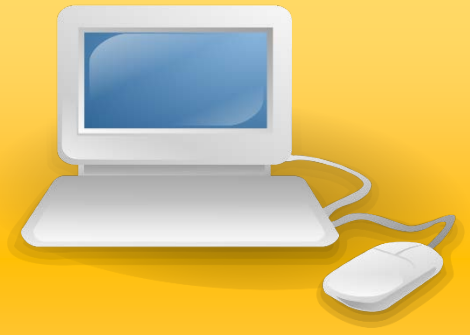
Computer Studies



The Core Concepts of Computer Studies for Class VIII are as follows:

Class VIII

Operating System and Graphic User Interface – Role and Functions

Spreadsheet – Functions and Charts

Program Coding

App Development

Networks

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**
▸ Introduction, need, functions, features and types of Operating System: definition and examples of single user. ▸ Meaning of user interface and its types (CUI, GUI). ▸ Introduction to GUI and its advantages.	▸ Revisiting the concept of system software discussed in previous classes ▸ Using presentations/ Videos/ Comparative charts/ Interactive classes to explain the GUI and CUI Operating Systems to children. ▸ Discussing the different types of OS with examples. ▸ Explaining how an OS works - single user, multiuser. ▸ Providing facilities for Quizzes/worksheets and Visuals.	▸ Computers/ IWB with presentation software. ▸ Videos. ▸ Worksheets. ▸ Field trips ▸ Hands on experiences ▸ Worksheets/quiz on this topic.

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.

Spreadsheet – Functions and Charts		
Key Concepts	**Suggested Transactional Processes**	**Suggested Learning Resources**
▸ Method to enter formulae. ▸ Meaning of Range, selecting range, naming a range. ▸ Cell referencing and its types (relative, absolute, mixed –with examples). ▸ Naming, renaming and deleting a sheet from sheet tab. ▸ Meaning of Functions. ▸ Rules to enter a function like Sum, Average, Max, Min, count, etc. ▸ Creating a chart.	▸ Revising and revisiting the previous Key Concepts learnt by children by providing opportunities through presentations/ worksheets. ▸ Building on children's previous learning. ▸ Illustrating /Demonstrating cell range, formula and function to children. ▸ Emphasizing on the different ways of cell referencing (relative, absolute, mixed –with examples) in a formula/ function. ▸ Illustrating how sheets can be edited in the sheet tab. ▸ Providing opportunities to each child through hands on experience to apply common functions like Sum, Average, Max, Min, count, etc. ▸ 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.	▸ Computers/ IWB with presentation software. ▸ Spreadsheet software. ▸ Questionnaires ▸ Surveys. Hands-on-activities

Topic 3: 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;
- use different operators.

Program Coding		
Key Concepts	**Suggested Transactional Processes**	**Suggested Learning Resources**
▸ Introduction to Program coding/ programming. ▸ Components of a program: identifiers, their naming rules. ▸ Literals (like integer, real and string). ▸ Data types and the need for different data types (like int, char, float, etc.). ▸ Declaration and initialisation of variables. ▸ Arithmetic operators (+, -, *, /, %), relational and logical operators. ▸ Assignment operator and its use.	▸ Citing examples from real life of computing being used in every field, and discussing with children the importance of learning to code. ▸ Showing videos on the importance of programming. ▸ Explaining: ☛ *different components of a program* ☛ *the correct syntax of each component* ▸ Providing opportunities for Hands-on-activity to each child on the computer,	▸ Computers/ IWB with any Programming software. ▸ Internet facility. ▸ Videos ▸ Presentations. ▸ A sample structure of a program.

Topic 4: 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**
▸ Introduction to apps Working of apps. ▸ Uses of some commonly known apps. ▸ Types of apps: web or online, mobile. ▸ Development of simple apps (using any free app development software).	▸ Asking children to share their experiences of using an app by them or by any other member in their family. ▸ Demonstrating some apps on the mobile phone or through projection through computers. ▸ Illustrating the steps to create an app (using any free app development software).	▸ IWB / Computers with an app development software. ▸ Hands-on-activities on the use of app

Topic 5: 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.
- summarize the characteristics and advantages of cloud computing.
- use cloud computing to store, share and present data/ information.

Networks		
Key Concepts	**Suggested Transactional Processes**	**Suggested Learning Resources**
▸ Definition of Network and its components (sender, receiver, medium). ▸ Definition of different types of networks with examples (LAN, MAN, WAN, PAN, CAN). ▸ 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. ▸ Introduction to Cloud Computing: characteristics and advantages. ▸ Storing and sharing data/information using Cloud Computing.	▸ Showing the school network (the server, the cables, switch, workstations) to explain its uses, components (sender, receiver, medium) and working of different parts. ▸ Discussing and classifying the different types of networks with examples with respect to proximity, communication channels, etc. ▸ Explaining and discussing the various internet terms.	▸ Computers/ IWB. ▸ Videos. ▸ Internet facility.