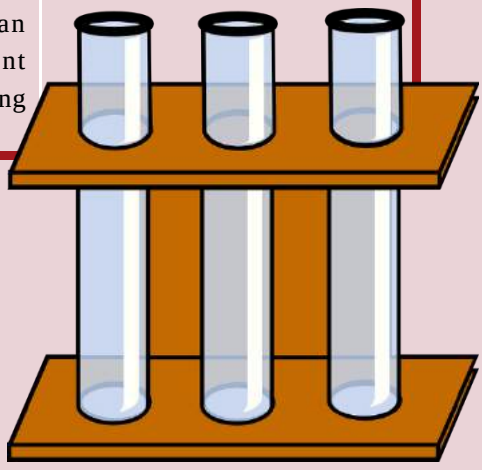
Elements, Compounds and Mixtures (experimental techniques)

Key Concepts / Concerns	Pedagogy/ Transactional Strategies*	Suggested Learning Resources
Identification of elements, and compounds from representation of their symbols and formulae. Mixtures and compounds: difference between mixtures and compounds on the basis of the chemical composition of constituents. Recall that a mixture is formed when two or more substances are mixed in any proportion such that their particles are in intimate contact with one another without	Revisiting previous concepts Building on children's previous learning. Preparing a list of elements and compounds with their symbols & formulae by the teacher and then asking children to classify them as elements and compounds. On the basis of their knowledge of class VI, they should be able to do this classification. Discussing the basis of classification to strengthen the concept. Classification using the names may also be attempted. Illustrating the meaning of the terms mixtures and compounds based on the proportions of their components using common examples from daily life such as honey, water, milk, rust, etc. Demonstrating through the activity of mixing of iron and sulphur. It is a mixture when mixed in any proportion. Next take iron and sulphur in	List of the symbols and formulae of elements and compounds. List- elements: iron, aluminium, copper and compounds: water, plaster of paris, sodium chloride, calcium oxide, sodium sulphate, sodium hydrogen carbonate. Different Mixtures e.g.: mixture of (i) salt and sugar, (ii) sand and salt, honey, milk, butter, cough syrup, etc. Iron powder, sulphur, burner, tongs. Some homogeneous mixtures- alloys, sugar solution and acetic acid in water, milk. Heterogeneous mixtures: - sand & salt, sand & water, kerosene & water, chalk powder & water etc.

Elements, Compounds and Mixtures (experimental techniques)

Key Concepts / Concerns	Pedagogy/ Transactional Strategies*	Suggested Learning Resources
undergoing a chemical change. ▸ Types of mixtures: - ☛ Homogeneous & Heterogeneous mixtures ☛ On the basis of State: Solid –solid; Solid-liquid; Liquid-liquid. ▸ Separation techniques: ☛ evaporation, ☛ distillation, ☛ use of separating funnel, ☛ sublimation, ☛ fractional distillation. ▸ Examine the principle behind each separation technique. ▸ Chromatography as a separation technique; Paper chromatography.	stoichiometric quantities and heat. The compound iron sulphide is formed. ▸ Differentiating some mixtures as homogeneous and heterogeneous and explaining the differences between them. ▸ Collecting samples of solid-solid, solid-liquid, liquid-liquid types of mixtures from daily life. ▸ Demonstrating some separation techniques: ☛ Evaporation - separate salt from water. ☛ Distillation - obtain pure liquid (water) from impure liquid (impure water). ☛ Separating funnel - two immiscible liquids (kerosene/oil & water). ☛ Sublimation- ammonium chloride. ☛ Fractional distillation - two miscible liquids (alcohol & water) ▸ Organising a discussion of the preference and order of use of separation techniques in the separation of two or three component mixtures and explaining the reason for preferring that particular order of technique. ▸ Discussing the principle of Paper Chromatography, and characteristics of stationary phase, mobile phase; – demonstration: Performing an experiment for separation of different colours of a marker pen. Discussing the solvent system used.	▸ Apparatus: beaker, china dish, glass rod, tripod stand, wire gauze, R.B. flask, cork, bent glass tube, boiling tube funnel, distillation apparatus, Separating funnel. ▸ Chemicals: alcohol, ammonium chloride, kerosene, common salt. ▸ A small jar/ petri dish, pigment/ ink, suitable solvent/ water. Whatman no. 1 paper.

Integration: Geography



Theme 4: Atomic Structure

This theme will enable children to understand that every matter is made up of tiny particles known as atoms and molecules. Molecules are also made up of atoms. Hence atoms are the building blocks of matter. The physical and chemical properties of matter are governed by atoms. Therefore, the knowledge of the concepts of atoms of elements, molecules of elements and compounds and radicals of compounds is necessary to understand different processes and principles of Chemistry.

Learning Outcomes:

Children will be able to:

- define atom, molecule and radical;
- discuss the significance of valency of elements and radicals;
- define valency in terms of number of hydrogen atoms combined or replaced by one atom of the element;
- apply the definition based on hydrogen atom to find out the valency of other elements and radicals;
- correlate the valency of the elements with group number of periodic table.

Atomic Structure

Key Concepts / Concerns	Pedagogy/ Transactional Strategies*	Suggested Learning Resources
Atoms, Molecules and Radicals • An atom is the smallest particle of an element. • It is not capable of independent existence. • The properties of an element depend upon the atoms constituting it. • A molecule is the smallest particle of an element or compound, capable of independent existence. It consists of one or more than one atom of the same or different elements. • A radical is a single atom of an element or a group of atoms of different elements behaving as single charged unit. • Atomicity (no. of atoms in an entity) of elements and compounds – mono atomic, di atomic, tri atomic, polyatomic. • Associate the first 20 elements in the periodic table with their names and symbols • Valency is the combining capacity of an element or the number of hydrogen atoms with which it combines or replaces.	• Discussing about atoms, molecules and radicals and explain the difference between them. • Discussing different examples of elements having mono, di, tri and poly atomicity. • Preparing a list of some elements and radicals which have valency of 1, 2, 3 and 4. • Explaining the meaning of valency and correlating the valency with the group number of the periodic table. • Discussing that development of the periodic table is a classification of the element and is based on their physical and chemical properties.	• Periodic table. • Valency cards made by writing name, symbol and valency of an element. Children can play a game of identifying the card of a specific element and score a point.

Integration: Physics

Theme 5: Language of Chemistry

Chemistry involves the study of a large number of elements and compounds that also have been learnt earlier with their representation by their short hand notations i.e. symbols and formulae. This theme will enable children to understand that it is not convenient to write the full names of the elements and compounds, and the use of symbols has made the job of the chemists much easier. In addition, they will further realize that Chemistry also involves the occurrence of a large number of chemical reactions that are written in the form of equations known as chemical equations. The writing of chemical equations involves writing of reactants and products as their symbols and formulae. Thus symbols and formulae have also made writing of chemical equations in Chemistry very convenient.

Learning Outcomes:

Children will be able to:

- identify the names of reactants and products of different chemical reactions;
- write a chemical reaction in the form of a chemical word equation;
- recognize the usefulness of a word equation.

Language of Chemistry

Key Concepts / Concerns	Pedagogy/ Transactional Strategies*	Suggested Learning Resources
Chemical reactions ▸ A chemical reaction may take place when two or more reactants come in contact with one another and transfer of energy takes place.	▸ Demonstration by teacher: Adding dilute HCl to solid sodium carbonate taken in a test tube. A reaction takes place with the evolution of gas.	▸ HCl, solid Na_2CO_3, ▸ KI, Lead acetate, NH_4Cl, NaOH, Dilute HCl. ▸ Test tube, burner.
▸ Characteristics of occurrence of a chemical reaction: Change of: ☛ Colour ☛ State ☛ Smell ☛ Evolution of gas ☛ Precipitate formed ☛ Heat evolved / released	▸ Demonstration by teacher of these changes through activities: ☛ Colour: KI + Lead acetate reaction. Yellow colour formed. Precipitate is also formed. ☛ Heat NH_4Cl. NH_3 gas is evolved. ☛ HCl+ NaOH; heat is evolved.	
▸ Chemical Equations: ☛ Writing word equations for chemical reactions and emphasize on the observational skills and the names of products formed ☛ Some examples of word equations for practice.	▸ Guiding children to identify the reactants and products of the reaction, put an arrow in between the reactants and products with the arrow pointing towards the products side. ▸ Involving each child to write word equations of some simple reactions.	

Integration: Physics

Theme 6: Metals and Non-Metals

In day-to-day life many elements are commonly found such as iron, aluminium, zinc, lead, chlorine, carbon, sulphur etc. and their compounds. The elements have been classified in two classes, namely metals and non-metals. In this theme children will learn the classification of elements as metals and non-metals on the basis of their properties.

Learning Outcomes:

Children will be able to:

- differentiate between metals and non-metals on the basis of their physical properties such as lustre, conduction of electricity and heat, malleability, ductility, sonority, melting point, boiling point, density, strength;
- describe common uses of some of the metals and non-metals;
- describe the cause of corrosion of iron and other metals;
- list different ways of preventing corrosion of metallic articles used in daily life;
- list some properties and uses of metalloids.

Metals and Non-Metals

Key Concepts / Concerns	Pedagogy/ Transactional Strategies*	Suggested Learning Resources
Metals, non-metals • Properties • Distinguish between metals and non-metals with the general properties (lustre, conduction of electricity, heat, malleability, ductility, sonority, melting point, boiling point, density, strength.) • Classification of elements as metals & non-metals. • Corrosion of iron (rusting); ways to prevent rusting (oiling, painting, chrome plating, galvanization, tinning) (avoiding contact with air and water vapour). • Uses of certain metals (iron, gold, copper, aluminium, zinc, lead, magnesium). • Metalloids: elements that show the properties of both metals and non-metals – e.g. silicon, germanium,	• Asking children to name some metals that they know of/have seen being used in daily life. • Examining the properties of metals and non-metals through activity: ☛ Taking a small iron nail, a coal piece, aluminium wire, and pencil lead. Beating each separately with a hammer and recording the observations. (malleability). ☛ Making separate electric circuits using a metal and a non-metal (Al wire, coal piece) - (conductivity). ☛ Dropping the above samples one by one. Noting the sound produced –(sonority). • Classifying elements on the basis of their properties. • Demonstrating that moisture and oxygen in air are responsible for the corrosion; reaction of corrosion in words: **Activity**: Take three test tubes. Iron nails are placed in them. In 1st iron nails are dipped in water, in 2nd, put a piece of quick lime so as to make the tube moisture free, in 3rd tube, add water and a few drops of dilute acid. Keep the test tubes aside for a few days and ask	• Collection of some metals such as copper, iron nail, a coal piece, aluminium wire, and pencil lead. • Collection of rusted articles made of iron. • Article made of copper. • Water pipes used in houses to show that they are galvanized to prevent rusting. • Iron pieces, grease, paint.

Metals and Non-Metals		
Key Concepts / Concerns	**Pedagogy/ Transactional Strategies***	**Suggested Learning Resources**
tungsten, antimony); uses.	children to observe and then draw conclusions. The basic nature of rust can be tested using litmus paper. - In case of copper, green deposit on the surface of articles made of copper can be observed. - Discussing examples such as the iron pillar at Qutab Minar which has not rusted for the last 1600 years. It highlights the achievements of ancient India in technology. - Discussing that rusting of iron can be prevented if the metal does not come in direct contact with air and water. This can be shown experimentally by applying grease/ coating of paint on the surface of an iron object. - Iron pipes used in homes to carry water are galvanized to prevent rusting. Refer to cooler in homes. - Asking children to identify some metals used in daily life. - Discussing some properties of silicon, germanium, tungsten and antimony to justify them as metalloids.	

Integration: Physics, Geography

Theme 7: Air and Atmosphere

Air is a mixture of some gaseous components which have wide use in daily life. For example, nitrogen is an important constituent of fertilizers and oxygen is essential for our body for sustenance of life. These gases have important physical and chemical properties and uses.

Learning Outcomes:

Children will be able to:

- review that air is a mixture of gases;
- recall the components of air;
- discuss the use of oxygen and nitrogen in different life processes;
- explain from an activity that mass change takes place on combustion;
- express the reaction in the form of word equation;
- describe the preparation of oxygen in the laboratory using potassium chlorate/ hydrogen peroxide and manganese dioxide as a catalyst;
- understand the concept of catalyst.

Air and Atmosphere

Key Concepts / Concerns	Pedagogy/ Transactional Strategies*	Suggested Learning Resources
Air a mixture of gases. Composition of air and uses of its components. Oxygen is needed for combustion. Mass change during burning (burning of magnesium and candle). Word equations for reactions of metals and non-metals (S, C, P, Na, K, Ca, Mg) with O. Products formed in acid rain; effects of acid rain. Air quality.	Revisiting earlier concepts. Building on children's previous learning. Discussing that concentration of components of air is not fixed at all places. Hence it is a mixture. Making a Pie chart presentation to show the composition of air and discussing the same with children. Preparing a list of the uses of oxygen, nitrogen and carbon dioxide. Activity: placing a candle in a plate of water. Candle goes off when oxygen is used up. (Recall demonstration in class VI). Demonstration: Weighed quantity of magnesium is burnt in air and magnesium dioxide so formed is weighed. There is an increase in mass due to gain of oxygen from the atmosphere in the formation of MgO. Guiding the children to write word equations of the reactions. Identifying that in acid rain, the acidic oxides, namely SO2, CO2, nitrogen oxides dissolve in rain water. The acids so formed damage the heritage	Pie chart. Candle in plate of water. Magnesium ribbon. Burner, tongs, weighing scale. Apparatus to prepare O2 gas. Potassium chlorate, manganese dioxide and hydrogen peroxide. Project.

Air and Atmosphere		
Key Concepts / Concerns	**Pedagogy/ Transactional Strategies***	**Suggested Learning Resources**
▸ Study the properties of oxygen: (physical properties to include colour, odour). ▸ Distinguish between: ☛ Respiration and combustion, ☛ Combustion and rusting.	buildings like the Taj Mahal. The stone of Taj Mahal is CaCO3 which reacts with acids present in rain. ▸ Preparing a report in groups on the effects of acid rain on Taj Mahal and the efforts of the Government. Waste gases from factories, emission from vehicles contributing to the change in the composition of air and damaging environment. ▸ Organising children's activity – assigning in groups on a Project on the consequences of acid rain on bridges, cars, machines, coral reef, aquatic organisms, agriculture and presenting the findings in class. ▸ Demonstrating reactions of combustion of wood and rusting of spade.	

Integration: Physics, Geography, Biology, Languages

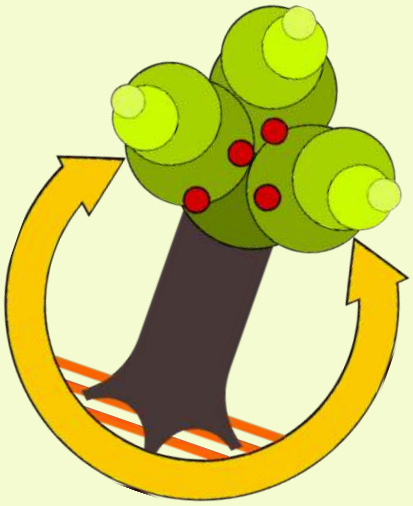
Biology

Biology is perhaps the most fascinating of all the sciences, as it is the science of life, and is aptly called life science. More than anything else, Biology is a quest, an ongoing inquiry about the nature of life.

Scientists all over the world are engaged in solving biological puzzles that once seemed unsolvable. We are moving closer to our understanding of many things such as how a single microscopic cell develops into a complex plant or animal; how plants convert solar energy into the chemical energy of food; how the human mind works; how various forms of life network in biological communities such as forests and coral reefs; how the great diversity of life on Earth evolved from the first microbes, etc.

The discovery of the double-helical structure of the DNA, deciphering of the genetic code, and three-dimensional structure of many macromolecules led to the phenomenal growth in the field of Molecular Biology. Recent breakthroughs in genetics and molecular cell biology are transforming medicine and agriculture. New models in ecology are helping scientists to evaluate environmental issues such as increasing atmospheric levels of carbon dioxide leading to global warming and the destruction of the ozone layer.

Biology also plays a valuable part in general education and its day to day relevance in the lives of children, in terms of nutrition, health and hygiene, medicines and a host of other useful products needs to be highlighted. At the same time, the curiosity of children towards environmental issues needs to be aroused and knowledge be imparted through the study of nature and the consequences of upsetting nature be addressed.



The core concepts of Biology for Classes VI – VIII are as follows:

Class VI	Class VII	Class VIII
Plant Life	Tissue	Transport of Food and Minerals in Plants
The Cell	Kingdom Classification	Reproduction in Plant and Animals
Human Body	Plant Life	Ecosystems
Health and Hygiene	Human Body	Human Body- Endocrine, Circulatory and Nervous Systems
Adaptation	Health and Hygiene	Health and Hygiene
		Food Production

Theme 1: Tissue

In the previous class, children learnt about the cell, which is the basic unit of life in plants and animals. The cells are organized into tissues, organs, organ-systems and finally into an organism. The theme in this class will focus on enabling children to know about tissues and the different types of tissues in plants and animals.

Learning Outcomes:

Children will be able to:

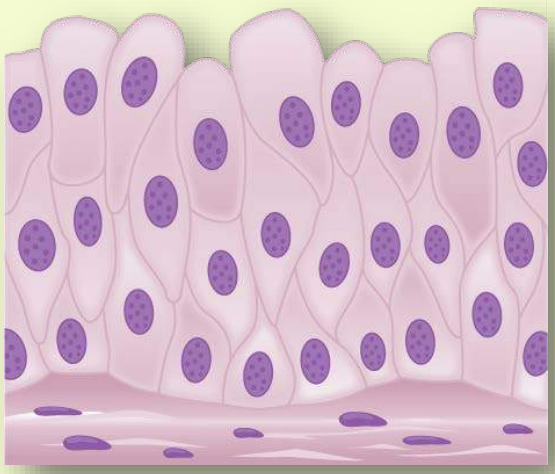
- define the term 'tissue';
- relate that plants and animals have different types of tissues;
- explain the differences between meristematic and permanent tissues with examples;
- draw the relation between structure, location and function of different tissues;
- draw diagrams of different tissues and label them;
- classify the different types of animal tissues (epithelial, connective, muscular and nerve tissues) with functions.

Tissue

Key Concepts	Suggested Transactional Processes	Suggested Learning Resources
Plant Tissues ▸ Definition of tissue. ▸ Classification of plant tissues: Meristematic and permanent (simple and complex). ▸ Meristematic tissues: characteristics (any two), simple structure, location, function, examples. ▸ Simple permanent tissues: parenchyma, collenchyma, sclerenchyma (simple structure, location and functions of each), examples. ▸ Complex permanent tissues: xylem, phloem (only nature of cells and function. Elements of xylem and phloem not to be mentioned).	▸ Showing and explaining the different plant tissues to children - their location, structure, characteristics and functions charts and models. ▸ Encouraging children to develop charts and models. ▸ Drawing of diagrams by children of kinds of tissues and differentiating between them. ▸ Collecting more information on plant tissues, such as tissue culture by children in groups or individually **Experiments** ▸ Keep a twig of petunia with white flowers in a beaker containing coloured water and observe the flowers after a few hours (flowers will become coloured). ▸ Perform an experiment and ask the children to observe and record what happens to the plant seedlings if the roots	▸ Permanent slides on kinds of tissues. ▸ Charts and models. ▸ PPTs and Videos on tissues. ▸ Photographs and pictures of tissues. 

Tissue

Key Concepts	Suggested Transactional Processes	Suggested Learning Resources
Animal Tissues ➢ Epithelial tissue: simple location, and function (types of epithelial tissue not to be mentioned). ➢ Connective tissue location and functions of areolar, adipose, bone, cartilage, blood, ligament, tendon. ➢ Muscular tissue: location and one function of: ☛ *striated (voluntary or skeletal muscle),* ☛ *unstriated (involuntary/ smooth muscle),* ☛ *cardiac (specialized muscle*). ➢ Nerve tissue: parts of neuron (cell body, Dendron, axon). ***Note**: Only basic structure and basic functions of the above mentioned tissues to be done.*	are removed and seedlings are kept in coloured water. **Animal Tissues** ➢ Showing diagrams of the following tissues: Epithetical, Connective, Muscular and Nervous tissue, through charts and models. ➢ Providing opportunities to children to: ☛ *draw diagrams of animal tissues.* ☛ *label them* ☛ *write functions of each kind of tissue* ☛ *collect more information on animal tissues* ☛ *model/charts of animal tissues.* ➢ Showing children, the model of the nervous system and pictures of Dendron and axon. ➢ Asking children to draw a diagram of nerve tissue. ➢ Discussing functions of nervous system.	➢ Specimens, charts and models. ➢ Models and pictures of nervous system. ➢ Children's drawings.



Theme 2: Kingdom Classification

This theme gives an insight into the study of the types of Kingdoms in Plants and Animals. Living organisms are divided into two kingdoms – Kingdom Plantae and Kingdom Animalia. The kingdom Plantae includes plants, while the animals are included under kingdom Animalia. This two-kingdom classification was found inadequate in the light of disputed position of organisms like bacteria and fungi. In view of the objections to the two-kingdom system of classification, a Five-Kingdom Classification was proposed in 1969. The five Kingdoms are Monera, Protista, Fungi, Plantae and Animalia.

Learning Outcomes:

Children will be able to:

- explain the purpose and advantages of classification;
- explain the basis of 5-kingdom classification;
- differentiate between major groups of organisms;
- draw pictures of organisms representing each kingdom;
- list the useful and harmful effects of bacteria and fungi;
- infer that complex organisms have evolved from simple organisms (evolution of life).

Kingdom Classification

Key Concepts	Suggested Transactional Processes	Suggested Learning Resources
▸ Meaning and concept of classification. ▸ Need and advantages of Classification. ▸ Characteristics of each kingdom with suitable examples: (i) Monera: bacteria - shape; useful bacteria, harmful bacteria (applications related to daily life to be discussed); (ii) Protista: *Amoeba* - basic structure and life processes (nutrition, locomotion, respiration, excretion and reproduction – by binary and multiple fission); (iii) Fungi: basic structure of mould, nutrition and respiration in mould, useful fungi, harmful fungi (applications related to daily life to be discussed); (iv) Plantae: characteristics and examples (classification of plantae not to be discussed); (v) Animalia (a) Vertebrates. (b) Invertebrates: 9 major Phyla, Porifera, Cnidaria, Coelenterata, Platyhelminthes, nematoda, Annelida, Arthropoda, Mollusca, Echinodermata) (Two characteristics and two examples of each Phylum).	▸ Providing opportunities for observation through visit to a nearby garden/zoo or a nature walk. ▸ Asking children to classify or group these plants and animals in their own way. ▸ Learning about different organisms belonging to each kingdom and asking them to write about examples of each kingdom. ▸ Drawing pictures of organisms belonging to each kingdom. ▸ Encouraging children to collect more information on each phylum. ▸ Assigning projects to make picture cards and writing their features on the other side.	▸ Plants and animals in their natural habitats. ▸ Zoo to see the diversity of life. ▸ Specimen from the laboratory. ▸ Charts, Models and photographs. ▸ PPTs and Videos. ▸ Picture cards.

Life Skill: appreciate diversity of life

Theme 3: Plant Life

The theme Plant Life aims at promoting children's understanding that all living organisms despite their great diversity in shapes and sizes, show similarity in their activities. They all need food, energy, grow, remove waste materials from their bodies, reproduce and respond to their environment. Growth, excretion, reproduction and response to stimuli are some of the basic life processes. This theme will particularly focus on enabling children to understand the two important processes in plants of Photosynthesis and Respiration, differences between the two and factors affecting them.

Learning Outcomes:

Children will be able to:

- discuss and demonstrate that leaves perform the function of photosynthesis;
- enlist the factors affecting photosynthesis;
- draw picture of stomata and chloroplast;
- identify the difference between respiration and photosynthesis and relate that respiration and photosynthesis help maintain the balance of CO2 and O2 in the atmosphere;
- reason out that the energy produced in respiration is used up by the body to perform life-sustaining activities;
- differentiate between the aerobic and anaerobic respiration;
- discuss the need for growing more and more plants.

Plant Life

Key Concepts	Suggested Transactional Processes	Suggested Learning Resources
Photosynthesis ▸ Definition, basic process, factors affecting photosynthesis: (light, carbon dioxide, water, chlorophyll), significance of photosynthesis, setup. ▸ Experiment to demonstrate photosynthesis process. **Respiration** ▸ Basic process, word equation; respiration as a process which releases energy; respiration in plants: two types (aerobic and anaerobic: basic concept, word equations for both, examples). ▸ Respiration and photosynthesis in plants, difference in both processes.	▸ Revisiting previous concepts. ▸ Building on children's previous learning. ▸ Asking children to observe the colour of leaves and also name plants that have yellow or red coloured leaves, discussing the reasons for such colours. ▸ Providing opportunities for observation of stomata and chloroplasts present in the leaves using a microscope. ▸ Drawing picture of stomata and chloroplast and labelling their parts. ▸ Summarizing the process of photosynthesis with the help of a word equation (No symbols) ▸ Demonstrating experiments in setup on photosynthesis and respiration with the support of elders. ▸ Demonstrating to children the hydrilla experiment to show evolution of oxygen during	▸ Charts. ▸ Plants like hydrilla (water plant), mushroom, money plant, yeast, leaves of croton, *Rhoeo* (*to see colour of leaves and performing experiments*). ▸ Permanent slides/fresh preparations of epidermal peels of leaves (to observe stomata) and Hydrilla leaf to study stomata and plastids. ▸ PPTs, videos.

Plant Life		
Key Concepts	**Suggested Transactional Processes**	**Suggested Learning Resources**
	photosynthesis. - Discussing the difference between aerobic and anaerobic respiration and citing examples of both. - Discussing differences between the respiration and photosynthesis process in plants and asking children to explain both the processes in their own words.	

Theme 4: Human Body

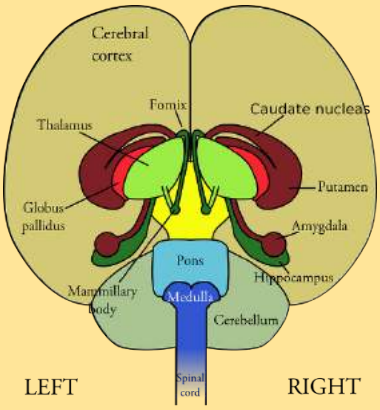
In the previous classes, children were exposed to basic information regarding some of the organ systems in the human body (digestive, respiratory and circulatory systems). In this theme, children will study the excretory and nervous systems in the human body.

Learning Outcomes:

Children will be able to:

- define the term 'excretion' and its need/significance;
- draw the outline figure of the human body and mark the location of kidneys, skin, sweat glands and lungs;
- infer that the kidneys are very important as they filter the blood;
- identify various parts of nervous system i.e. brain, spinal cord and nerves.
- discuss the need of spinal cord, brain, nerves for the body;
- relate that all parts of the body are connected to the brain through the nerves;
- list some of the activities that are under the control of the nervous system.

Human Body

Key Concepts	Suggested Transactional Processes	Suggested Learning Resources
Excretory System **Excretion: Definition.** ▸ Organs and their excretory products (kidneys, sweat glands, lungs); ▸ Renal Excretory System - kidneys, ureter, urinary bladder, urethra (location and functions to be explained along with diagram); ▸ Role of kidneys infiltration of blood through millions of nephrons (details not required, structure of nephron not to be discussed); common disorders of the urinary system: Urinary Tract Infection, kidney stone. **Nervous System** ▸ Main parts: brain, spinal cord, nerves. ▸ Brain: cerebrum, cerebellum, medulla oblongata (location and function). ▸ Spinal cord: location and function. ▸ Nerves: what are nerves; their general function.	▸ Building on children's previous learning. ▸ Explaining the various parts of excretory and nervous system with the help of charts, models, PPTs and videos. ▸ Explaining the difference between excretory and waste products. ▸ Asking children to draw labelled diagrams of the following: ☛ *The excretory system showing the various parts along with labelling.* ☛ *The nervous system – the brain, spinal cord, and nerves.* ▸ Discussing common disorders of the urinary system. ▸ Assigning group projects on making models and charts on both systems. ▸ Providing children opportunities to share their personal experiences.	▸ Charts and models. ▸ PPTs and videos. ▸ Model of the brain and human excretory system. ▸ Children's drawings. 

Theme 5: Health and Hygiene

In the earlier classes children have learnt that diseases develop due to infections by micro-organisms, imbalances in diet and malfunctioning of vital body organs, and that hygiene is important to prevent spread of diseases. In this theme, children will know and understand the allergic reactions of the body due to certain substances in the environment and how they can be prevented.

Learning Outcomes:

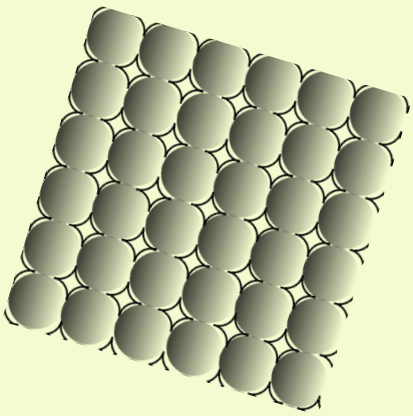
Children will be able to:

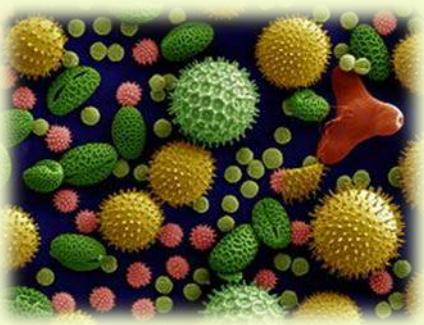
- define the terms allergy and allergens and differentiate between them;
- identify the symptoms produced by allergens;
- infer that allergy can be seasonal or perennial;
- know the precautions to be taken if they suffer from any particular type of allergy.

Health and Hygiene

Key Concepts	Suggested Transactional Processes	Suggested Learning Resources
Allergy • Concept of allergy. • Allergens: Common allergens like dust, pollen grain, mites, strong sunlight, particular food items. • Entry routes of allergens: mouth, nose, skin. • Symptoms of allergic reaction. • Types of allergies: seasonal and perennial with examples. • Precautions and care to be taken by a person who is prone to allergies.	• Enlisting causes of allergy. • Discussing with children the concept of allergy, explaining the various aspects of entry route of allergens, symptoms produced, precaution to be taken to control allergic reactions. • Providing opportunities for discussion with the school physician. • Organising group discussion on prevention and care of allergy. • Discussing various ways to keep oneself healthy and safe.	• PPTs, Videos, photographs • Permanent/temporary slide of *Aspergillus* conidiophores • Photographs/ slide showing mites, pollen, etc. in house dust. • Physician.

Integration: Health and Physical Education
Life Skill: Health awareness





COMPUTER STUDIES

Computer Studies

Introduction

With computers, mobiles and tablets present in most urban households, children today have far greater access to these devices than ever earlier. With their natural tendency to explore, they are often adept at learning by themselves or by observation. It is important to identify the content suitable for the children according to their age and introduce it to them at the opportune time. Keeping in mind their curiosity and knowledge, this curriculum provides children with opportunities to use modern technology to enhance their learning in all subjects. It also generates awareness among them about risks like long hours of usage to play or inappropriate access to the internet. This curriculum also ensures that children become digitally literate, i.e. able to use, and express themselves and develop their ideas through ICT at level suitable for the future workplace and as active participant in the digital world.

Aim

This curriculum helps the learner:

- to become competent, confident, responsible and critical user of technology.
- to develop the appropriate social skills that are essential for co-operative and collaborative learning.
- to take ownership of their own learning.
- acquire knowledge and skills in using Information and Communications Technology (ICT) to accomplish tasks, communicate, and facilitate activities.
- develop awareness regarding the developments and emerging issues concerning computing and society;
- develop critical and analytical thinking skills for practical solutions.
- develop creative skills for problem solving.

The Core Concepts of Computer Studies for Classes VI-VIII are as follows:

Topic 1: Computer - Hardware Components

Computers comprise of two major components: hardware and software that are integral to each other's functioning. Hardware are either external, like, monitor, keyboard, mouse, printer, etc., or internal, like, CPU, motherboard, drive, sound card and video card. This theme aims at enabling children to know and understand the two major components of the computer.

Learning Outcomes:

Children will be able to:

- recognize different components of a computer like SMPS, ports, MODEM and disc drives.
- explain the usage of different components.
- differentiate between external and internal hardware.
- cite examples of external and internal hardware.

Computer – Hardware Components

Key Concepts	Suggested Transactional Processes	Suggested Learning Resources
▸ Computer Hardware: external and internal hardware; ▸ Brief explanation with examples of hardware and some of its parts (CPU, Disk drives, Power supply (SMPS), Motherboard, Ports, Modem, peripheral devices (keyboard, mouse, pen drive, scanner, printer etc.).	▸ Showing the components of an old CPU box and their placement on the mother board. ▸ Differentiating through demonstrations to children between internal and external hardware. ▸ Explaining different components like Power supply (SMPS), Motherboard, Ports, Modem through presentations/ videos. ▸ Engaging children to participate in quizzes and worksheet activities related to hardware	▸ Old CPU components. ▸ Computers/ IWB with presentation software. ▸ External hardware. ▸ Internal hardware, ▸ Quizzes and worksheets

Topic 2: Number System – An Introduction

Number System is a set of values used to represent different quantities. In day-to-day life we use the decimal number system, which has a base of 10 as it uses 10 digits (0-9). The digital computer represents all kind of data and information (text, numbers, graphics, video, etc.) in binary numbers which have a base of 2 as the computer uses 2 digits (0 and 1). Other number systems used in computer are octal and hexadecimal. Values from one number system can be converted to other number system. This theme aims at enabling children to know and understand the different number systems and their uses in general and in particular, that of the digital computer.

Learning outcomes:

Children will be able to:

- explain the need for Number Systems;
- list the uses of various Number Systems in computer learning;
- convert a value from decimal number system to binary and vice versa;
- citing examples of binary, decimal conversion and demonstrating them.

Number System – An Introduction		
Key Concepts	**Suggested Transactional Processes**	**Suggested Learning Resources**
▸ Introduction to Number system: need for number systems and examples of various number systems. ▸ Digits and bases of different number systems. ▸ Represent value in different number systems (Decimal, binary, octal and hexadecimal number system). ▸ Conversions from decimal to binary and vice versa.	▸ Illustrating to children the various number systems (Decimal, binary, octal and hexadecimal) through videos/ presentation. ▸ Providing opportunities, through examples to children to undertake hand-on-activity for practicing the technique of conversion binary to decimal and vice versa.	▸ Computers/ IWB with presentation software. ▸ Hands-on-activity ▸ Interactive class ▸ Videos on number systems. ▸ Projector, etc.

Life Skills: Such as logical thinking may be developed through this content.

Topic 3: Computer Virus

A computer virus is a 'piece of code' that copies itself and corrupts the system to destroy existing data on a computer. Computer viruses are manmade. There are many types of viruses which infect systems in different ways causing damage to the system. To counter-effect the virus, antivirus programs are developed. This Topic aims at developing children's ability to understand and discuss about what a computer virus is the different types, symptoms and causes along with remedies and protection tips.

Learning outcomes:

Children will be able to:

- define a virus.
- list different types of viruses.
- follow standard measures to prevent virus attack.
- identify symptoms of virus attack on a computer.
- use a suitable antivirus software.

Computer Virus		
Key Concepts	**Suggested Transactional Processes**	**Suggested Learning Resources**
▸ Definition and example of computer virus. ▸ Types of Virus (boot sector and program file virus - definition and examples). ▸ Virus symptoms and harm caused by virus ▸ Antivirus – definition and examples. ▸ Ways to prevent a virus (e.g. scanning pen drive, and CDs, downloading only from secured sites, updating of antivirus regularly etc.). ▸ Definition and example of forms of virus attack (malware, worm, spyware, Trojan horse, sweeper).	▸ Illustrating different types of viruses (boot sector and program file virus with examples). ▸ Discussing the different forms/types of viruses. ▸ Showing children through videos/ presentations the symptoms and harm caused by viruses and conducting a discussion with them after that. ▸ Demonstrating different ways to prevent virus attacks and asking children to replicate the same.	▸ Computers/ IWB with presentation software. ▸ Videos. ▸ Discussion on harmful effects of virus ▸ Scanning process of pen drive, CD

Life Skills: Awareness and Management skills

Topic 4: Ethics and Safety Measures in Computing

Ethics in computing or computer ethics is a set of moral principles which regulate the use of computers. This theme aims at making children aware of the ethics in computing while using the Internet. Further, in order to safeguard the computer and prevent attacks of viruses and hacking, etc. they will know about certain safety features which need to be applied.

Learning outcomes:

Children will be able to:

- follow ethics in computing;
- identify online threats;
- identify positive and negative uses of social media;
- show responsible behaviour when using computer and internet;
- become responsible digital citizens;
- take care about the digital footprint being created by their online behaviour;
- use information ethically when developing presentations/ projects/ etc.

Ethics and Safety Measures in Computing

Key Concepts	Suggested Transactional Processes	Suggested Learning Resources
▸ Advantages and disadvantages of using internet. ▸ A brief introduction to ethics in computing. ▸ Unethical practices prevalent in the society, related to internet: ☛ *Plagiarism* ☛ *Cyber bullying* ☛ *Hacking* ☛ *Phishing* ☛ *Spamming* ☛ *Individual right to privacy* ☛ *Software Piracy,* ☛ *Intellectual property rights* ▸ Meaning and a brief explanation of the different unethical practices stated above in point no. 3. along with the preventive measures. ▸ Safety Measures to be taken while using the computer and internet. Parental assistance for minors, such as- viewing age appropriate websites, keeping strong password, not sharing passwords, frequently changing passwords, responding to emails only from known person or organisation etc. Protection using Firewall (meaning and a brief explanation). ▸ Digital footprints (meaning and sensitising children about it.)	▸ Discussing with children various Topic/Topics related to ethical and non-ethical issues and practices on the Internet. ▸ While working on the computers inculcating, among the children, the habit of ethical online conduct and responsible behavior while using information and technology. ▸ Encouraging children to follow safety measures while using the computer and internet. ▸ Citing examples from real life to sensitise children on the implications of the digital footprint created by their posts, comments, pictures, social groups, etc.	▸ Computers/ IWB with Presentation Software. ▸ Videos. ▸ Discussion on ethical and unethical practices related to internet use

Life Skills: Net Safety, Social intelligence, work ethics and interpersonal skills.

Topic 5: Spreadsheets - An Introduction

A Spreadsheet is an interactive computer application for storing data, in a tabular form (in rows and columns of a grid), that can be manipulated and used for calculations. Spreadsheets are one of the most popular uses of computer. This Topic aims at developing children's understanding about the basic components and operations of the Spreadsheet, namely: creating/ saving/ modifying a workbook.

Learning outcomes:

Children will be able to:

- define a spreadsheet;
- list the features and components of a spreadsheet;
- create a worksheet;
- identify the components of spreadsheet window;
- differentiate between a workbook and a worksheet;
- edit/format a worksheet.

Spreadsheets – An Introduction

Key Concepts	Suggested Transactional Processes	Suggested Learning Resources
▸ Features of spreadsheet and its advantages. ▸ Components of Spreadsheet window: workbook and worksheet, sheet tab, cell, cell address, active cell, formula bar, row, column, name box. ▸ Entering data in a spreadsheet ▸ Types of data (number, string and formula). ▸ Perform calculations. ▸ Enter simple formulae. ▸ Select cells. ▸ Change cell contents. ▸ Use Undo and Redo features. ▸ Insert and deleting columns and rows. ▸ Copy and move data. ▸ Use autofill feature.	▸ Demonstrating to children the different components of a spread sheet along with discussion. ▸ Demonstrating the use of Spreadsheets using real life examples: children can be individually/in groups asked to collect data of a group of people on two- three criteria (e.g. age, height, weight, etc.), enter the data on a spread sheet and perform the various functions on them. ▸ Using formatting features by children created on the spread sheets. ▸ Discussion on advantages of spreadsheet and workbook. ▸ Providing each child the opportunity to work on computers and undertake the following tasks: • Entering data in a spreadsheet • Perform calculations. • Enter simple formulae. • Select cells. • Change cell contents. • Use Undo and Redo features. • Insert and deleting columns and rows. • Copy and move data. • Use autofill feature.	▸ Computers/ IWB with spreadsheet software. ▸ Questionnaires/surveys/ polls ▸ Discussion on advantages of spreadsheet and workbook

Life Skills: creative thinking, analytical and deductive skills
Integration: Mathematics

Topic 6: Database and DBMS – An Introduction

Database is an organised collection of data. DBMS, an acronym for Data Base Management System, is an application software for creating and managing databases. It provides facility to create, update, retrieve and manage data.
In this topic children will know and understand about the basics of creating a database and will develop the ability to design simple query statements.

Learning outcomes:

Children will be able to:

- define database and DBMS;
- list real life examples of databases;
- design a database;
- describe different data types;
- define a primary Key;
- create a table, insert data, save and edit a table;
- build query statements.

Database and DBMS – An Introduction		
Key Concepts	**Suggested Transactional Processes**	**Suggested Learning Resources**
▸ Meaning of Database and DBMS. ▸ Uses of database with examples. ▸ Create and Save a database. ▸ Primary Key. ▸ Querying a Database.	▸ Organising a discussion with children to cite examples from real life, like, telephone directory, student registration records, etc., highlighting the need to store data in an organised manner. ▸ Explaining the concept of database and illustrating steps to create, save and edit a database and querying a database. ▸ Explaining the importance of Primary Key and different data types with respect to database Query. ▸ Provide opportunities for hands on experience to prepare a database through some examples and generating queries on the data.	▸ IWB with database software. ▸ Telephone directory. ▸ Student registration record.

Topic 7: HTML – Advanced Features

This topic will develop children's ability to create a web page by not only using basic HTML tags, but upgrading their skills to use advanced tags like lists, images, links, tables and forms. This will make the creation of a web page more attractive and useful to children.

Learning outcomes:

Children will be able to:

- add advanced features to a web page, like lists, images, links, tables and forms

HTML – Advanced Features		
Key Concepts	**Suggested Transactional Processes**	**Suggested Learning Resources**
Create lists (<OL>, <UL>) . Insert Images in web pages <img src>. Insert links <a href>, tables <tr>, <td>, <table>. Display objects through <Marquee>. Create forms using <form> tag.	Revising and revisiting previous concepts learnt by children i.e. The HTML tags and building on the same. Encouraging children to discuss: • about the features of the websites that they like and their reasons for the same. • how a webpage can be made more impressive/user friendly. Illustrating how to create lists, insert images, links, tables and forms in a web page and encouraging each child to do the same on his/her computer. Providing opportunities for hands on activity through web page development.	Computers/ IWB with HTML editor. Internet facility.

ARTS EDUCATION

Arts Education

The Arts are organised expressions of ideas, feelings and experiences in images, music, language, gesture and movement. They provide for sensory, emotional, intellectual and creative enrichment and contribute to the child's holistic development. Much of what is finest in society is developed through a variety of art forms which contribute to the cultural ethos and sense of well-being of an individual.

Overview

Various policy documents have recommended Arts Education as an area of immense importance for the overall development of students. Report of the Education Commission (1952-53) emphasized the "release of creative energy among the students so that they may be able to appreciate cultural heritage and cultivate rich interests, which they can pursue in their leisure and later in life" and the Kothari Commission re-emphasized the role of arts in education and stated, “The neglect of arts in education impoverishes the educational process and leads to a decline of aesthetic tastes and values."

Arts education was always recommended as an important component of the school curriculum in all National Curriculum Frameworks (1975, 1988 and 2000). The NCF 2005 recommendations brought in the major shift giving Arts Education the status of a curricular area of school education from classes I to X on one hand and arts as an approach to learning to be integrated across the complete school curriculum on the other.

At International front the UNESCO outlines the importance of Arts Education and its essential role in improving the quality of education. UNESCO's Road Map (2006) endeavors to define concepts and identifies good practices in the field of arts education, globally. It is meant to serve as an evolving reference document which outlines concrete changes and steps required to promote arts education in educational settings.

The Seoul Agenda (2010) is another important policy document of UNESCO on Arts Education. Its

three Goals for the Development of Arts Education reflect that Arts education has an important role to play in the constructive transformation of educational systems that are struggling to meet the needs of learners in a rapidly changing world characterized by remarkable advances in technology on the one hand and intractable social and cultural injustices on the other.

Objectives of Teaching and Learning Arts

Education deals with human nature, which has its own potential and pace of growth. Its objective is not to mould, but to facilitate the individual to grow and develop into a creative and productive citizen. The aim is to make an individual free to make his/her own choices in life and grow holistically. In other words, education in general and Art Education in particular is a way for one to grow and become sensitive to the beauty in nature, of social values and the aesthetic aspects of life as a whole.

The Objectives of teaching and learning Arts are:

- ✓ Awareness about oneself and one's immediate environment, from physical existence of objects to daily life experiences and their social importance.
- ✓ Development of individuality, sense of self and self-identity including personal identity and social identity.
- ✓ Opportunity for experiential learning through exploring, appreciating, creating, imagining and expressing.
- ✓ Develop sensory, kinesthetic, psycho motor and affective abilities.
- ✓ Develop cognitive abilities such as imagination, divergent thinking, critical and reflective thinking.
- ✓ Develop an understanding of art materials, methods, tools & techniques, and of processes to communicate and express ideas and feelings in different ways.
- ✓ Develop a non-verbal means of communicating ideas and seeing relationships to reinforce verbal learning.
- ✓ Develop the sensory and other skills in differently abled children (children with special needs) so as to include them in to the mainstream of the process of art learning with normal children.
- ✓ Appreciation of India's heritage and cultural diversity, and that of the world.
- ✓ Develop humane values of peaceful co-existence with nature and other human beings.

Art Education Curriculum and Suggestive Pedagogical Guidelines

Art is essential for cognitive, affective and psychomotor development of every child. It also helps them in modes of expression, visualizing, scenario building, creative problem solving, divergent, critical and reflective thinking. Arts education enhances a child's ability to understand their traditional art heritage as a national treasure and conserve and preserve it. Experiencing arts and

its explorations during the school years give them avenues to nurture creativity which makes them contributing citizens.

The Curriculum of 'Art Education' is delimited to the 'Visual Arts', which consists of; 2-D work such as; Drawing, Painting, Printing, Still-life, pen & Ink, Collage, Paper-craft, Photography, Animation, Graphic-designing etc. and 3-D work such as; Mask making, Clay-modelling, Puppet making, Sculpture, Installations etc.

Stage wise/class wise pedagogical guidelines are given in detail alongside the theme charts of curriculum outcomes, with general guidelines to assist teachers / facilitators plan and conduct the teaching learning experiences better are as given below:

Upper Primary Level

At the upper primary level children are just stepping into the period of adolescence. Physical and psychological changes are rapid and cause anxiety, mood swings, identity issues, etc. Arts education, as medium of creative and individual expression, can cater to their needs of engaging in constructive activities and channelization of thoughts and energy, which initiates a spirit to work in teams. This is the stage where children require adequate practice to develop skills in handling methods and materials, using tools and techniques of different art forms as they start analyzing their own work, as well as of others.

Profile of the Learner

Children of this stage are between the ages of 10+ to 14+ years. They are extremely self-conscious and critical of themselves due to peer and social pressures. There are many physical and emotional distractions, and diversions due to gender differences.

Content and Methodology

Content at upper primary level should cover self, family and society at large. Learning the skills to explore and express emotions through different art Experiences. Learning and understanding of regional arts and crafts to appreciate the national heritage and cultural diversity as value. Study of environmental and social issues and understanding of elements and principals of visual arts.

Methodology at this stage should be focused on experiential learning. Adequate time and space is to be given for exploration and experimentation with methods and materials. Teachers should ensure the participation of each child including those with special needs. Art experiences should be organized in such a way that it provides opportunities for individual as well as group assignments and presentations. Children should be encouraged to take the lead in the planning, designing and executing of different classroom and school programs. Art experiences should be designed and utilized to address values and life-skills. Exposure through media, field visits and community celebrations, where children and teachers interact and share responsibilities. Additional emphasis should be on

the process than the product. Wherever possible, art should be integrated with content of other subjects, for better understanding and joyful learning of concepts.

All activities whether individual or group, should be evaluated and tools and techniques for this stage recommended are; observation, interactions, portfolios, worksheets, display, presentations, visits, documentation and report etc.

Visual Arts Education

Visual arts education is the area of learning that is based solely on the kind of art that one can see which includes drawing, painting, print making, collage, textiles, sculpture, artefacts and design in jewellery, pottery, weaving, fabrics, etc. and design applied to more practical fields such as commercial graphics and home furnishings. The different types of visual arts are highlighted below.

Drawing

Drawing is a means of making an image, using any of a wide variety of tools and techniques. It generally involves making marks on a surface by applying pressure from a tool, or moving a tool across a surface using dry media such as graphite pencils, pen and ink, inked brushes, wax colour pencils, crayons, charcoals, pastels, and markers.

Painting

Painting is the practice of applying paint, pigment, colour or other medium to a solid surface. The medium is commonly applied to the base with a brush, but other implements, such as knives, sponges, and airbrushes, can also be used. Painting is a mode of creative expression, and the forms are numerous. Drawing, gesture, composition, narration, or abstraction, among other aesthetic modes, reflect the expressive and conceptual intention of the artist.

Print making

Print making is the process of making artworks by printing, normally on paper that involves the making of a work of art by transferring ink from the surface upon which the work was originally drawn or otherwise composed to another surface.

Collage

Collage is a technique of an art production, primarily used in the visual arts, where the artwork is made from an assemblage of different forms, thus creating a new whole. A collage may sometimes include magazine and newspaper clippings, ribbons, paint, bits of coloured or handmade papers, portions of other artwork or texts, photographs and other found objects, glued to a piece of paper or canvas.

Textiles

Textiles are arts and crafts that use plant, animal and or synthetic fibres to construct practical or decorative objects. The textile arts also include those techniques which are used to embellish or decorate textiles – dyeing and printing to add colour and pattern; embroidery and other types of needlework; tablet weaving; and lace-making.

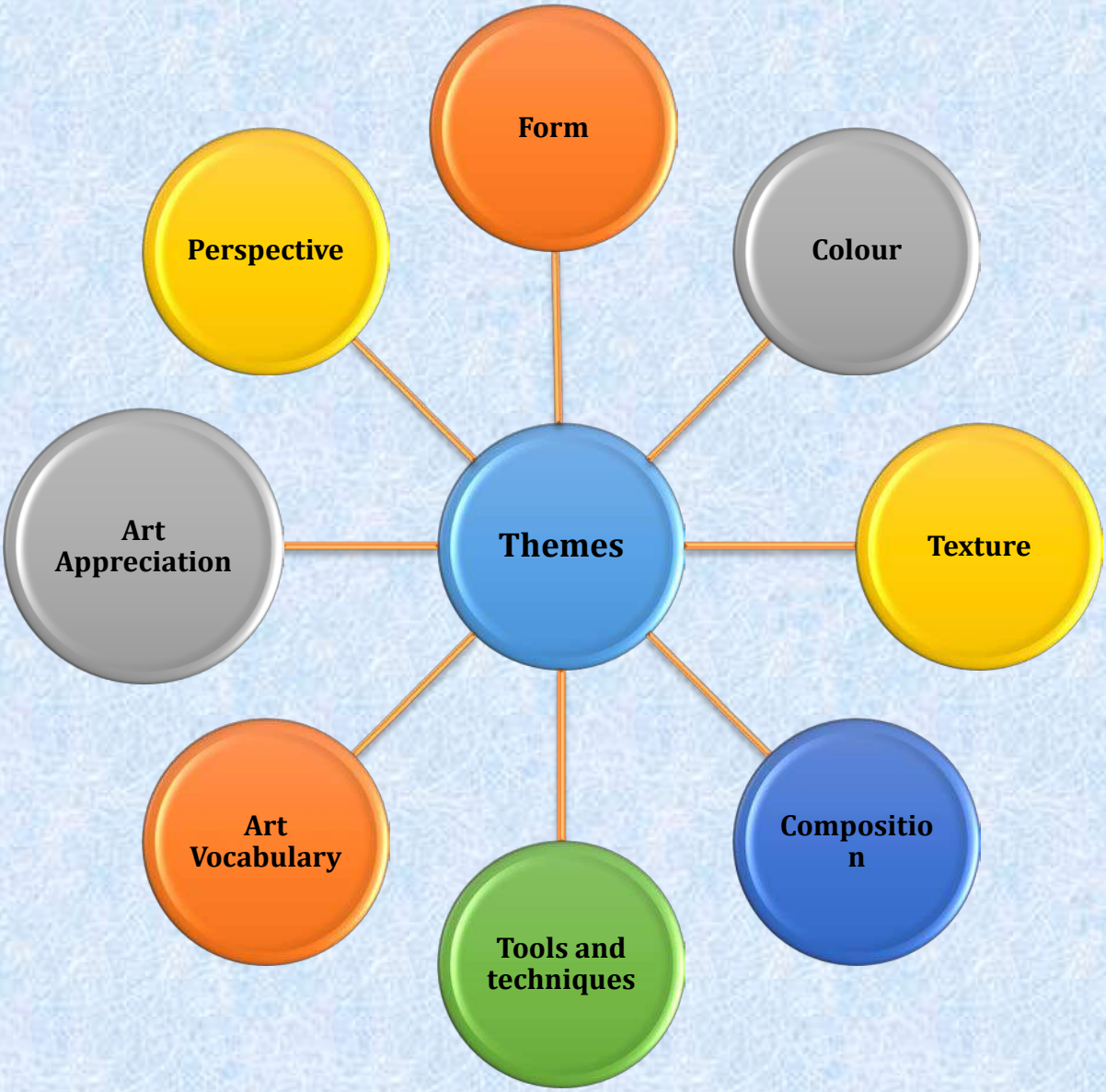
Three Dimensional Work

Three-dimensional art design is comprised of three main elements: balance, proportion and rhythm. Balance denotes visual balance and not the actual ability to stand upright. Proportion refers to the various parts of the three-dimensional object. The parts need to give the appearance of belonging together. Rhythm is the repetition of line or shape within the overall form.

Art & Artefacts

An artefact is something made or given a shape by man, such as a tool or a work of art, especially an object of archaeological interest. Examples include stone tools, pottery vessels, metal objects such as weapons, and items of personal adornment such as buttons, jewellery and clothing.

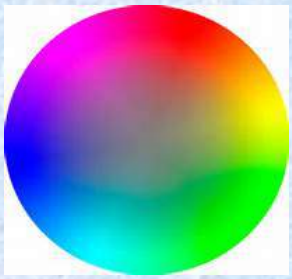
At the upper primary level the themes dealt with in the curriculum for Classes VI , VII and VIII are presented below, there are seven totally.



Theme 1 Form

Forms; Lines, shapes and sizes of the objects in the immediate surroundings/environment, both natural and man-made.

Theme 2 Colour



Colours and naming them after common objects /flowers /fruits / vegetables /animals etc. Understanding and using the characteristics of colour – hue, tint, shade

Theme 3 Texture

Different surfaces; soft, smooth, hard, rough etc.

Theme 4 Composition

Organisation of 2-D and 3-D space, Artistic placement of colours and forms, installation of 3-D objects, painting landscapes/ seascapes, composition based on seasons, sports, parks, situations, arranging patterns, making designs etc. Identification of different kinds of symmetry as types of balance – radial, symmetrical and asymmetrical

Theme 5 Tools and Techniques

Use of flat and round brushes, exploring 2-D and 3D methods & materials, such as; drawing, painting, printing, collage making, paper crafts, clay modelling, pottery, construction of objects & situations, mask making, etc.

Theme 6 Art Vocabulary

Identification of tools, papers and materials with their names. Names of techniques, such as: drawing, painting, folding, stretching, printing, block impression, spray work, blow painting and thumb painting. Names of colours, shapes, sizes, words of appreciation etc.

Theme 7 Art Appreciation or Responding to Artefacts and Nature

Appreciation of artefacts and nature around us, understanding of visual representation of objects, situations and concepts.

Theme 8 Perspective

The way in which objects appear to our eyes based on their spatial dimensions, and position of our eye in relation to that object.

All the eight themes will be dealt with in the sequence given above. Each theme will deal with Classes VI, VII and VIII.

Theme 1: Form

The theme "Form' is aimed at developing an understanding of line, shape and size of objects. The prime focus of this theme is to observe and identify lines and shapes in nature and in man-made objects from the immediate surroundings. Understanding of sizes such as: small, big, tall, huge, tiny etc., and creation of different forms with 2-D and 3-D materials. The process of identification of forms enhances skills, such as; observation, exploration, concentration and creative expression. Learning from this theme will be utilised for facilitating learning of other subjects.

Learning Outcomes:

Children will be able to:

- identify different geometrical and natural forms, realistic and abstract forms, 2-D and 3-D forms of objects and artefacts;
- sketch natural and artificial objects from their immediate surroundings;
- create geometrical and natural, 2-D and 3-D forms from imagination, while using different shapes and sizes;
- decorate 3-D objects using variety of shapes using straight lines, curved lines, smooth lines, crooked lines, vertical and horizontal lines, patterns;
- differentiate between realistic and abstract forms;
- demonstrate use of extended vocabulary related to the theme;
- engage and explore various sites and immediate surroundings for the joy of knowing more.

Form		
Key Concepts	**Suggested Transactional Process**	**Suggested Learning Resources**
▸ Identify different geometrical and natural forms, realistic and abstract forms, 2-D and 3-D forms of objects and artefacts. ▸ Sketch natural and artificial objects from immediate surroundings. ▸ Create geometrical and natural, 2-D and 3-D forms from imagination, while using different shapes and sizes. ▸ Decorate 3-D objects using variety of shapes using straight line, curved line, smooth line, crooked line, vertical and horizontal	▸ Providing opportunities to children for observing and understanding different forms, such as; geometrical and natural forms, realistic and abstract forms, 2-D and 3-D forms of objects around and artefacts. ▸ Providing a platform for children to share their individual experiences related to different types of forms. Suggested area of sharing can be; Interesting 'Forms of home furniture', of 'school furniture', different forms of building architecture and bridges in the immediate surroundings. ▸ Independent and group exploration of the immediate surroundings and selected sites. ▸ Encouraging children to make regular sketches of different forms from	▸ Children's own learning experiences of understanding of forms related to furniture items, building and bridge architecture etc., and forms in nature. ▸ Sketchbooks of children. ▸ Scrap books of children. ▸ Picture cards/ placards, video clips on different forms and designs. ▸ Drawing and painting materials, local specific, low cost art materials. ▸ Art Room with working tables of appropriate height. ▸ Computers with relevant

Form		
Key Concepts	**Suggested Transactional Process**	**Suggested Learning Resources**
lines, patterns etc. ▸ Differentiate between realistic and abstract forms. ▸ Demonstrate use of extended vocabulary related to the theme. ▸ Engage and explore various sites and immediate surroundings for the joy of knowing more.	nature and from artificial creation. ▸ Creating geometrical and natural, 2-D and 3-D forms from imagination, while using different shapes and sizes, on subjects/themes such as; 'the chair I would like to use for studies', 'the bed I would like to gift to my parents', 'my classroom, furniture', etc., in drawing and painting, with clay and with any other local specific materials for painting or construction. ▸ Encouraging children to create their own patterns for decorating 3-D objects using variety of shapes using straight lines, curved lines, smooth lines, crooked line, vertical and horizontal lines, patterns etc. ▸ Conducting discussions based on placards/ pictures/ video clips etc. on different type of forms, such as; ☛ difference between realistic and abstract forms.' ☛ 'difference between geometrical and natural forms.' ☛ use of computer graphics to explore and understand the beauty and diversity of forms. ***Integration with other subjects:*** ***Language*** ▸ Providing opportunities to make poems/ songs on objects to develop verbal expression. ***Mathematics*** ▸ concept of lines, angels of triangles, rectangles, square, circle etc.	soft wares and LCD projector for ICT based art experiences of varied forms. ▸ Cameras. ▸ White board or classroom board/s. ▸ Easel /stand. ▸ Water arrangements. ▸ Potter's clay/wheel. ▸ Origami paper. ▸ Aprons and towels.

Life Skills: Developing skills of observation, problem solving, communication and cooperation by becoming aware of the immediate surroundings and accepting responsibility of its beautification and cleanliness through active participation.

Theme 2: Colour

The theme "colour' is aimed at developing children's understanding of different colours on the one hand and developing aesthetic sensibility on the other. The prime focus of this theme is to develop children's ability to observe and identify colours in nature and in man-made objects and understand the relationship of certain colours with plants, flowers, fruits and nature. For example, leaf green, sea blue & sky blue, bottle green, lemon yellow etc. It will also enable them to create different shades by mixing of two different colours. For example; mixing of red and yellow in equal quantity will create orange colour.

Children will also be enabled to understand the relationship of colours with different subjects and emotions. For example, bright colours for joyful compositions and dull and grey shades for sad subjects. Contrast colours to break the monotony, bold use of warm colours to depict force and of cool colours to depict peace and harmony, etc. The process of identification and understanding of colours enhances skills, such as; observation, exploration, experimentation and artistic expression.

Learning Outcomes:

Children will be able to:

- name different colours and shades of household objects, furniture items, flowers, vegetables, fruits, plants and trees etc., appropriately;
- describe art work based on its colours;
- draw and paint images from their immediate surroundings and colour them with appropriate colours;
- use neutral colours (black and white) and create chart of grey tones of all primary colours;
- understand use of theme appropriate colours in compositions;
- demonstrate use of extended vocabulary related to colours;
- link experience and understanding of colours with learning of other subjects;
- appreciate the beauty of colours in nature and in artificially made objects.

Colour

Key Concepts	Suggested Transactional Process	Suggested Learning Resources
▸ Name different colours and shades of household objects, furniture items, flowers, vegetables, fruits, plants & trees etc., appropriately. ▸ Describe art work based on its colours. ▸ Draw and paint images from immediate surroundings and colour them with their appropriate colours. ▸ Use neutral colours (black and white) and	▸ Motivating children to make keenly observe colours in nature and in artificial objects with the aim of making a note of different colours, shades and tones. ▸ Encouraging children to make scrap book on Colours of 'Nature' 'Furniture items' and 'Walls and drapery' etc. ▸ Providing opportunities for children to share their personal experiences related with colours around them. Their likes and dislikes, importance and value of different colours to them. ▸ Encouraging children to explore their immediate surroundings such as- shopping centres, fruit and vegetable markets,	▸ Children's own experience related to colours and shades. ▸ Theme based scrap books on colours and shades. ▸ Shopping centres, Fruit and vegetable markets, Fairs (Melas), Events, Gardens, Zoos etc. ▸ Picture cards on tones and shades of different colours, art works of artists, video clips to

Colour		
Key Concepts	**Suggested Transactional Process**	**Suggested Learning Resources**
create chart of grey tones of all primary colours. • Understand use of theme appropriate colours in compositions. • Demonstrate use of extended vocabulary related to the theme. • Link the experience and understanding of colours with learning of other subjects of their class. • Appreciate beauty of colours in nature and in artificially made objects.	fairs/melas, events, gardens, zoo etc. for learning more about colours of natural and artificial objects, structures and sceneries. • Encouraging children in making their own colour charts of 8to10 tones of primary colours, using neutral colours (white and black). • Facilitating the use of a computer for mixing and making colours. Using painting software for visual effects of different colours on the selected composition. • Drawing, colouring or clicking objects based on colour theme: ☛ 'Green around us' ☛ 'Red around us', ☛ 'Yellow around us' etc., and display in the class. • Discussing the use of theme based colours in art work by using sample cards, video clips, paintings and prints of renowned artists. • Arising a curiosity in children by asking: ☛ 'Why he/she has used red colour in this work?' ☛ 'What do you think about so much of white here'? • Conducting practice sessions to describe one's own work and work of their peers, based on use of colours. • Making theme based Rangolis using different materials. Themes can be; 'save girl child', 'save water', 'save tigers' 'our planet earth' etc. ***Integration with other subjects:*** ***Languages:*** • Facilitating children to create poem/s on colours of their choice. (individual activity) ***Mathematics:*** • Make Rangolis on different topics, using mathematical skills and concepts.	study the use of different colours. • Drawing and painting materials: sheets, pigments, paints, inks & dyes, powder colours, sawdust, sand, etc. • Thread, sponge, straw, paper cuttings, etc. • Art Room with working tables of appropriate height, slabs on sides. • Easel /stand. • Cameras. • Computers with relevant software and LCD projector for ICT based art experiences. • Boards for art displays. • Aprons and towels. • Water arrangements.

Life Skills: Developing skills of observation, problem solving, communication and cooperation, acceptance of the social multiple perspective by exploring and knowing about their immediate surroundings in teams. Accepting the responsibility of maintaining the cleanliness and beautification of surroundings through *active participation.*

Theme 3: Texture

The theme "Texture' is aimed at developing in children an understanding of different textures and surfaces. The prime focus of this theme is to enable children to observe, identify and create textures and understand the relationship of certain textures with plants, trees, flowers, fruits, furs, feathers, wool, sand, fabric, etc. For example, fur is soft, sand is rough, bark of a tree is rough, etc. They will also be able to create different textures and surfaces by using a mix mediums and materials. For example; sand painting, impression of bark on clay slab etc. Experience with different textures will lead to sharpening of the sense of touch among all learners, including those with special needs. The process of identification, understanding and creation of texture enhances skills, such as; observation, imagination, experimentation and artistic expression.

Learning Outcomes:

Children will be able to:

- identify and name different textures and surfaces of household and natural objects;
- create new textures with 2-D and 3-D materials;
- appreciate beauty, variety and value of different surfaces in work of arts;
- demonstrate use of extended vocabulary related to the theme;
- link the experience and understanding of textures with learning of other subjects;
- engage and learn to observe and explore immediate surroundings for joy of knowing and experiencing different surfaces and textures.

Texture

Key Concepts	Suggested Transactional Process	Suggested Learning Resources
▸ Identification and naming different textures and surfaces of the common household and natural objects. ▸ Create new textures with 2-D and 3-D materials. ▸ Appreciate beauty, variety and value of different surfaces in work of arts. ▸ Demonstrate use of extended vocabulary related to the theme. ▸ Learn to link the experience and understanding of textures with learning of other subjects of their class. ▸ Engage and learn to observe and explore	▸ Encouraging 'Exploration Walk' in and around school at different times of the day and in different weathers for observation, and feel of different textures and surfaces. ▸ Providing opportunities for children to share their experiences on variety of textures and surfaces they have come across. ▸ Conducting drawing, painting and printing activities to create texture of different kinds of stones, soil and wood etc. (with 2-D material). ▸ Making 3-D Collage and clay modelling for creating texture of wool, wood, soft and hard, dry and wet, slippery and sandy surface. ▸ Organising discussions on value of texture in work of art. Making use of children' work, scrap books and video	▸ Children's own experiences related to household objects. ▸ Natural objects, plants, trees, birds & animals, sand and soil of different kinds, etc. ▸ Scrap books on textures. ▸ Sample pictures and videos of different textures and surfaces. ▸ Drawing and painting materials such as: glue, sponge, pieces of different fabrics, sand, bark, wool, feathers, potters clay, samples of soil, etc. ▸ Art Room with working tables of appropriate height, slabs on sides

Texture		
Key Concepts	**Suggested Transactional Process**	**Suggested Learning Resources**
immediate surroundings for joy of knowing and experiencing different surfaces and textures.	clips. ▸ Exploring new textures with the help of computer software/s. ▸ Organising playing of games for identification of different textures while being blindfolded. (classroom activity). ***Integration with other subjects:*** ***Languages:*** ▸ Facilitating children to create poem or story on topic such as; ☛ *'Walking bare foot in the grassy park on a winter morning'.* ☛ *'When I held frog/tortoise in my hands'!!* ☛ *Walk on wet and slippery road.' etc.*(individual activity)	▸ Cameras for clicking pictures. ▸ Easels /stands. ▸ Computers with relevant software and LCD projector for ICT based art experiences. ▸ Boards for art displays. ▸ Aprons and towels. ▸ Water arrangements.

Life Skills: Developing skills of observation, empathy and compassion for nature and for animals by observing and understanding of the nature. Accepting the responsibility of protecting the environment and surroundings through participation in its upkeep.

Theme 4: Composition

The theme "composition', particularly in visual arts (painting, printing, graphic design, sculpture, installation etc.) is meant for the placement or arrangement of visual elements and organisation of the space (2-D and 3-D both). The prime focus of the theme is on artistic placement of colours and forms, painting of landscapes, seascapes, composition based on seasons, sports, parks, situations, arranging patterns, making designs, installation of 3-D objects, still life, graphic designs, crafts etc. In the visual arts, composition is often used interchangeably with various terms such as design, visual ordering or formal structure, depending on the context. The process of visualizing and making composition enhances skills, such as; observation, imagination, experimentation, communication and artistic expression. Another major focus of this theme is to observe and find out compositions in nature, and in man-made structures. It will also enable children to understand the relationship of one object with the other, of form with the colours, of objects with the overall theme and finally the visual impact of the work of art. For example, in a composition of the 'Rainy Day', the form of clouds, the lines of falling rain drops, colours supporting mood of the weather, and finally the visual impact of a composition, all are interrelated and interdependent.

Learning Outcomes:

Children will be able to:

- select compositions from the immediate surroundings;
- draw and paint compositions on themes, such as; my family, my school, festival/s I like, Hockey/Football/Cricket/basketball match of my school, game I like the most, landscape, seascape from imagination;
- compose poster on social and environmental issues, such as; Save Girl Child', 'Help Senior Citizens', 'Save Trees', Save Tigers', 'Save Water', 'Keep your surrounding Clean' etc.;
- arrange and create 3-D objects on a given theme;
- demonstrate use of extended vocabulary related to the theme:
- link the experience gained while creating composition, with learning of other subjects of their class;
- engage and learn to observe and explore immediate surroundings for joy of knowing different compositions;
- communicate and express their arrangement of visual images.

Composition		
Key Concepts	**Suggested Transactional Process**	**Suggested Learning Resources**
▸ Select compositions from the immediate surroundings, using view finder. ▸ Draw and paint compositions on themes, such as; my family, my school, festival/s I like, Hockey/Football/	▸ Providing children opportunities and encouraging them to independently explore interesting locations in and around school and home. ▸ Conducting sessions of quick sketching of selected compositions with pencil or with dry pastels. ▸ Encouraging the use of personal sketchbooks and Viewfinders. ▸ Organising guided and independent walks to	▸ Children's own experience related with arranging their household objects, landscapes/seascapes, arranging idols during poojas, special days, festivals etc. Forest area, Zoo, School garden, Children's parks,

Composition

Key Concepts	Suggested Transactional Process	Suggested Learning Resources
Cricket/basketball match of my school, game I like the most, landscape, seascape, etc., from imagination. ▸ Compose poster/s on social and environmental issues, such as; Save Girl Child', 'Help Senior Citizens', 'Save Trees', 'Save Tigers', 'Save Water', 'Keep your surrounding Clean' etc. ▸ Arrange and create 3-D objects on a given theme. ▸ Use of extended vocabulary related to compositions. ▸ Engage and learn to explore immediate surroundings for the joy of knowing more. ▸ Link experience and understanding of composition with learning of other subjects.	green/forest area, to historical monuments, to the fairs (melas), sports complex and to the social gatherings /celebrations to make a sketch of the same. ▸ Encouraging children to make use of camera/s to click compositions which can be displayed and also used for developing art work. ▸ Organising activities of drawing and/or painting of imaginary compositions on social themes, such as; ☛ My family, ☛ My school, ☛ My village/ community, ☛ Our festival/s, ☛ Hockey/ Football/ Cricket match at school, Landscapes, seascapes etc. ▸ Making poster/s on social and environmental issues, such as; 'Save Girl Child', 'Help Senior Citizens', 'Save Trees', Save Tigers', 'Save Water', 'Keep your Surrounding Clean' etc. ▸ Providing Opportunities to create 3-D composition/s on themes, such as; 'Furniture in my room', 'Garden furniture', 'Gym in the park', 'Means of Transportation' etc., and installation of the same. ▸ Organising discussions on age appropriate compositional skills. Examples should be related to the immediate environment of the child and their class work. Use of video clips and original work of artists is always motivational. ▸ Making a Rangoli using different compositions. ***Integration with other subjects:*** ***Languages:*** ▸ Facilitating children to narrate their experiences on subjects related to the selected compositions. ▸ Writing a letter to your friend describing experience related to the sketching walk for new compositions.	Historical monuments, Social gatherings, Fairs etc. ▸ View finder, Picture cards, Videos depicting different compositions. ▸ Sketch books of children. ▸ Drawing/painting materials, clay, adhesive, card board, Rangoli material, etc. ▸ Art Room with working tables of appropriate height, slabs on sides. ▸ Computers with relevant soft wares and LCD projector for ICT based art experiences. ▸ Cameras. ▸ Boards for art displays. ▸ Easel /stand ▸ Aprons and towels. ▸ Water arrangements.

Life Skills: Developing skills of problem solving, visualization, communication, cooperation and interpersonal relationship by observing, imagining and arranging compositions on their immediate surroundings and of other places of social and historical importance. Accepting responsibility of the cleanliness, maintenance and beautification of the environment and surroundings through active participation.

Theme 5: Tools & Techniques

The theme 'Tools and Techniques' is aimed at developing an understanding in children of the different types of tools and techniques that are used for experiencing the visual arts. The process of knowing and working with the tools and techniques enhances skills, such as; observation, experimentation, problem solving and free expression. The prime focus of this theme is to identify, experiment and understand the appropriate use of different tools, materials and techniques used in visual arts. It also focuses on developing an understanding of the relationship of tools and materials with that of the techniques. For example, knowledge of brushes, blocks, nibs& holders/pens for inks and their maintenance.

Children will also be enabled to handle of different tools, materials and techniques. For example; Use of soft but flat brushes (of bigger number) for broader strokes, Round brushes for drawing lines of varied thickness, dry colours (pencils, wax crayons, pastels etc.) for drawings, inks for quick and transparent drawings and blow printing, glue/adhesives for fixing of paper cuttings and other materials for making collages, softness of clay for slab, coil and pinching method, converting clay models in to terracotta, etc. Use of light and shade, ratio - proportion for arranging and making still life, knowing camera adjustments for clicking good pictures, knowing computer software for exploring and using computers for art experience. Knowing soft stone and wood for carving and sculpture, etc.

The experiences with the different tools and techniques will sharpen children's common sense and make them confident users and creators.

Learning Outcomes:

Children will be able to:

- identify and name age appropriate tools and materials including camera and computer software/s;
- understand and apply the age appropriate techniques of visual expression, such as; drawing, still life, poster making, painting composition, pen & ink drawings, block printing, 2-D and 3-D work, origami, coil, slab and pinching methods of clay modelling, terracotta, engraving and relief work, 3-D masks and puppets, simple crafts (local specific) rangoli, wall painting, photography, animation (manual and computer based);
- demonstrate use of extended vocabulary related to tools and techniques;
- create their own tools and techniques of visual expression;
- maintain their tools and equipment of use;
- link the experience and understanding of tools and techniques with learning of other subjects;
- appreciate the beauty and variety of methods and materials for visual expression.

Tools and Techniques		
Key Concepts	**Suggested Transactional Process**	**Suggested Learning Resources**
▸ Identify and name the age appropriate tools and materials including camera and computer software/s. ▸ Understand and apply the age appropriate techniques	▸ Providing opportunities to children to share their experiences on use and preferences about different tools, materials and techniques used or seen. ▸ Encouraging children's participation in the collection activities of tools and	▸ Children's experience with different tools & techniques, such as drawing, still life, poster making, painting composition, pen & ink

Tools and Techniques

Key Concepts	Suggested Transactional Process	Suggested Learning Resources
of visual expression, such as; drawing, still life, poster making, painting composition, pen & ink drawings, block printing, 2-D and 3-D work, origami, coil, slab and pinching methods of clay modelling, terracotta, engraving and relief work, 3-D masks and puppets, simple crafts (local specific) rangoli, wall painting, photography, animation (manual and computer based).. ▸ Demonstrate use of extended vocabulary related to the theme. ▸ Create his / herown tools and techniques of visual expression. ▸ Maintain their tools and equipments of use. ▸ Create small poem or song on tool/s of their liking. ▸ Integration of knowledge & experience of tools, materials and techniques with learning of other subject. ▸ Appreciate beauty and variety of methods and materials for visual expression.	materials from home, community and from the immediate surroundings. ▸ Question answers in 'Do you know?' format, such as; ☛ Name any 5 tools of drawing & painting. ☛ Which are the materials that you have seen and used for the drawing & painting? ☛ Name any 5 printing tools/equipment/materials you know? ☛ What is mixed collage? ☛ What precautions should you take while working on terracotta? ☛ What is Block printing? ☛ What is the difference between slab, coil and pinching methods in clay modelling? ☛ What method of puppet making do you like? ☛ What is the role of the Camera in art making? ☛ Which computer software have you used for making graphics? ▸ Facilitating learning of new technique/s and use of new tools through demonstration method. For example; ☛ Drawing of still life. ☛ How and why water colours are the most transparent colours, and Poster colours as opaque. Making of a poster based on its elements. ☛ Baking terracotta, Engraving on clay& soft wood and ☛ Maintenance of tools, etc. ☛ Making of wall painting is another example which involves local specific tools, technique/s, materials, motifs and	drawings, block printing, 2-D and 3-D work, origami, coil, slab and pinching methods of clay modelling, terracotta, engraving and relief work, 3-D masks and puppets, simple crafts (local specific) rangoli, wall painting, photography, animation (manual and computer based), etc. ▸ Collection and display of age appropriate art tools, techniques and materials in the classroom. ▸ Collection and display of local specific /easily available tools and materials in the art room/classroom. ▸ Age appropriate samples in form of pictures or videos of different art methods and techniques. ▸ Drawing, painting and printing materials, glue, sponge, pieces of different fabrics, sand, bark, wool, feathers, potters clay, etc. ▸ Art Room with working tables of appropriate height, slabs for 3-D work and display on sides. ▸ Computers with relevant soft wares and LCD projector for ICT based art experiences. ▸ Cameras. ▸ Easel /stand. ▸ Boards for art displays. ▸ Aprons and towels. ▸ Water arrangements.

Tools and Techniques		
Key Concepts	**Suggested Transactional Process**	**Suggested Learning Resources**
	composition. - Organising a visit to the local artists/artisans to see the process, tools and equipment used for creating particular art work. - Conducting a Class quiz or competition for testing children's knowledge about tools, materials and techniques of visual expression and also to encourage further innovations. - Organising an Annual group show of classroom activities on tools, techniques and materials. - Taking impressions of all Indian coins (in use) on clay slabs for demonstrating relief and reverse techniques. ***Integration with other subjects:*** ***Language:*** - Encouraging children to create stories on brush / colour/ block etc. in small groups. - Enacting role plays, such as; 'I am the brush', 'I am your new colour plate' 'I am your printing roller', etc. - *(story making can cover it's making process, it's use, its value, etc.)*	

Life Skills: Developing skills of problem solving and perseverance by using different tools and materials of creative expression. Confidence of learning to handle tools and materials and joy of learning the appropriate techniques to express through will also be developed. An increase in active participation for cleaning and beautification of one's own classroom, school and home.

Theme 6: Art (Visual Arts) Vocabulary

The theme 'Art Vocabulary' is aimed at children learning and using appropriate names and terms related to art techniques, to hues and shades of colours, to tools and accessories used, to different mediums and materials for appreciating a work of art. The process of knowing and using appropriate vocabulary will enhance the communication skills of the learner. The prime focus of this theme is for the child to know, to remember, and to use art related vocabulary appropriately. For example, block printing is done with the blocks, block printing is a technique which is used to take same kind of impression again and again. Soft paint-brushes are used for doing water based colours, flat brushes (of bigger number) are used for broader strokes whereas round brushes are used for drawing lines of varied thickness, slab method and coil method are techniques of making 3-D objects with potter's clay, terracotta is the result of baking clay models at an appropriate temperature, perspective is a skill for making 2-D objects and sceneries look 3-D, use of different colours can help in creating different effects in an art work, composition is a grouping of different objects/forms and colours in a visually pleasant manner, animation is a technique which provides movement to the graphics, etc.

Learning Outcomes:

Children will be able to:

- identify and name different tools and techniques, such as; round brushes, flat brushes, hard and soft brushes, type of scissors, rollers/rolling pins, drawing and painting, printing, clay modelling, terracotta, pottery, spray painting, reverse techniques, origami, construction, engraving, round and relief work of sculpture, 2-D and 3-D work, paper craft, photography, animation, light and shade, still life and graphics.
- name the terms/specifications of materials, such as; colours, medium of colours, water colours, pastel colours, neutral colours, shades and tones of colours, paints & dyes, pen & ink, background and foreground in the composition, perspective, landscapes, seascapes, lines of different types, shapes and sizes, modelling, still life and photography.
- describe one's own art work and that of their peers;
- narrate art experiences using age appropriate vocabulary;
- communicate in their art class using appropriate art vocabulary;
- demonstrate use of extended vocabulary related to art vocabulary;
- learn to link the knowledge of art vocabulary with learning of other subjects.

Art Vocabulary

Key Concepts	Suggested Transactional Process	Suggested Learning Resources
▸ Identification of different tools and techniques, such as; round brushes, flat brushes, hard and soft brushes, type of scissors, rollers/rolling pins, drawing and painting, printing, clay modelling, terracotta, pottery, spray	▸ Encouraging children to use appropriate art vocabulary while sharing knowledge of art tools, techniques and materials, of art experience and artistic expression, in the classroom or elsewhere. ▸ Providing children opportunities to analyse the art work of peers and of artists to practice use of art vocabulary. ▸ Discussing different art techniques,	▸ Children's scrap books on tools and materials of visual arts, with their name or title. (*The scrap book should cover all the tools, materials, including that of the local ones.*) ▸ Children's portfolios of

Art Vocabulary

Key Concepts	Suggested Transactional Process	Suggested Learning Resources
painting, reverse techniques, origami, construction, engraving, round and relief work, 2-D and 3-D work, paper craft, photography, animation, light and shade, still life, graphics, etc. ▸ Terms/specifications of materials, such as; colours, medium of colours, water colours, pastel colours, neutral colours, shades and tones of colours, paints, pen & ink, background and foreground in the composition, perspective, landscapes, seascapes, lines of different types, shapes and sizes, modelling, still life, photography, etc. ▸ Describe one's own art work and that of their peers. ▸ Narrate art experiences using appropriate (age appropriate) vocabulary. ▸ Communicate in their art class using appropriate art vocabulary. ▸ Use of extended vocabulary related to the theme. ▸ Integration of art experiences with learning of other subjects.	quality of materials and value of art tools, such as; brushes, type of scissors, rollers/ rolling pins, drawing & painting, printing, clay modelling, terracotta, pottery, spray painting, reverse techniques, origami, construction, round and relief work of sculpture, 2-D and 3-D arts, paper craft, etc. ▸ Viewing art related pictures, videos for giving quick observations. ▸ Encouraging presentation/s based on tools, colours, different medium and materials, different techniques, art work in school corridors, etc. This can either be through scrap book or power point presentation (PPT). ▸ Organising a visit to the local museums and galleries, to the art exhibitions, to the craftsmen, potter, etc., and writing note on field experience, using appropriate vocabulary. ▸ Helping children to write a review after a visit to the gallery. ***Integration with other subjects:*** ***Languages:*** ▸ Encouraging children to write letter/s, stories, describing experience of the field visit to museum, by using appropriate vocabulary. ▸ Writing an imaginary dialogue; ☛ between composition and it's subject, ☛ between brush and sheet, ☛ between potter's clay and potter, ☛ between fire and terracotta, etc. ▸ ***EVS:*** ▸ Knowing our immediate surroundings. ▸ Engaging children in classroom displays, to learn cleanliness, maintenance and beautification.	art activities. ▸ Samples of paintings, photographs, of selected compositions, slides, videos of art camps and exhibitions etc. ▸ Collection and display of age appropriate art tools and materials in the class. This also includes local specific and easily available tools and materials. ▸ Drawing and painting materials, potters clay, etc. ▸ Museums, Art galleries. ▸ Local craftsmen and potters, etc. ▸ Computers with relevant soft wares ▸ LCD projector for ICT based art experiences. ▸ Cameras. ▸ Boards for art displays.

Life Skills: Learning based on this theme will help in developing skills of observation, communication and free expression. Confidence of knowing words and terms for different tools and materials, methods and techniques and joy of free expression, will also enhance creativity and aesthetic appreciation.

Theme 7: Responding to the Artefacts and Nature

The theme "Responding to the Artefacts and Nature' is aimed at children getting to know, understand and appreciate the beauty of nature and artefacts. The prime focus of this theme is to make children understand the beauty and value of arts, of nature, as well as man-made objects, structure and architecture. The process of appreciation will sensitize their eye for aesthetics of an object, subject and situation. And will help in developing an attitude for accepting and appreciating multiple perspectives on any given subject or situation. This theme will make children understand the 'importance of elements of visual arts'. The process of responding to the artefacts and nature will enhance the skills of; observation, exploration, critical analysis interpersonal relations, effective communication and artistic expression.

Learning Outcomes:

Children will be able to:

- describe objects, buildings, structures, scenes and situations of his / her liking in the immediate surroundings;
- appreciate nature and natural beauty of form, colours, composition, perspective, etc.; such as plants & trees, buds & flowers, birds & animals, ponds & lakes, pastures & deserts, sea beaches, rivers & mountains, sky with and without clouds, wind and rain, sun, moon and stars, rainy day, starry night, sunny day.;
- respond to the impact of art work done by their classmates and herself;
- state the elements of visual arts;
- appreciate the artefacts displayed in galleries and museums, such as; paintings, prints, pottery, terracotta and sculptures, installations, local crafts, etc. done by the experts/ artists;
- write an appreciation note on their experience of the art museum and art gallery while describing a few artefacts seen;
- demonstrate use of extended vocabulary related to the artefacts and nature;
- link the knowledge of appreciation and responding to the nature and to the artefacts with learning of other subjects.

Responding to the Artefacts and Nature

Key Concepts	Suggested Transactional Process	Suggested Learning Resources
Describe the objects, buildings, structures, scenes and situations of their liking in the immediate surroundings. Appreciate nature and natural beauty of form, colours, composition, perspective, etc.; such as plants & trees, buds & flowers, birds & animals, ponds & lakes, pastures & deserts, sea beaches, rivers	Encouraging children and providing opportunities to them to explore and experience the beauty of nature and natural objects, buildings, structures, scenes and situations in their immediate surroundings. Providing a platform for children to share their experiences, likes and dislikes on nature and natural objects, on artefacts and architectural sites in their immediate surroundings, and appreciation on scenes of their liking in the classroom. Providing	Children's own experiences, likes and dislikes on nature and natural objects, on artefacts and architectural sites in the immediate surroundings. Art work of every child in the class. Guided tour to the museum/s and art galleries. Samples/replicas of artists

Responding to the Artefacts and Nature		
Key Concepts	**Suggested Transactional Process**	**Suggested Learning Resources**
& mountains, sky with and without clouds, wind and rain, sun, moon and stars, rainy day, starry night, sunny day, etc. ▸ Respond to the impact of art work done by their classmates and himself/herself. ▸ Know about the elements of the visual arts. ▸ Appreciate the artefacts displayed in galleries and museums, such as; paintings, prints, pottery, terracotta and sculptures, installations, local crafts, etc. done by the experts/ artists. ▸ Write an appreciation note on their experiences of the art museum and art gallery while describing a few artefacts seen. ▸ Demonstrate use of extended vocabulary related to the theme. ▸ Learn to link the knowledge of appreciation and responding to the nature and to the artefacts with learning of other subjects.	opportunities for children to record and share self/ peer assessment of art activities and experiences, periodically. ▸ Worksheet/s on ☛ appreciation of nature and its beauty, ☛ specific theme/s, such as; plants, flowers, animals, lakes, deserts, sea beaches, rivers, mountains, clouds, wind and rain, sun, moon and stars, rainy day, starry night, sunny day, etc. ▸ Conducting Class Sessions on introduction to the 'Elements of Visual arts', based on art examples. ▸ Organising Visual thinking sessions on paintings, photographs, pottery & ceramics, terracotta & sculpture, installations, etc. of known artists ▸ Providing a well-designed worksheet on museum and gallery visits to facilitate appreciation of any one section. For example, write an appreciation note on the Ajanta paintings. ***Integration with other subjects:*** ***Languages:*** ▸ Assisting them in illustrating one story from their course book. ▸ Giving assignment based on Writing 10 sentences describing 4 whether of India along with its visual representation.	work in 2-D and 3-D, pictures or videos of artists' work. ▸ Power Point Presentation or video clip on 'Elements of Visual arts'. ▸ Children's scrap books. ▸ Collection and display of age appropriate art tools and materials in the class. ▸ Display boards with theme based display of children's work and/or artist's work. ▸ Computers with relevant soft wares. ▸ LCD projector for ICT based art experiences. ▸ Cameras.

Life Skills: Learning based on this theme will help in sharpening the skills of observation, critical thinking and that of art appreciation. Increase in participation for cleaning and beautification of classroom, school and home.

Theme 8: Perspective

The theme "Perspective is aimed at children knowing, understanding and appreciating the beauty of 3rd dimension in any object, architecture, or in a scene etc. Perspective, in the context of visual perception, is the way in which objects appear to our eyes based on their spatial dimensions, and position of our eye in relation to that object. The prime focus of this theme is to make children aware of beauty and value of the 3rd dimension of any object in visual expressions. The process of applying perspective in visual arts will sensitize their eye on the play of light and shade, ratio and proportion, colour variation, use of lines in creating life like similarities in the objects. The application of perspective will also help in developing skill of creating required distance between foreground and background on a flat (2-D) surface. The process of understanding and application of the perspective in visual arts will enhance the skills of; observation, imagination, critical analysis, artistic skills and creative expression.

Learning Outcomes:

Children will be able to:

- state the meaning of perspective;
- describe the play of light and shade on the given object/s;
- describe linear and areal perspective;
- create landscape/seascape using age appropriate perspective skills;
- respond to the perspective in art work done by their classmates and himself/herself;
- respond to the perspective in 2-D and 3-D artefacts displayed in galleries and museums, such as; paintings, pottery, terracotta and sculptures, installations, local crafts, etc. done by experts, artists and artisans;
- demonstrate use of extended vocabulary related to the theme- perspective.

Perspective		
Key Concepts	**Suggested Transactional Process**	**Suggested Learning Resources**
▸ State the meaning of perspective. ▸ Describe the play of light and shade on the given object/s. ▸ Describe Linear and areal perspective. ▸ Create landscape/ seascape using age appropriate perspective skills. ▸ Respond to the perspective in art work done by their classmates and himself/herself. ▸ Respond to the perspective in 2-D and 3-D artefacts displayed in galleries and	▸ Encouraging children and providing opportunities to explore and experience the play of light and shade on natural and artificial objects, buildings, structures, scenes etc. in their immediate surroundings. ▸ Organising classroom discussions on what is perspective and its relationship with the 3rd dimension of any object. ▸ Explaining Linear and Areal perspective, based on live examples. ▸ Organising sketching and painting sessions of landscape/ seascape of their liking, while using age appropriate perspective skills. ▸ Guided tour to view natural and	▸ Sharing of children's own understanding of perspective, light and shade, 2-D and 3-D art work, based on their sketch book. ▸ Art work of every child in the class. ▸ Actual samples or even replicas of artist's work on perspective, both; linear and areal, on 2-D and 3-D work, Videos of artists' work etc. ▸ Children's scrap books. ▸ Easels /stands. ▸ Computer with LCD

Perspective		
Key Concepts	**Suggested Transactional Process**	**Suggested Learning Resources**
museums, such as; paintings, pottery, terracotta and sculptures, installations, local crafts, etc. done by expert artists and artisan. • Demonstrate use of extended vocabulary related to the theme.	artificial objects, architectural sites in the immediate surroundings. • Providing every child opportunities to describe his/her own work and work done by the peers using perspective skills. • Conducting sessions of Still life drawing to practice 3-D effects on a 2-D surface. A group of 2-3 objects such as; book, glass bottle/jug and a fruit can be organised on a table with proper light from one angle to practice light and shade, ratio and proportion etc. • Worksheet/s on use of perspective and its description in the work of masters, while visiting art gallery or a museum.	projector /ICT facilities. • Display boards with theme based display of children work and/or artist work.

Life Skills: Learning based on this theme will help in sharpening the skills of observation, imagination, critical thinking and that of artistic expression. Increase in the interest of creating life like art work and also the ability to appreciate such work of others.