

**Topic 1: Computers – Storage and Memory device**

A Computer system is a highly organised system that processes data which is a representation of facts, concepts or instructions. Processed data become information on which decisions and actions are based. Bits and Bytes are the basic units to represent data in the computer system. Computer data storage often called storage or memory is a technology used to retain digital data internally or externally. There are two types of memory - Internal and External.

**Learning Outcomes:**

Children will be able to:

- ☑ differentiate between the terms data and information;
- ☑ explain the purpose of internal and external memory;
- ☑ describe different data storage units;
- ☑ list the primary and secondary data storage devices.

Computers – Storage and Memory device		
Key Concepts	Suggested Transactional Processes	Suggested Learning Resources
<ul style="list-style-type: none"> <li>➤ Data vs Information</li> <li>➤ Data storage units-basic facts</li> <li>➤ Internal and External memory</li> <li>➤ Primary and Secondary Storage Devices</li> </ul>	<ul style="list-style-type: none"> <li>➤ Discussing about data and information related to real-life scenario by using a computer.</li> <li>➤ Explaining the concept of memory and its capacity related to the size of the storage devices.</li> <li>➤ Introducing the basic concepts of bits and bytes. Relating the units to digital system (ON and OFF).</li> <li>➤ Providing opportunities for hands on practice to the children through online Worksheets</li> </ul>	<ul style="list-style-type: none"> <li>➤ Physical memory devices/ visuals using IWB.</li> <li>➤ Online Worksheets</li> <li>➤ Online computer experiences.</li> </ul>

**Life Skills:** General awareness

## Topic 2: GUI Operating System – Desktop Management

The Graphical User Interface (GUI) operating system has a visual environment using windows, buttons, and icons. Using this interface, user can customise the wallpaper, screen/desktop, set time/date, etc.

### Learning Outcomes:

Children will be able to:

- recall the features of OS and GUI;
- identify and use the Task Bar, Quick Launch Bar and short cut menu;
- customize the windows setup.

### GUI Operating System – Desktop Management

Key Concepts	Suggested Transactional Processes	Suggested Learning Resources
<ul style="list-style-type: none"> <li>➤ Recapitulation of the Topic done in previous class.</li> <li>➤ Usage of Quick Launch Bar, Task Bar</li> <li>➤ Setting Date, time and volume of the speaker.</li> <li>➤ Use of shortcut menu</li> </ul>	<ul style="list-style-type: none"> <li>➤ Conducting activities to:</li> <li>➤ Explaining the use of different task bars and customizing windows.</li> <li>➤ Observing children work responsibly on the windows set up and providing a timely feedback.</li> </ul>	<ul style="list-style-type: none"> <li>➤ Computer / IWB with GUI operating system.</li> <li>➤ Hands on experiences</li> <li>➤ Worksheet analysis by teacher.</li> </ul>

**Life Skills:** General Awareness



## Topic 3: Tools of Word Processor

Editing tools present in the word processing software are used to modify documents while Formatting tools are used to design how each page of the document will appear when it is printed. The printer is an output device (hardware) connected to the computer, that enables the user to take a hard copy of the files stored in the internal/external storage devices.

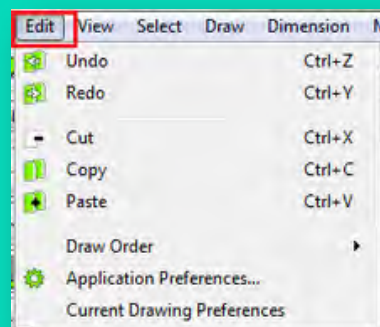
### Learning Outcomes:

Children will be able to:

- use various features of editing and formatting;
- use shortcut keys;
- prepare a document based on their requirement;
- preview and print a document.

Tools of Word Processor		
Key Concepts	Suggested Transactional Processes	Suggested Learning Resources
<ul style="list-style-type: none"> <li>▶ Editing a document</li> <li>▶ using Undo and redo commands</li> <li>▶ checking spelling and grammar</li> <li>▶ describing the purpose of using Thesaurus</li> <li>▶ Formatting a document</li> <li>▶ Font: Font size, colour, bold, italics and underline</li> <li>▶ changing text alignment</li> <li>▶ changing line spacing and paragraph spacing.</li> <li>▶ Shortcut keys</li> <li>▶ Using a printer for printing and print preview</li> </ul>	<ul style="list-style-type: none"> <li>▶ Recapitulation of the activities done in previous class.</li> <li>▶ Review of the features done previously.</li> <li>▶ Demonstrating various tools related to Editing and Formatting</li> <li>▶ Providing opportunities through hands-on-experience to each child /in groups on the computer/s by:</li> <li>▶ showing sample documents, to prepare required documents using the features learnt</li> <li>▶ discussing in detail the difference between editing and formatting.</li> <li>▶ demonstrating the use of print preview and the steps for printing the document.</li> <li>▶ explaining the use of shortcut keys.</li> <li>▶ Children doing all the above.</li> </ul>	<ul style="list-style-type: none"> <li>▶ Computer/IWB with a word processor software.</li> <li>▶ Printer</li> <li>▶ Hands on experiences – to work on computer</li> </ul>

**Life Skills:** General awareness, Creative thinking, Decision making, Collaborative learning, presentation skills



## Topic 4: The Internet - Web Browser

A web browser is a software which enables the user to interact with text, images, videos, music, and other information present on the internet.

The Search Engine is a software that is used to search information on the Internet. While searching for information using Search Engines, the user has to use the appropriate keywords. It is important to be more responsible and follow Netiquettes for safe browsing on the internet.

### Learning Outcomes:

Children will be able to:

- label the parts of a browser window;
- define the terminologies related to Internet Network;
- use appropriate keywords to collect information;
- make responsible decision while browsing.

The Internet - Web Browser		
Key Concepts	Suggested Transactional Processes	Suggested Learning Resources
<ul style="list-style-type: none"> <li>▷ Network in terms of Internet</li> <li>▷ Basic requirements for an Internet connection</li> <li>▷ Parts of a browser window (address bar, refresh button, favourite, history, home, stop, back and forward, new tab)</li> <li>▷ Related terms like www, URL, ISP, net surfing</li> <li>▷ Search engine</li> </ul>	<ul style="list-style-type: none"> <li>▷ Recapitulation of previous learning on the Internet</li> <li>▷ Explaining:</li> <li>▷ the concept of Network through role play.</li> <li>▷ The parts of a browser window</li> <li>▷ terminologies</li> <li>▷ Discussing various search engines and how to use them.</li> <li>▷ Discussing usage of appropriate keywords to search information.</li> </ul>	<ul style="list-style-type: none"> <li>▷ Computers/IWB with an internet connection</li> <li>▷ Worksheets</li> </ul>

**Life Skills:** Work ethics, Decision making, Collaborative learning



## Topic 5: Presentation Software – An Introduction

The presentation software is a software that enables the user to present information, graphics, videos, etc. through slide shows in an attractive way. This software ensures that important points are highlighted effectively.

### Learning Outcomes:

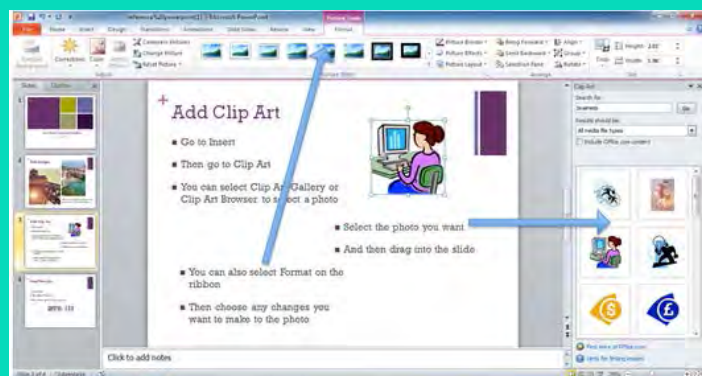
Children will be able to:

- ☑ explain the purpose of presentation software;
- ☑ choose appropriate layouts according to the requirement;
- ☑ create, add text and images to the slide;
- ☑ navigate between the slides;
- ☑ present a slide show.

Presentation Software – An Introduction		
Key Concepts	Suggested Transactional Processes	Suggested Learning Resources
<ul style="list-style-type: none"> <li>▷ Introduction to presentation software and its purpose</li> <li>▷ Opening and exiting a presentation software</li> <li>▷ Components of a presentation software window.</li> <li>▷ Concept of slides and its layouts</li> <li>▷ Slide show presentation</li> </ul>	<ul style="list-style-type: none"> <li>▷ Discussing the importance of presentation software as a group activity.</li> <li>▷ Demonstrating how to:                             <ul style="list-style-type: none"> <li>☛ Prepare layouts of slides and its uses according to the requirements.</li> <li>☛ create, save, and close a file</li> <li>☛ open and edit an existing file</li> <li>☛ insert a slide to a presentation</li> <li>☛ add of text and images to a presentation</li> </ul> </li> <li>▷ Providing hands-on experience to children (individually /groups) for preparing a presentation on selected topics integrated with the curriculum/real-life scenario.</li> </ul>	<ul style="list-style-type: none"> <li>▷ Computers/IWB with presentation software.</li> </ul>

**Integration:** Languages

**Life Skills:** Work ethics, Decision making, Collaborative learning, Creative thinking, Presentation skills



## Topic 6: Step-Wise Thinking

Step-Wise Thinking helps in converting complicated tasks into simple steps, predicting the possible solutions to achieve the desired goal. For example - Planning and organising a birthday party, summer trip.

### Learning Outcomes:

Children will be able to:

- analyse the task;
- break up the task into simple steps;
- predict possible solutions.

Step-Wise Thinking		
Key Concepts	Suggested Transactional Processes	Suggested Learning Resources
<ul style="list-style-type: none"> <li>▷ Reasoning and problem solving – meaning</li> <li>▷ Case studies</li> </ul>	<ul style="list-style-type: none"> <li>▷ Taking a real life scenario/ case study, to plan a task.</li> <li>▷ Discussing with the children to break the task into small steps.</li> <li>▷ Dividing the class into groups and assigning the same task to each group to find the solution.</li> <li>▷ Suggested task could be - Planning for a picnic/a birthday party/visit to a park.</li> </ul>	<ul style="list-style-type: none"> <li>▷ IWB with presentation software</li> <li>▷ Projector</li> <li>▷ Case Study</li> </ul>



## Topic 7: Features of File Management

Folder is a location to store information in the computer. It is used to organize files and folders according to the user's requirements.

### Learning Outcomes:

Children will be able to:

- copy and move a file/folder;
- rename and delete files and folders;
- Inculcate habits not to tamper others' files or folders.

### Features of File Management

Key Concepts	Suggested Transactional Processes	Suggested Learning Resources
<ul style="list-style-type: none"><li>▶ Copy and move a file/folder from one location to another</li><li>▶ Rename a file/folder</li><li>▶ Delete a file/folder.</li><li>▶ Not tampering with others' files/folders.</li></ul>	<ul style="list-style-type: none"><li>▶ Recollect the activities done in previous classes</li><li>▶ demonstrating different operations of file management, like copying, moving, renaming, deleting a file/folder.</li></ul>	<ul style="list-style-type: none"><li>▶ Computer / IWB</li></ul>

**Life Skills:** Work ethics

## Topic 1: Evolution of Computers

The evolution of computers started way back in the late 1930s and the first known device was Abacus. Based on the hardware, evolution of computers has been classified into five generations.

### Learning Outcomes:

Children will be able to:

- ☑ describe the history of computers;
- ☑ state its characteristics and limitations;
- ☑ compare the generations of computers;
- ☑ keep pace with the latest developments related to technology.

Evolution of Computers		
Key Concepts	Suggested Transactional Processes	Suggested Learning Resources
<ul style="list-style-type: none"> <li>▶ History of Computers</li> <li>▶ Characteristics of computers</li> <li>▶ Limitations of a computer</li> </ul>	<ul style="list-style-type: none"> <li>▶ Demonstrating the history of computers through presentations/ videos/ Interactive classes.</li> <li>▶ Providing opportunities to discuss the characteristics and limitations of computers.</li> <li>▶ Illustrating the latest technological developments by using pictures or showing videos.</li> <li>▶ Facilitating a quiz game on all the key concepts either as a group or whole class activity.</li> </ul>	<ul style="list-style-type: none"> <li>▶ Computers/ IWB with presentation software.</li> <li>▶ Videos</li> <li>▶ Projector, etc.</li> </ul>

**Integration:** Social Studies

**Life Skills:** Critical thinking,





## Topic 2: Types of Software

A software is the programme that makes the physical computer perform specific tasks. Based on function and purpose, software is broadly classified into System and Application software.

### Learning Outcomes:

Children will be able to:

- ☑ define the term software;
- ☑ explain the types of software and their purpose with examples;
- ☑ differentiate between system software and application software;
- ☑ backup files;
- ☑ scan the System/Drive/File;
- ☑ use defragmentation utility.

Types of Software		
Key Concepts	Suggested Transactional Processes	Suggested Learning Resources
<ul style="list-style-type: none"> <li>▷ Types of software</li> <li>▷ System software</li> <li>▷ Operation support system</li> <li>▷ Utility software</li> <li>▷ Application software</li> <li>▷ General Purpose Application Software</li> <li>▷ Customized Software</li> <li>▷ Backup of files.</li> <li>▷ Utility Programs like backup, scanning, defragmentation</li> </ul>	<ul style="list-style-type: none"> <li>▷ Build on previous experience</li> <li>▷ Explaining the classification of software:</li> <li>▷ Discussing the importance of different utility programs</li> <li>▷ Providing opportunity for hands on activity in groups/individually to children to use utility software in Group / individual level activities.</li> </ul>	<ul style="list-style-type: none"> <li>▷ Computers/ IWB with utility software</li> <li>▷ Videos</li> <li>▷ Projector, etc.</li> </ul>

**Life Skills:** General awareness, decision making, problem solving and responsible behaviour.



### Topic 3: Advanced Features of Word processor

Formatting and Editing tools are used to design how each page of a document will appear when it is printed. Additional features like find/ replace/insert are used for editing purposes and in some cases, to create a report. Using drawing tools like shape tools, user can insert pictures as per their requirements to enhance the look of the document.

#### Learning Outcomes:

Children will be able to:

- ☑ enhance the document by using advanced formatting tools;
- ☑ use editing tools;
- ☑ use drawing tools.

#### Advanced Features of Word processor

Key Concepts	Suggested Transactional Processes	Suggested Learning Resources
<ul style="list-style-type: none"> <li>➤ Advanced formatting tools like Format painter, Subscript, Superscript shadows etc.,</li> <li>➤ Editing tools</li> <li>➤ Header &amp; footer</li> <li>➤ Inserting column &amp; column break, page break and line break</li> <li>➤ Tabs, indent text, Margins</li> <li>➤ Page orientation and page size</li> <li>➤ Search and replace text</li> <li>➤ Drawing tools</li> <li>➤ Working with shapes</li> <li>➤ Placing text in shapes</li> <li>➤ Applying border and shading etc.</li> </ul>	<ul style="list-style-type: none"> <li>➤ Recollect activities discussed in classes earlier</li> <li>➤ Demonstrating in group to children the advanced formatting tools to enhance the look of the document.</li> <li>➤ Demonstrating in groups to children the editing tools of page setting</li> <li>➤ Explaining the drawing tools</li> </ul>	<ul style="list-style-type: none"> <li>➤ Computer/ IWB with Word Processor.</li> <li>➤ Hands on activity/ experiences</li> <li>➤ Projector</li> <li>➤ Demonstration by teacher</li> </ul>

**Integration:** Languages

**Life Skills:** Creative thinking.



## Topic 4: Presentation software – Special Effects

Presentations can be enhanced in an attractive manner by using various tools like clipart, word art, animations, etc. These ensure that important points are highlighted effectively.

### Learning Outcomes:

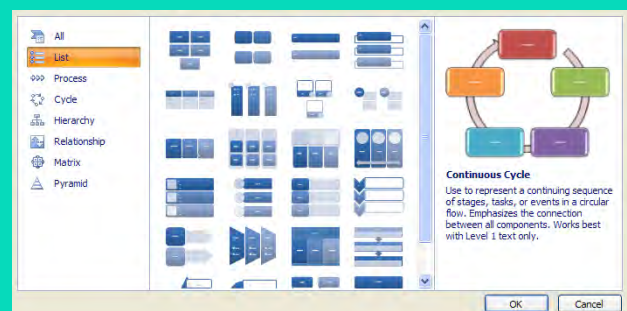
Children will be able to:

- express the topic attractively using different templates;
- enhance the presentation by applying formatting effects and inserting objects.

Presentation software – Special Effects		
Key Concepts	Suggested Transactional Processes	Suggested Learning Resources
<ul style="list-style-type: none"> <li>▷ Built-in templates</li> <li>▷ Enhancing the look of a presentation</li> <li>▷ Changing colour scheme, background colour.</li> <li>▷ Specifying alignments.</li> <li>▷ Inserting different objects like Clipart, Word art and shapes</li> </ul>	<ul style="list-style-type: none"> <li>▷ Recapitulation of previous learning.</li> <li>▷ Demonstrating the procedure of using templates.</li> <li>▷ Demonstrating applying different formatting effects</li> <li>▷ Providing hands on experience in groups/individually to children in using the various formatting effects.</li> </ul>	<ul style="list-style-type: none"> <li>▷ Computers/ IWB with presentation software.</li> <li>▷ Projector</li> </ul>

**Integration:** Arts Education

**Life Skills:** Creative thinking



## Topic 5: An Introduction to Scratch Programming

Programming is the process of taking an algorithm/stepwise-thinking and encoding it into a programming language, so that a computer can execute it and produce the desired output.

Scratch is a free programming software that enables children to create their own games, animated stories and interactive art.

### Learning Outcomes:

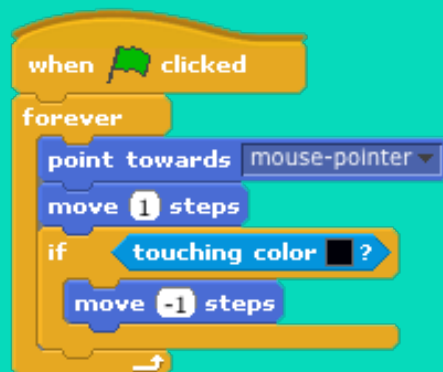
Children will be able to:

- ☑ explain the concept of programme and programming;
- ☑ work on scratch interface;
- ☑ handle basic commands;
- ☑ develop logical thinking.

An Introduction to Scratch Programming		
Key Concepts	Suggested Transactional Processes	Suggested Learning Resources
<ul style="list-style-type: none"> <li>➤ Program Programming</li> <li>➤ Brief introduction of Scratch software</li> <li>➤ Use of basic commands in Scratch</li> </ul>	<ul style="list-style-type: none"> <li>➤ Explaining the concept of program and programming</li> <li>➤ Hands on activity in groups/individually to children to get acquainted with Scratch and basic commands like 'motion', 'pen, and 'sound' blocks</li> <li>➤ Providing opportunities by using computers to develop creativity and imagination among children.</li> </ul>	<ul style="list-style-type: none"> <li>➤ Computers/ IWB with Scratch software</li> <li>➤ Projector, etc.</li> </ul>

**Life Skills:** Creative thinking

**Integration:** Mathematics



## Topic 6: Internet Services

Internet services enables the user to access and gain information through use of the internet. There are different ways to connect to the internet. For example, dial-up, broadband and wireless services.

### Learning Outcomes:

Children will be able to:

- identify the ways to connect to the Internet services;
- use the different internet services;
- follow Netiquettes while communicating online.

Internet Services		
Key Concepts	Suggested Transactional Processes	Suggested Learning Resources
<ul style="list-style-type: none"> <li>▶ Ways to connect to the Internet</li> <li>▶ Netiquettes while communicating online</li> </ul>	<ul style="list-style-type: none"> <li>▶ Organising active discussions /participation of children sharing their experiences related with the topic.</li> <li>▶ Discussing and demonstrating different ways to connect to Internet services like dial-up, broadband and wireless.</li> <li>▶ Discussing strategies to safeguard oneself while communicating online by following Netiquettes.</li> <li>▶ Emphasising the importance of being a responsible netizen.</li> <li>▶ Providing hands-on experience to children in groups/individually in actual use of the Internet.</li> <li>▶ Facilitating a Quiz Game amongst children in groups/whole class on the key concepts.</li> </ul>	<ul style="list-style-type: none"> <li>▶ Computers/ IWB with presentation software</li> </ul>

**Life Skills:** Interpersonal skills, net safety



## Topic 1: Categories of Computers and Computer Languages

This theme focuses on computers and computer languages. Computers are categorized based on the basis of (i) generation, (ii) type, (iii) purpose and (iv) size, speed, processing power and price. The aim of this theme is to enable children to communicate with the computer, by using specific languages that are broadly into three categories, i.e., machine language, assembly language and higher-level language. They will also become aware of all the different operations performed by a computer which are controlled by computer programs written in a computer programming language.

### Learning Outcomes:

Children will be able to:

- ☑ classify computers into different categories;
- ☑ differentiate between computers on the basis of RAM size, Storage capacity, CPU speed, etc.;
- ☑ describe a Computer Language.
- ☑ explain the evolution of computer languages with their features;
- ☑ differentiate between different computer languages;
- ☑ explain the importance of 4GLs;
- ☑ explain the working of translators by differentiating between an interpreter and compiler.

### Categories of Computer and Computer Languages

Key Concepts	Suggested Transactional Processes	Suggested Learning Resources
<ul style="list-style-type: none"> <li>➤ Categories of computers: basic features of microcomputers, mini computers mainframes, supercomputer, mobile, game consoles, embedded computer.</li> <li>➤ Types of computer languages.</li> <li>➤ Features of Low level language (Machine language. Example: binary language)</li> <li>➤ Features of Assembly language.</li> <li>➤ Features of High level languages. Example: C, C++, Java.</li> <li>➤ Features of 4GLs.</li> <li>➤ Translator and its types (Interpreter, Compiler);</li> <li>➤ <b>Working of Translators (briefly).</b></li> </ul>	<ul style="list-style-type: none"> <li>➤ Revisiting and reviewing children's previous learning and building on their experiences.</li> <li>➤ Revising the basic features of a computer with children.</li> <li>➤ Questioning children to identify various types of computers observed in their surroundings.</li> <li>➤ Discussing with children different categories of computers (definition and basic features of microcomputers, mini computers mainframes, supercomputer, mobile, game consoles, embedded computer).</li> <li>➤ Explaining computer languages - Low level language, Assembly language and High-level languages.</li> <li>➤ Discussing and explaining the evolution of computer languages.</li> <li>➤ Demonstrating the working of a Translator and its types.</li> </ul>	<ul style="list-style-type: none"> <li>➤ Presentations/ Videos/ Comparative charts.</li> <li>➤ Computer/ IWB with presentation software.</li> <li>➤ Hands on experience / activity</li> <li>➤ Interactive class resources</li> <li>➤ Projector, etc.</li> <li>➤ Discussion on computer languages</li> </ul>

## Topic 2: File Management – Organisation of Data

Building on children's previous learning in primary classes this Topic covers additional and advanced features on file management which will enable them to organise data better. It is important to understand file format as it makes the task of file management easier. In file management the focus of this theme is that they develop the ability to undertake common operations on stored files such as editing, viewing, copying, playing, moving and deleting files enable better management, access and retrieval/ sorting of files by type, name, size, date (created or modified). File management will also help them to transfer data from one device to another and work with multiple applications at the same time. Understanding of a file format is important as it makes the task of file management easier.

### Learning Outcomes:

Children will be able to:

- move/copy data from one drive to another drive;
- move/copy data between storage devices (pen drive, C.D. hard disc);
- use two or more applications at the same time;
- search files and folders;
- compare different file formats.

File Management – Organisation of Data		
Key Concepts	Suggested Transactional Processes	Suggested Learning Resources
<ul style="list-style-type: none"> <li>▶ Transfer of data from one device/drive to another device/ drive</li> <li>▶ Work with multiple applications</li> <li>▶ Search for files using wild card characters ('?', '*')</li> <li>▶ Various file formats such as JPEG, MP3, MP4, doc, XLS</li> </ul>	<ul style="list-style-type: none"> <li>▶ Giving opportunities for hands on activities for transferring data from one drive/ device to another drive/ device/</li> <li>▶ Demonstrating with an example of listening to music while searching for information on Internet.</li> <li>▶ Explaining the difference between wild card characters by using games such as puzzles</li> <li>▶ Correlating the file</li> <li>▶ extensions with the type of file</li> </ul>	<ul style="list-style-type: none"> <li>▶ Computer/ IWB with presentation software.</li> <li>▶ Hands on activity.</li> <li>▶ Internet.</li> <li>▶ Videos.</li> <li>▶ Projector.</li> <li>▶ Group discussion / activities.</li> </ul>

**Life Skills:** organisation skills

### Topic 3: Word Processor - Tabular Presentation

One of the most common but an important formatting feature of the word processor is 'Tables'. Tables are a method of presenting data in a document, in rows and columns. Blank tables can be inserted or drawn. A table can be simple (based on a metrics) or complex (having different number of rows in columns or vice versa). Intersection of a row and column is a cell. After entering data in a table, it can be modified as per the requirement.

#### Learning outcomes:

Children will be able to:

- define table;
- create a table and enter data in the table;
- edit a table;
- format the row/ column/table;
- apply borders and shading in tables.

#### Word Processor – Tabular Presentation

Key Concepts	Suggested Transactional Processes	Suggested Learning Resources
<ul style="list-style-type: none"> <li>▷ Define a table in terms of rows and columns.</li> <li>▷ Create and edit tables.</li> <li>▷ Insert and delete rows and columns in a table.</li> <li>▷ Enter data.</li> <li>▷ Change row height and column width.</li> <li>▷ Split and merge cells.</li> <li>▷ Apply borders and shading.</li> <li>▷ Resize tables.</li> <li>▷ Align text,</li> </ul>	<ul style="list-style-type: none"> <li>▷ Providing children opportunities to: Explain a table and work on how it can be created in a document.</li> <li>▷ Providing every child hands- on experience and involving them in creating and formatting tables based on everyday requirements such as- creating a class time-table, study schedule for the month, marks obtained in the term examination, etc.</li> </ul>	<ul style="list-style-type: none"> <li>▷ Computers/ IWB with presentation software and Word Processor.</li> <li>▷ Hands on activity</li> <li>▷ Projector.</li> </ul>



## Topic 4: Word Processor – Mail Merge

The topic Mail merge is an important feature of the word processor. The aim is to develop the ability in children so as to enable them to create personalised letters for bulk mailing in a short period of time and address/ mailing labels by using this facility.

### Learning outcomes:

Children will be able to:

- describe Mail merge;
- apply the concept of mail merge to multiple addresses;
- handle various components of mail merge;
- use mail merge to create multiple personalised documents from a single one.

Word Processor – Mail Merge		
Key Concepts	Suggested Transactional Processes	Suggested Learning Resources
<ul style="list-style-type: none"> <li>➤ Mail merge and its advantages.</li> <li>➤ Apply Mail merge feature of a Word processor to generate document with varying addresses.</li> <li>➤ Components of mail merge (main document, data source, merged document).</li> <li>➤ Steps to be followed during mail merge.</li> <li>➤ Printing merged letters.</li> </ul>	<ul style="list-style-type: none"> <li>➤ Initiating a discussion with children on the need of mail merge by giving real life examples like birthday party invitations, etc.</li> <li>➤ Providing opportunities for hands on activities to create and print mail merged letter/ documents for everyday situations.</li> </ul>	<ul style="list-style-type: none"> <li>➤ Computers/ IWB with Word Processor.</li> <li>➤ Hands on activity</li> <li>➤ Projector, etc.</li> <li>➤ Use of mail for document development related to daily life activities</li> </ul>

**Life Skills:** General Awareness, Collaborative learning

## Topic 5: Presentation – Visual Effects

Presentation software is an application software that aims at enabling children to access their ideas easily while making a presentation through slide shows. It also provides the audience with visual information. They will understand appreciate how presentations can be made more attractive and interactive by using animations, sound, video, etc.

### Learning outcomes:

Children will be able to:

- demonstrate different ways of viewing a presentation;
- present a Topic in an attractive manner by using different objects;
- enhance the presentation by applying transitions and custom animations;
- navigate between slides during a slide show;
- import data from other applications.

<b>Presentation – Visual Effects</b>		
<b>Key Concepts</b>	<b>Suggested Transactional Processes</b>	<b>Suggested Learning Resources</b>
<ul style="list-style-type: none"> <li>▶ Need for different views in a presentation.</li> <li>▶ Working with different views (normal, slide sorter, slide master, slide show) to view a presentation.</li> <li>▶ Apply animation effects through custom animation</li> <li>▶ Add transitions to slides.</li> <li>▶ Use of a media clip and action buttons.</li> <li>▶ Insert media clips (movie and sound)/ action buttons in the presentation.</li> <li>▶ Import data from other applications.</li> </ul>	<ul style="list-style-type: none"> <li>▶ Demonstrating to children the advantages of using normal, slide sorter, slide master, slide show by using an existing presentation.</li> <li>▶ Involving the children in a discussion to highlight how a presentation can be enhanced by using a media clip/ transitions/ animations and action buttons.</li> <li>▶ Organising hands on activities for each child to: insert different objects; apply slide transition and custom animation; use action buttons to navigate between slides.</li> </ul>	<ul style="list-style-type: none"> <li>▶ Computers/ IWB with presentation software.</li> <li>▶ Projector.</li> <li>▶ Animation related activities.</li> <li>▶ Presentation on media clip.</li> <li>▶ Hands-on activities / experiences</li> </ul>

**Life Skills:** Presentation skills, creativity

## Topic 6: Scratch Programming – Introduction to Game Creation

In previous learning of the Topic on 'Scratch' children learnt how to handle basic motion block. This Topic aims at enabling children to handle and work with looks, control pen, and sound blocks of Scratch programming.

### Learning outcomes:

Children will be able to:

- handle commands of different blocks;
- create a working multi-player game.

### Scratch Programming – Introduction to Game Creation

Key Concepts	Suggested Transactional Processes	Suggested Learning Resources
<ul style="list-style-type: none"><li>▶ Revision from previous class.</li><li>▶ Changing sprites, images, shapes.</li><li>▶ Working with Multiple sprites</li><li>▶ Use of different blocks like Looks, Motion, Control, Pen and Sound.</li><li>▶ Use of Forever, Forever- IF.</li></ul>	<ul style="list-style-type: none"><li>▶ Explaining the working of Blocks like Looks, Motion, Control, Pen and Sound.</li><li>▶ Providing opportunities to children to use the commands in their own way in order to create games/ quizzes/ interactive cards.</li><li>▶ Demonstrating the use of blocks and working with multiple sprites to children in class.</li></ul>	<ul style="list-style-type: none"><li>▶ Computers/ IWB with Scratch software.</li><li>▶ Projector.</li><li>▶ Games, quizzes, interactive cards.</li></ul>

**Integration:** Mathematics, Physics

**Life Skills:** Collaborative learning

## Topic 7: HTML - An Introduction

HTML an acronym for Hyper Text Markup Language, is the language used to describe structured documents as well as to create web pages in Internet. Hyper Text refers to links that connect web pages/ web sites and Markup means a set of markup tags. This aim of this topic is to enable children to understand the different features of HTML and develop the ability to design a simple web page using HTML editors.

### Learning outcomes:

Children will be able to:

- define HTML;
- differentiate between web page, web site and web browser;
- list various features of HTML;
- use various HTML tags;
- design a web page.

<b>HTML – An Introduction</b>		
<b>Key Concepts</b>	<b>Suggested Transactional Processes</b>	<b>Suggested Learning Resources</b>
<ul style="list-style-type: none"> <li>▷ Definition of webpage and website, web browser.</li> <li>▷ Introduction to HTML programming and its features.</li> <li>▷ Create a web page using HTML Editors (e.g. Notepad).</li> <li>▷ Basic Structure of a HTML document.</li> <li>▷ Basic HTML Tags (&lt;HTML&gt;, &lt;HEAD&gt;, &lt;TITLE&gt;, &lt;BODY&gt;, &lt;BR&gt;, &lt;P&gt;, heading tags from &lt;H1&gt; to &lt;H6&gt;, &lt;B&gt;, &lt;I&gt;, &lt;U&gt;, &lt;SUP&gt;, &lt;SUB&gt;, &lt;CENTER&gt;, &lt;BGCOLOR&gt;, &lt;FONT COLOR&gt;, &lt;FONT SIZE&gt;, &lt;FONT FACE&gt;, &lt;TEXT&gt;).</li> <li>▷ Web Browsers for HTML (e.g. IE, Google Chrome, Netscape Navigator etc.).</li> <li>▷ View HTML codes in a Browser.</li> <li>▷ Create and save a web page through HTML editor.</li> </ul>	<ul style="list-style-type: none"> <li>▷ Explaining and discussing with children HTML, as a web designing tool, and its features.</li> <li>▷ Demonstrating various tags in classroom activities.</li> <li>▷ Demonstrating the process to view the code in a browser.</li> <li>▷ Providing opportunities to each child to participate in project work to create webpage/ website.</li> </ul>	<ul style="list-style-type: none"> <li>▷ Computers/ IWB with HTML editor.</li> <li>▷ Internet facility.</li> <li>▷ Projector.</li> <li>▷ .</li> <li>▷ Project work</li> </ul>

**Life Skills:** creative thinking, logical thinking and critical thinking.

## Topic 8: Internet – Online Surfing

Internet is the largest wide area network. It provides us many facilities and services. In this chapter we will discuss internet services such as E-mail, E-commerce, Blogging, Podcasting and Google drive (to store and share data). The focus of this topic is to develop children's interest, understanding of and ability to use the Internet in simple ways.

### Learning outcomes:

Children will be able to:

- communicate through e-mail;
- store and share data using google drive;
- explain online services of e-commerce;
- create a blog;
- express views/ opinions through blogs;
- differentiate between a website and a blog;
- create a podcast.

<b>Internet – Online Surfing</b>		
<b>Key Concepts</b>	<b>Suggested Transactional Processes</b>	<b>Suggested Learning Resources</b>
<ul style="list-style-type: none"> <li>▶ Features to be kept in mind while using the internet services – following netiquette; being aware of potential threats in the cyber world.</li> <li>▶ E-mail: introduction; features; advantages; composing and sending e-mail, attachments, cc, bcc, inbox, outbox, trash, spam, logging in and out.</li> <li>▶ Google Drive: introduction; using the drive: upload, organise and share.</li> <li>▶ E-commerce: an understanding of E-commerce as online buying and selling of goods and services.</li> <li>▶ Online modes of payment: credit card, debit card, e-money.</li> <li>▶ Blogging and Podcasting: meaning purpose and uses.</li> </ul>	<ul style="list-style-type: none"> <li>▶ Having an open discussion with children on their experiences while surfing the internet, what they liked and did not and issues they faced if any.</li> <li>▶ Discussing and debating with children on:                             <ul style="list-style-type: none"> <li>• potential threats while using the internet</li> <li>• importance of netiquettes.</li> <li>• evolution of communication by comparing earlier modes with the modern modes and advantages and disadvantages of each.</li> </ul> </li> <li>▶ Demonstrating how to:                             <ul style="list-style-type: none"> <li>• send an e-mail, with bcc, cc, attachments.</li> <li>• use the Google Drive and explaining the process of uploading and sharing data through it</li> </ul> </li> <li>▶ Introducing E -commerce by discussing the different modes online buying and selling</li> <li>▶ Discussing with children the following:                             <ul style="list-style-type: none"> <li>• advantages and disadvantages of online shopping</li> <li>• online modes of payment</li> <li>• the difference between a website and a blog</li> </ul> </li> <li>▶ Introducing the concept of podcast by giving real life examples of use of podcast in news</li> <li>▶ Providing opportunities for hands-on activity through projects and individually on the internet, google, website and blog.</li> </ul>	<ul style="list-style-type: none"> <li>▶ Computers/ IWB with presentation software</li> <li>▶ Use of internet in conducting activities</li> <li>▶ Hands on experiences working on various functions of internet.</li> <li>▶ Use of google drive</li> <li>▶ Use of website and blog</li> </ul>

**Life Skills:** Organisation skills

## 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
<ul style="list-style-type: none"> <li>▶ Computer Hardware: external and internal hardware;</li> <li>▶ 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.).</li> </ul>	<ul style="list-style-type: none"> <li>▶ Showing the components of an old CPU box and their placement on the mother board.</li> <li>▶ Differentiating through demonstrations to children between internal and external hardware.</li> <li>▶ Explaining different components like Power supply (SMPS), Motherboard, Ports, Modem through presentations/ videos.</li> <li>▶ Engaging children to participate in quizzes and worksheet activities related to hardware</li> </ul>	<ul style="list-style-type: none"> <li>▶ Old CPU components.</li> <li>▶ Computers/ IWB with presentation software.</li> <li>▶ External hardware.</li> <li>▶ Internal hardware,</li> <li>▶ Quizzes and worksheets</li> </ul>

## 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
<ul style="list-style-type: none"> <li>▶ Introduction to Number system: need for number systems and examples of various number systems.</li> <li>▶ Digits and bases of different number systems.</li> <li>▶ Represent value in different number systems (Decimal, binary, octal and hexadecimal number system).</li> <li>▶ Conversions from decimal to binary and vice versa.</li> </ul>	<ul style="list-style-type: none"> <li>▶ Illustrating to children the various number systems (Decimal, binary, octal and hexadecimal) through videos/ presentation.</li> <li>▶ Providing opportunities, through examples to children to undertake hand-on-activity for practicing the technique of conversion binary to decimal and vice versa.</li> </ul>	<ul style="list-style-type: none"> <li>▶ Computers/ IWB with presentation software.</li> <li>▶ Hands-on-activity</li> <li>▶ Interactive class</li> <li>▶ Videos on number systems.</li> <li>▶ Projector, etc.</li> </ul>

**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.

<b>Computer Virus</b>		
<b>Key Concepts</b>	<b>Suggested Transactional Processes</b>	<b>Suggested Learning Resources</b>
<ul style="list-style-type: none"> <li>▷ Definition and example of computer virus.</li> <li>▷ Types of Virus (boot sector and program file virus - definition and examples).</li> <li>▷ Virus symptoms and harm caused by virus</li> <li>▷ Antivirus – definition and examples.</li> <li>▷ Ways to prevent a virus (e.g. scanning pen drive, and CDs, downloading only from secured sites, updating of antivirus regularly etc.).</li> <li>▷ Definition and example of forms of virus attack (malware, worm, spyware, Trojan horse, sweeper).</li> </ul>	<ul style="list-style-type: none"> <li>▷ Illustrating different types of viruses (boot sector and program file virus with examples).</li> <li>▷ Discussing the different forms/types of viruses.</li> <li>▷ Showing children through videos/ presentations the symptoms and harm caused by viruses and conducting a discussion with them after that.</li> <li>▷ Demonstrating different ways to prevent virus attacks and asking children to replicate the same.</li> </ul>	<ul style="list-style-type: none"> <li>▷ Computers/ IWB with presentation software.</li> <li>▷ Videos.</li> <li>▷ Discussion on harmful effects of virus</li> <li>▷ Scanning process of pen drive, CD</li> </ul>

**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.

<b>Ethics and Safety Measures in Computing</b>		
<b>Key Concepts</b>	<b>Suggested Transactional Processes</b>	<b>Suggested Learning Resources</b>
<ul style="list-style-type: none"> <li>▷ Advantages and disadvantages of using internet.</li> <li>▷ A brief introduction to ethics in computing.</li> <li>▷ Unethical practices prevalent in the society, related to internet:                             <ul style="list-style-type: none"> <li>☛ <i>Plagiarism</i></li> <li>☛ <i>Cyber bullying</i></li> <li>☛ <i>Hacking</i></li> <li>☛ <i>Phishing</i></li> <li>☛ <i>Spamming</i></li> <li>☛ <i>Individual right to privacy</i></li> <li>☛ <i>Software Piracy,</i></li> <li>☛ <i>Intellectual property rights</i></li> </ul> </li> <li>▷ Meaning and a brief explanation of the different unethical practices stated above in point no. 3. along with the preventive measures.</li> <li>▷ 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).</li> <li>▷ Digital footprints (meaning and sensitising children about it.)</li> </ul>	<ul style="list-style-type: none"> <li>▷ Discussing with children various Topic/Topics related to ethical and non-ethical issues and practices on the Internet.</li> <li>▷ While working on the computers inculcating, among the children, the habit of ethical online conduct and responsible behavior while using information and technology.</li> <li>▷ Encouraging children to follow safety measures while using the computer and internet.</li> <li>▷ Citing examples from real life to sensitise children on the implications of the digital footprint created by their posts, comments, pictures, social groups, etc.</li> </ul>	<ul style="list-style-type: none"> <li>▷ Computers/ IWB with Presentation Software.</li> <li>▷ Videos.</li> <li>▷ Discussion on ethical and unethical practices related to internet use</li> </ul>

**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
<ul style="list-style-type: none"> <li>▶ Features of spreadsheet and its advantages.</li> <li>▶ Components of Spreadsheet window: workbook and worksheet, sheet tab, cell, cell address, active cell, formula bar, row, column, name box.</li> <li>▶ Entering data in a spreadsheet</li> <li>▶ Types of data (number, string and formula).</li> <li>▶ Perform calculations.</li> <li>▶ Enter simple formulae.</li> <li>▶ Select cells.</li> <li>▶ Change cell contents.</li> <li>▶ Use Undo and Redo features.</li> <li>▶ Insert and deleting columns and rows.</li> <li>▶ Copy and move data.</li> <li>▶ Use autofill feature.</li> </ul>	<ul style="list-style-type: none"> <li>▶ Demonstrating to children the different components of a spread sheet along with discussion.</li> <li>▶ 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.</li> <li>▶ Using formatting features by children created on the spread sheets.</li> <li>▶ Discussion on advantages of spreadsheet and workbook.</li> <li>▶ Providing each child the opportunity to work on computers and undertake the following tasks:               <ul style="list-style-type: none"> <li>• Entering data in a spreadsheet</li> <li>• Perform calculations.</li> <li>• Enter simple formulae.</li> <li>• Select cells.</li> <li>• Change cell contents.</li> <li>• Use Undo and Redo features.</li> <li>• Insert and deleting columns and rows.</li> <li>• Copy and move data.</li> <li>• Use autofill feature.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>▶ Computers/ IWB with spreadsheet software.</li> <li>▶ Questionnaires/surveys/ polls</li> <li>▶ Discussion on advantages of spreadsheet and workbook</li> </ul>

**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
<ul style="list-style-type: none"> <li>➤ Meaning of Database and DBMS.</li> <li>➤ Uses of database with examples.</li> <li>➤ Create and Save a database.</li> <li>➤ Primary Key.</li> <li>➤ Querying a Database.</li> </ul>	<ul style="list-style-type: none"> <li>➤ 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.</li> <li>➤ Explaining the concept of database and illustrating steps to create, save and edit a database and querying a database.</li> <li>➤ Explaining the importance of Primary Key and different data types with respect to database Query.</li> <li>➤ Provide opportunities for hands on experience to prepare a database through some examples and generating queries on the data.</li> </ul>	<ul style="list-style-type: none"> <li>➤ IWB with database software.</li> <li>➤ Telephone directory.</li> <li>➤ Student registration record.</li> </ul>

## 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
<ul style="list-style-type: none"> <li>▶ Create lists (&lt;OL&gt;, &lt;UL&gt;).</li> <li>▶ Insert Images in web pages &lt;img src&gt;.</li> <li>▶ Insert links &lt;a href&gt;, tables &lt;tr&gt;, &lt;td&gt;, &lt;table&gt;.</li> <li>▶ Display objects through &lt;Marquee&gt;.</li> <li>▶ Create forms using &lt;form&gt; tag.</li> </ul>	<ul style="list-style-type: none"> <li>▶ Revising and revisiting previous concepts learnt by children i.e. The HTML tags and building on the same.</li> <li>▶ Encouraging children to discuss:               <ul style="list-style-type: none"> <li>• about the features of the websites that they like and their reasons for the same.</li> <li>• how a webpage can be made more impressive/user friendly.</li> </ul> </li> <li>▶ 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.</li> <li>▶ Providing opportunities for hands on activity through web page development.</li> </ul>	<ul style="list-style-type: none"> <li>▶ Computers/ IWB with HTML editor.</li> <li>▶ Internet facility.</li> </ul>

## Topic 1: Operating System (OS) and Graphical User Interface (GUI) – Role and functions

This topic will familiarize and develop children's understanding about the operating system as an integral and important program of a computer system. It can be Character User Interface (CUI, e.g. DOS) or Graphical User Interface, GUI (e.g. Windows). They will know about some of the functions of OS: to boot the computer, perform basic computer tasks like managing peripheral devices (mouse, keyboard, printer, etc.), handling system resources, like computer's memory, sharing CPU, etc.

### Learning outcomes:

Children will be able to:

- differentiate between CUI and GUI in terms of multitasking;
- list the features, functions and advantages of GUI.

### Operating System (OS) and Graphical User Interface (GUI) – Role and functions

Key Concepts	Suggested Transactional Processes	Suggested Learning Resources
<ul style="list-style-type: none"> <li>▶ Introduction, need, functions, features and types of Operating System: definition and examples of single user.</li> <li>▶ Meaning of user interface and its types (CUI, GUI).</li> <li>▶ Introduction to GUI and its advantages.</li> </ul>	<ul style="list-style-type: none"> <li>▶ Revisiting the concept of system software discussed in previous classes</li> <li>▶ Using presentations/ Videos/ Comparative charts/ Interactive classes to explain the GUI and CUI Operating Systems to children.</li> <li>▶ Discussing the different types of OS with examples.</li> <li>▶ Explaining how an OS works - single user, multiuser.</li> <li>▶ Providing facilities for Quizzes/worksheets and Visuals.</li> </ul>	<ul style="list-style-type: none"> <li>▶ Computers/ IWB with presentation software.</li> <li>▶ Videos.</li> <li>▶ Worksheets.</li> <li>▶ Field trips</li> <li>▶ Hands on experiences</li> <li>▶ Worksheets/quiz on this topic.</li> </ul>

## Topic 2: Spreadsheet – Functions and Charts

This topic will expose children to spreadsheet is used the built-in features and tools of spreadsheets namely functions, charts, etc.

### Learning outcomes:

Children will be able to:

- edit and format a worksheet;
- define cell range and apply formula;
- differentiate between different cell referencing;
- edit a sheet from sheet tab;
- formulate a function and create a chart.

<b>Spreadsheet – Functions and Charts</b>		
<b>Key Concepts</b>	<b>Suggested Transactional Processes</b>	<b>Suggested Learning Resources</b>
<ul style="list-style-type: none"> <li>▶ Method to enter formulae.</li> <li>▶ Meaning of Range, selecting range, naming a range.</li> <li>▶ Cell referencing and its types (relative, absolute, mixed –with examples).</li> <li>▶ Naming, renaming and deleting a sheet from sheet tab.</li> <li>▶ Meaning of Functions.</li> <li>▶ Rules to enter a function like Sum, Average, Max, Min, count, etc.</li> <li>▶ Creating a chart.</li> </ul>	<ul style="list-style-type: none"> <li>▶ Revising and revisiting the previous Key Concepts learnt by children by providing opportunities through presentations/ worksheets.</li> <li>▶ Building on children’s previous learning.</li> <li>▶ Illustrating /Demonstrating cell range, formula and function to children.</li> <li>▶ Emphasizing on the different ways of cell referencing (relative, absolute, mixed –with examples) in a formula/ function.</li> <li>▶ Illustrating how sheets can be edited in the sheet tab.</li> <li>▶ Providing opportunities to each child through hands on experience to apply common functions like Sum, Average, Max, Min, count, etc.</li> <li>▶ Asking children to collect data on two criteria (e.g. age and food preferences, gender and interest in sports, etc.) and preparing a chart on the same.</li> </ul>	<ul style="list-style-type: none"> <li>▶ Computers/ IWB with presentation software.</li> <li>▶ Spreadsheet software.</li> <li>▶ Questionnaires</li> <li>▶ Surveys.</li> </ul> <p>Hands-on-activities</p>

## Topic 3: Algorithms and Flowcharts

An algorithm is 'rules or procedures' for solving problems and are used in all aspects of daily life activities. Two important aspects of algorithms are that the problem should be expressed in detail and without ambiguity. A Flowchart is a diagrammatic representation of an algorithm, in which different steps are shown as symbols of different shapes connected by arrows. To solve any problem, it is important to follow the stepwise strategy. This Topic focuses on enabling children to know and understand about an algorithm and flow chart and develop the ability to write an algorithm and design a flowchart for solution of a particular problem.

### Learning outcomes:

Children will be able to:

- describe an algorithm;
- list characteristics of algorithm;
- analyse a problem;
- apply algorithm to find the best solution of a given problem;
- describe flowchart with its symbols;
- design a flowchart.

<b>Algorithms and Flowcharts</b>		
<b>Key Concepts</b>	<b>Suggested Transactional Processes</b>	<b>Suggested Learning Resources</b>
<ul style="list-style-type: none"> <li>➤ Introduction to algorithm – definition and its use.</li> <li>➤ Characteristics of a good algorithm.</li> <li>➤ Steps to develop an algorithm.</li> <li>➤ Writing algorithms.</li> <li>➤ Definition of flowcharts.</li> <li>➤ Various symbols used in flowcharts.</li> <li>➤ Solving problems by writing algorithms and drawing flowcharts till decision making. (excluding loops).</li> </ul>	<ul style="list-style-type: none"> <li>➤ Introducing children to the topic by asking them to list the ingredients and steps involved in making a cup of tea/ sandwich, etc. (Ingredients may be compared to the Input, steps to the Process and the cup of tea to the Output). This can then be made into a flow chart.</li> <li>➤ Illustrating to children:                             <ul style="list-style-type: none"> <li>• the components of algorithm and flowchart.</li> <li>• the steps through a flow chart.</li> </ul> </li> <li>➤ Providing children opportunities, through projects, for hands on activity.</li> </ul>	<ul style="list-style-type: none"> <li>➤ Computers/ IWB.</li> <li>➤ Projector.</li> <li>➤ Interactive class resources.</li> <li>➤ Projects.</li> </ul>

**Life Skills:** Logical thinking

**Integration:** Mathematics

## Topic 4: Program Coding

Program coding (programming) involves the use of a computer programming language to write a series of instructions (algorithms) called a computer program that the computer can interpret and carry out. All operations performed by a computer are controlled by computer programs. Introduction of program coding (programming) can be explained by using any programming language. This Topic will be developing children's ability to write, compile and execute any program to solve the problem on a computer. They will also appreciate the need and importance of programming.

### Learning outcomes:

Children will be able to:

- explain the need of programming;
- define the basic components of a program;
- explain the need of different data types;
- use correct syntax of components to write an error free program;
- compile and execute a program;
- use different operators.
- identify the flow of control in selection statements.
- design a program with appropriate selection statements.

Program Coding		
Key Concepts	Suggested Transactional Processes	Suggested Learning Resources
<ul style="list-style-type: none"> <li>▶ Introduction to Program coding/ programming.</li> <li>▶ Components of a program: identifiers, their naming rules.</li> <li>▶ Literals (like integer, real and string).</li> <li>▶ Data types and the need for different data types (like int, char, float, etc.).</li> <li>▶ Declaration and initialisation of variables.</li> <li>▶ Arithmetic operators (+, -, *, /, %), relational and logical operators.</li> <li>▶ Assignment operator and its use.</li> <li>▶ Compiling and executing programs.</li> <li>▶ Concept, use and syntax of <i>if, if else, if else if ladder</i></li> </ul>	<ul style="list-style-type: none"> <li>▶ Citing examples from real life of computing being used in every field, and discussing with children the importance of learning to code.</li> <li>▶ Showing videos on the importance of programming.</li> <li>▶ Explaining:                             <ul style="list-style-type: none"> <li>☛ <i>different components of a program</i></li> <li>☛ <i>the correct syntax of each component</i></li> <li>☛ <i>the functionality of selection statements</i></li> <li>☛ <i>the use of selection statements by using simple examples</i></li> <li>☛ <i>how to compile and execute a program</i></li> </ul> </li> <li>▶ Providing opportunities for Hands-on-activity to each child on the computer,</li> </ul>	<ul style="list-style-type: none"> <li>▶ Computers/ IWB with any Programming software.</li> <li>▶ Internet facility.</li> <li>▶ Videos</li> <li>▶ Presentations.</li> <li>▶ A sample structure of a program.</li> </ul>



## Topic 5: App Development

An App (abbreviation for application) is a piece of software. It can run on our mobile phone, computer, internet or any other electronic device. There are many types of Apps used for different purposes. An App can be developed using any free app development software. This topic will introduce and enable children to understand the different apps, how they work and their uses.

### Learning outcomes:

Children will be able to:

- identify different types of apps;
- list uses of apps;
- classify apps;
- design and develop an app.

App Development		
Key Concepts	Suggested Transactional Processes	Suggested Learning Resources
<ul style="list-style-type: none"> <li>▶ Introduction to apps</li> <li>▶ Working of apps.</li> <li>▶ Uses of some commonly known apps.</li> <li>▶ Types of apps: web or online, mobile.</li> <li>▶ Development of simple apps (using any free app development software).</li> </ul>	<ul style="list-style-type: none"> <li>▶ Asking children to share their experiences of using an app by them or by any other member in their family.</li> <li>▶ Demonstrating some apps on the mobile phone or through projection through computers.</li> <li>▶ Illustrating the steps to create an app (using any free app development software).</li> </ul>	<ul style="list-style-type: none"> <li>▶ IWB / Computers with an app development software.</li> <li>▶ Hands-on-activities on the use of app</li> </ul>

## Topic 6: Networks

This topic focuses on enabling children to know about a Computer Network and its components. They will understand that it consists of a large number of computers connected to each other so that they can exchange data and share resources and that every network has a topology, i.e., physical layout of communication links. They will also know more about the Internet -that it is a world-wide system for interconnecting smaller networks and 'cloud computing'.

### Learning outcomes:

Children will be able to:

- define a network and its components,
- differentiate between types of network.
- explain the ways in which data moves over the network.
- explain Internet terms.
- discuss the need of protocols in networking.
- summarize the characteristics and advantages of cloud computing.
- use cloud computing to store, share and present data/ information.

<b>Networks</b>		
<b>Key Concepts</b>	<b>Suggested Transactional Processes</b>	<b>Suggested Learning Resources</b>
<ul style="list-style-type: none"> <li>▷ Definition of Network and its components (sender, receiver, medium).</li> <li>▷ Definition of different types of networks with examples (LAN, MAN, WAN, PAN, CAN).</li> <li>▷ Meaning of various terms related to internet: Intranet, URL, ISP, IP address, DNS, webpage, website, web portal, MODEM, switch, hub, router, gateways, link, hyperlink, hypertext, band width.</li> <li>▷ Definition of protocol (HTTP, FTP, TCP/IP, IMAP, SMTP – a brief explanation of each and their purpose).</li> <li>▷ Introduction to Cloud Computing: characteristics and advantages.</li> <li>▷ Storing and sharing data/information using Cloud Computing.</li> </ul>	<ul style="list-style-type: none"> <li>▷ Showing the school network (the server, the cables, switch, workstations) to explain its uses, components (sender, receiver, medium) and working of different parts.</li> <li>▷ Discussing and classifying the different types of networks with examples with respect to proximity, communication channels, etc.</li> <li>▷ Explaining and discussing the various internet terms.</li> <li>▷ Discussing protocols - a brief explanation of each and their purpose.</li> <li>▷ Providing opportunities through online collaborative project to develop a better understanding of cloud computing (using shared drives and various Web 2.0 tools).</li> </ul>	<ul style="list-style-type: none"> <li>▷ Computers/ IWB.</li> <li>▷ Videos.</li> <li>▷ Internet facility.</li> <li>▷ Interactive class resources</li> <li>▷ Projectors.</li> </ul>