

**J. R. Kissan College of
Education, Rohtak**

**CRITICAL
UNDERSTANDING
OF ICT**

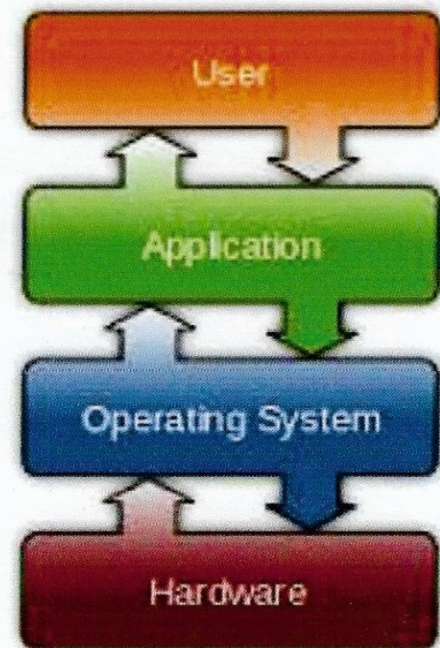
UNIT-I

MS Windows

Basic Concept of an Operating System

An operating system (OS) is system software that manages computer hardware and software resources and provides common services for computer programs. The operating system is a component of the system software in a computer system. Application programs usually require an operating system to function.

The operating system acts as an interface between the user and the computer system.



Types of Operating System

1. Real-Time Operating Systems:

It is a multitasking operating system that aims at executing real time applications.

2. Multi-User And Single-User Operating Systems:

The operating systems of this type allow multiple users to access a computer system concurrently.



3. Multi-Tasking And Single-Tasking Operating Systems:

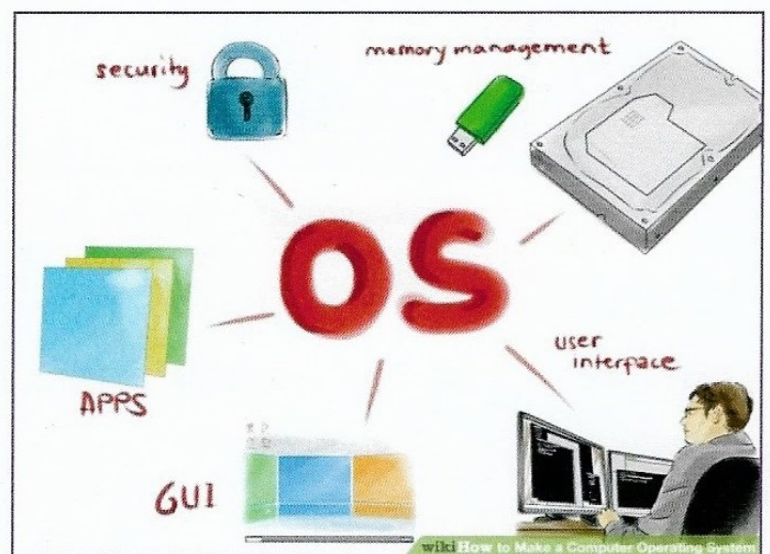
When a single program is allowed to run at a time, the system is grouped under a single-tasking system, while in case the operating system allows the execution of multiple tasks at one time, it is classified as a multi-tasking operating system.

4. Distributed Operating System:

An operating system that manages a group of independent computers and makes them appear to be a single computer is known as a distributed operating program that acts as an interface between the user and the computer.

Functions

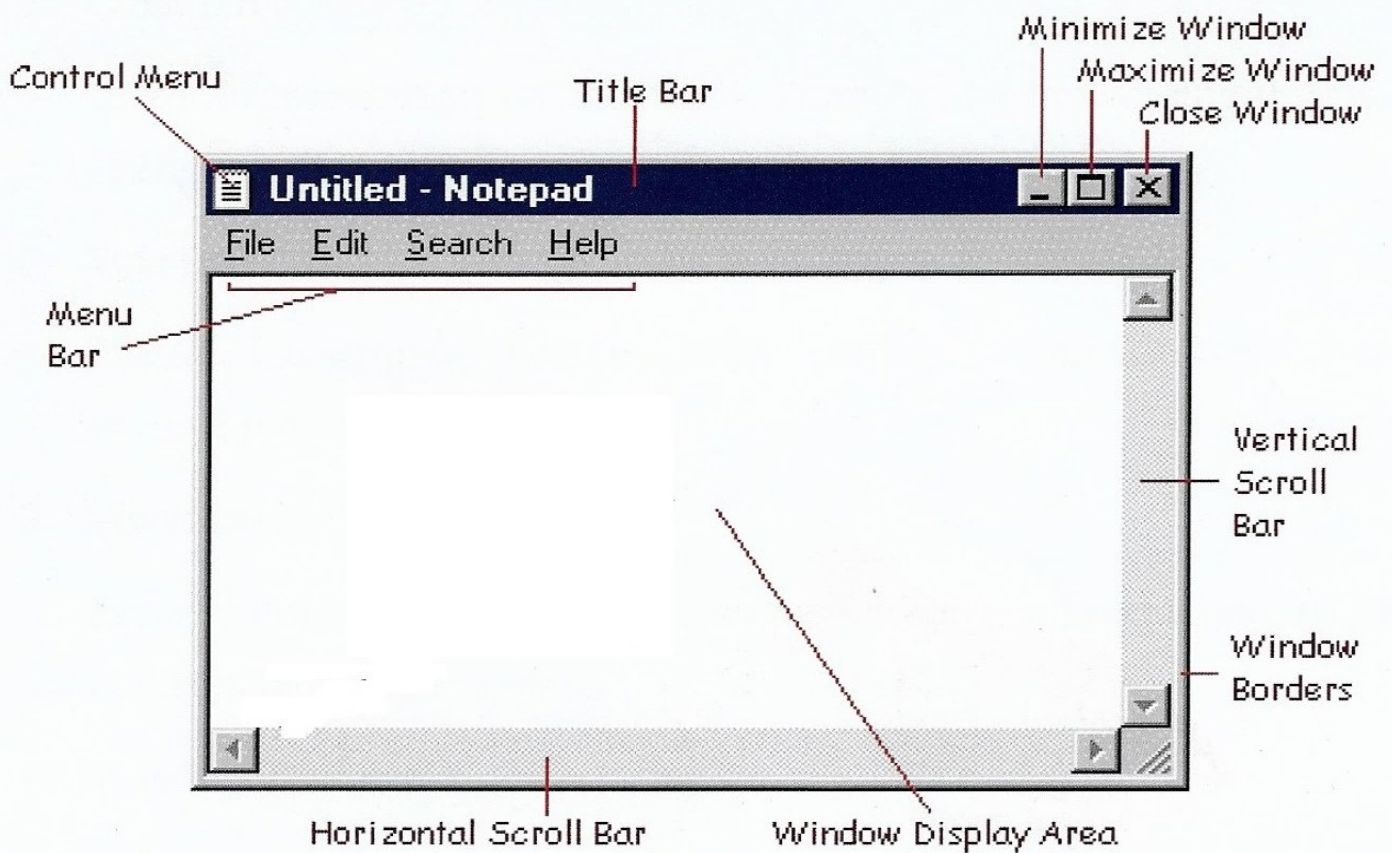
1. Program creation
2. Program execution
3. Access to Input/ Output devices
4. Controlling user interface
5. Controlled access to files
6. System access
7. User authentication
8. Error detection and response
9. Interpreting the commands
10. Managing peripherals
11. Memory management
12. Processor management
13. Information management
14. Process communication
15. Networking



Introduction of Windows

A window is an area on your desktop within which all windows-based programs run. A window is a separate viewing area on a computer display screen in a system that allows multiple viewing areas as part of a graphical user interface (GUI). Windows are managed by a windows manager as part of a windowing system.

Basic Components of a Window



1. Control Box:

The control box provides a menu that enable you to restore, move, size, minimize, maximize or close a window.

2. Restore Button:

After you maximize a window, if you click on the restore button, the window will return to its former size.

3. Move:

To use the arrow keys on the keyboard to change the location of the application or document window, click move.

4. Size:

Activates the arrow keys on the keyboard, so you can change the size of the application document window by using the keyboard.

5. Minimize Button:

Reduces an application or document window to an icon. To restore the window to its previous size and location, double click the title bar.

6. Maximize Button:

Click on the maximize button, the window fill the screen.

7. Close Button:

Close the application or document. Prompts you to save any unsaved changes before using.

8. Title Bar:

The title bar displays the name of the current file and the name of the current progress.

9. Menu Bar:

The menu bar displays the program menu. You send commands to the program by using the menu.

10. Standard Tool Bar:

Contains button for performing common word processing function with a click of the mouse.

11. Formatting Tool Bar:

Contains button and high formatting your documents.

12. Ruler:

It is used to set tabs indent paragraph and changes the page margins.

13. Status Bar:

It provides you with information about the stats of your program.

14. Work Area:

It is located in the centre of the windows. You perform most of your work in the work area. -

15. Scroll Bars:

These bars at the bottom and right hand side of the window that allows the user to scroll within a particular window. The one at the bottom is known as the horizontal scroll bar which allows to scroll left and right of window.

16. Formula Bar (In Excel):

This bar shows you the formula being applied.

17. Sheet Selector (In Excel):

You can select various sheets from here.

18. Name Box (In Excel):

This box will always show you the cell number on which you are working.



Ms Office is a software suite consisting of many desktop publishing programs. It comes with everything that may come into use in a classic office setting, hence the name. Computer users have the option of several different MS Office suites intended for students, home users, small business and corporations.

Office 2010 for Microsoft Windows and Office 2008 for the Macintosh computers are the versions available as of July 2010.

MS Word

Ms Word is a word-processing software. It allows you to easily create a variety of professional-looking documents using features such as themes, styles, smart art and more.

To begin, open Microsoft Word by clicking on 'start' button, then move your mouse pointer to 'all programs', then 'MS Office' and at last click on 'Microsoft Word'.

Use of MS Word in Teaching Learning Process

1. It is used for writing letter and sending message on the e-mail.
2. It is used for creating text and documents in an appropriate way.
3. It is used for the preparation of project and research report.
4. It is used for providing as well as doing assignment and homework.
5. It is used for saving the created documents and making use of other saved documents
6. It is used for helping teachers in preparing classroom material like lesson plans and notes, reports, letters to parents or students, etc.
7. It is used for the practice of compositions like story writing, letter writing, picture, composition, essay writing, poetic composition, etc.

Word Processor

Word processor is a software package that enables us to create, edit, print and save documents for future retrieval and reference. Editing a document involves correcting the spelling mistakes, if any deleting or moving words, sentences or paragraphs.

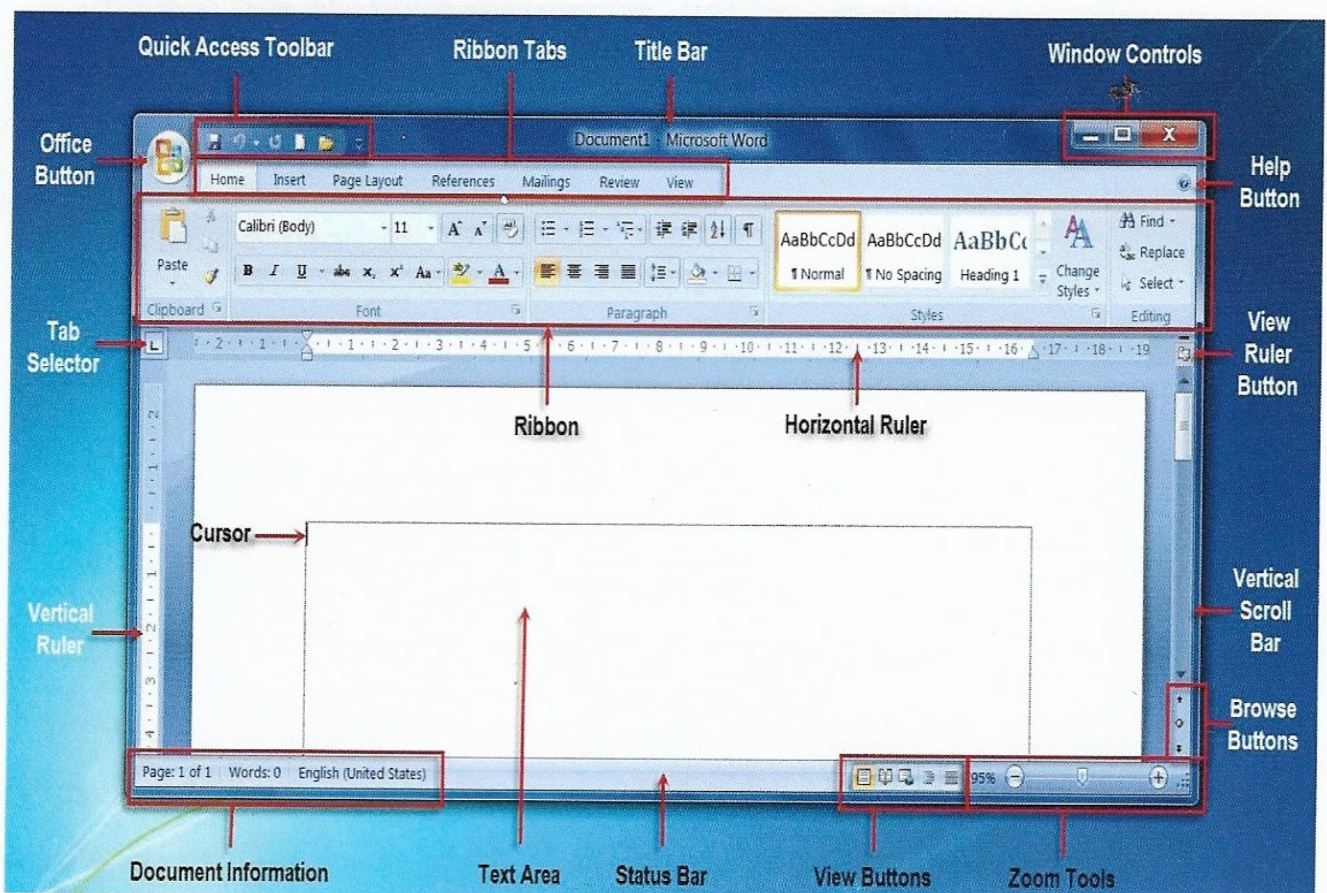
Features of Word Processing

1. Text is typing into the computer, which allows alterations to be made easily.
2. Paragraphs or text can be inserted, amended or deleted.
3. Margins and page length can be adjusted as desired.
4. Spelling can be checked and modified through the spell check facility.
5. Multiple documents/files can be merged.
6. Words and sentences can be inserted, amended and deleted.
7. Multiple copies of letters can be generated with different addresses through the mail merge facility.

Components and Functions of MS Word

1. File Menu Button:

It is used as the most standard menu command under the file menu in old version. Once you click, you can print your document, setup restrictions of your document, save and save as, publish document in the blog and send your document in an e-mail etc.



2. Insert Menu Toolbar:

It is primarily used to insert objects of application. One of the most common is the image or picture such as: pages, tables, illustrations, links, header & footer, text formatting and symbols.

3. Home Menu Toolbar:

These are the standard and formatting commands buttons of the application. Such as clipboard- the cut, copy, paste & paint commands and also font formatting command, the paragraph indentions and the styles of the text.

4. Page Layout Menu Toolbar:

Once you prepare your document template, use this menu to apply themes, page setup, Page background, paragraph Indentions and text alignment or the arrange buttons.

5. References Menu Toolbar:

These are the table of contents features, footnote citations and bibliography, captions, index and table of authorities.

6. Mailing Menu Toolbar:

In advance use of this new version, use this menu for creating envelopes and tables document – mail merge, write and insert fields, preview results and finish mail merge.

7. Review Menu Toolbar:

To assure the correctness of our spellings & grammar and other features, this version have features of Proofing, comments, tracking, service, changes, compare and protect.

8. View Menu Toolbar:

Other features included same as the applications of the view menu toolbar of the MS-Word 2003. This includes of the Document Views, Show/Hide, eg: Ruler, Document Zoom, Window View and Macros application.

9. Zoom in - Zoom out Sliding Bar:

It is situated at the bottom right side of the document window, this is used to zoom in/ zoom out the document. By dragging this using your mouse, rather by selecting a specific number of size of document template.

MS PowerPoint

It is presentation software that is used to create on screen slide shows, overhead projector slides, audience handouts and speaker notes. It is the most widely used presentation software.

Features of PowerPoint

1. It can create 35 mm slides.
2. It contains 6 slides views for various purposes.
3. It supports pictures for effective slide design.
4. It has a wide variety of ready-made templates.
5. It has a support for scanners to input images.
6. It supports graphs and organization charts.
7. It supports bullets and numbering for creating lists.
8. It can create slide shows for computer screen and projector.
9. It supports importing and exporting of slide from one to other files.

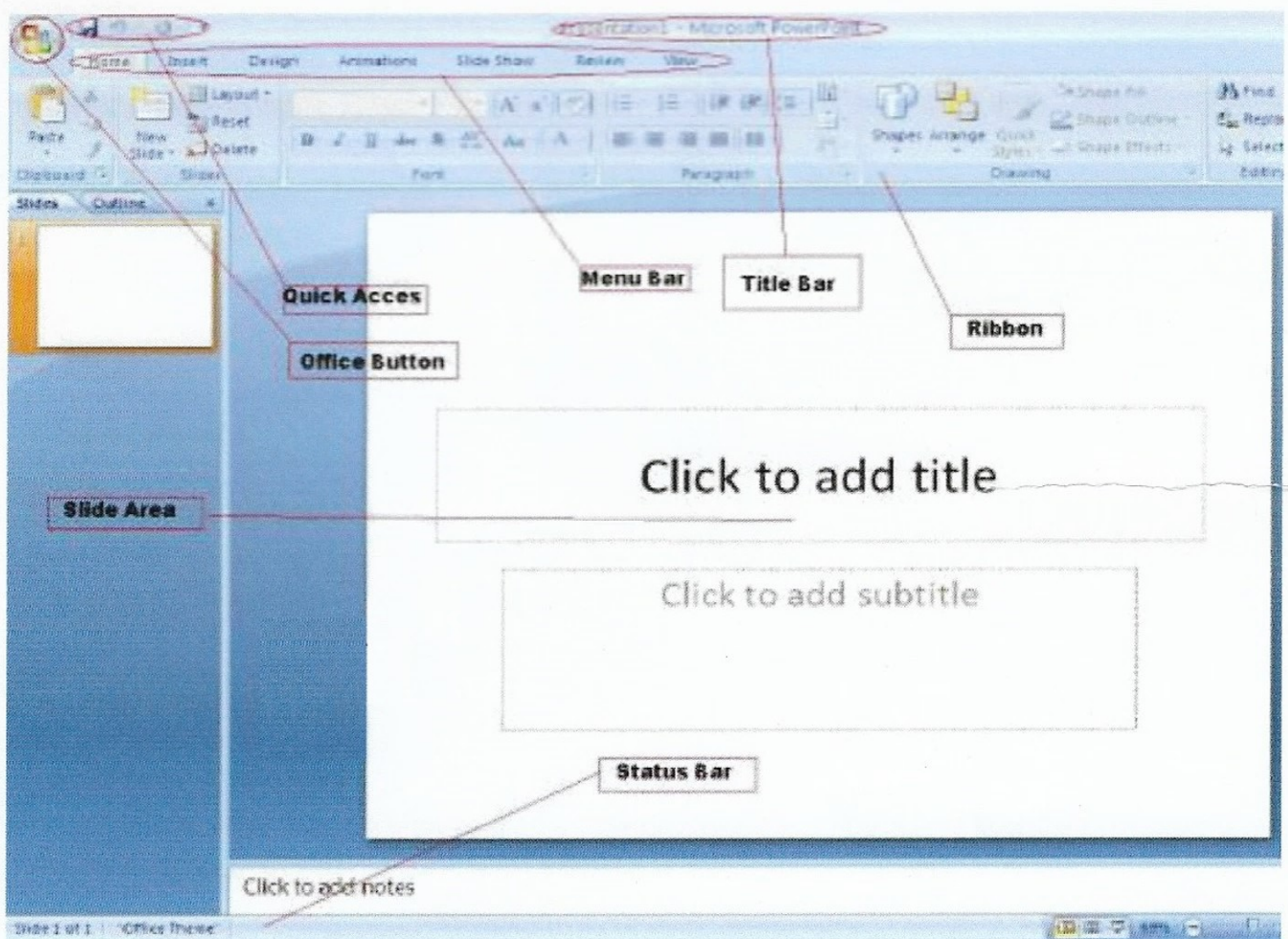
Components of MS PowerPoint & its Operation

1. Title:

A PowerPoint slide generally has title that describes the topic of the slide. It gives the main idea to which the contents are related.

2. Subtitle:

It is the descriptive message of few lines that gives the central idea of the information contained in the slide.



3. Drawing Objects:

Various drawing objects like auto-shapes and Word-arts can be embedded into a slide to improve its look.

4. Clipart and Pictures:

Pictures and clipart related to the subject of the slide can also be added to the slide. This helps audience to understand the content effectively.

5. Charts:

Charts are also used to describe numerical and statistical data.

Basics of a Presentation

Creation of PowerPoint Presentation

1. Open Microsoft PowerPoint
2. Go to file at the top of the screen and click New
3. In the “New Presentation” dialog box, click on “From Design Template”
4. Slide design
5. Slide layout
6. Adding text
7. Adding pictures
8. Resizing pictures
9. Click OK to create a presentation.

Providing Aesthetics

The easiest way to improve the look of your slide is alignment. Turn on your gridlines and make sure everything lines up with something else. It is amazing how much more professional your slides look when you work with your gridlines on so text, images and charts are all lined up consistently from slide to slide.

A little decoration is okay. After all, PowerPoint is one of the few outlets we still have for our creative expression. But a lot of decoration distracts from our message.

There are some things to look out for: Overly saturated colors should be replaced with muted colors, textured backgrounds can be replaced with white or muted backgrounds.

Slide Manipulation and Slide Show Representation

Inserting a new slide

1. Click insert at top of screen
2. Select New slide.

Formatting a slide background

1. Click format at the top of the screen.
2. Select Apply Design Template.
3. Select design you wish to apply.
4. Click Apply button.

Inserting Clipart and Picture

1. Display the slide you want to add a picture.
2. Click Insert at the top of the screen.
3. Select Picture.
4. Select Clip Art.
5. Click the category you want.
6. Click the picture you want.
7. Click Insert Clip on the shortcut menu.
8. When you are finished using the Clip gallery, click the Close button on the clip Gallery title bar.

MS Excel

MS Excel is a spreadsheet software that allows you to store, organize and analyse numerical and textual data.

Concept of Spreadsheet/Worksheet

A spreadsheet is like a large form with a very large number of rows and columns. The terms spreadsheet and worksheet are often used interchangeably. But specifically spreadsheet refers to the computer programme whereas worksheet refers to the document you create in a spreadsheet programme.

Example:- A mark-sheet is a typical example of a spreadsheet. It has rows and columns in which names of subjects and marks of students are entered.

A Sample of Spreadsheet

Name: Tanvi

Class: X

Name of the subject	Maximum Marks	Marks obtained
English	100	77
Hindi	100	75
Mathematics	100	90
S.S.T.	100	87
Computer	100	88

4. **Formatting Tool Bar:**

This toolbar allows you to select font, font size and apply such features as bold, italics, underline etc. and align text to the left, right or centre.

5. **Formula Bar:**

It displays the formula/operation you are trying to apply to different cells.

6. **Status Bar:**

It shows the status of the spreadsheet program.

7. **Active Worksheet Area:**

This active worksheet area consists of a grid of 256 columns and 16,834 rows. Columns are named or marked by letters running horizontally along the top of the worksheet. Numbers running vertically along the left hand side of the worksheet mark the rows. Columns begin with the letter A and continue to Z. Thereafter, they are labeled as follows: AA, AB...AZ.

In spreadsheet program, the computer recalculates automatically whenever there is a change in figures. Besides, this many other features of spreadsheet are available in the market. Excel is a spreadsheet program with a workbook style format. It has several worksheets, like the pages in a notebook. It provides you with tools for calculating and analyzing numeric etc.

Workbook

It is a collection many worksheets. Whenever, you save a file in excel means are saving a workbook.

Components of MS Excel

1. Title Bar:

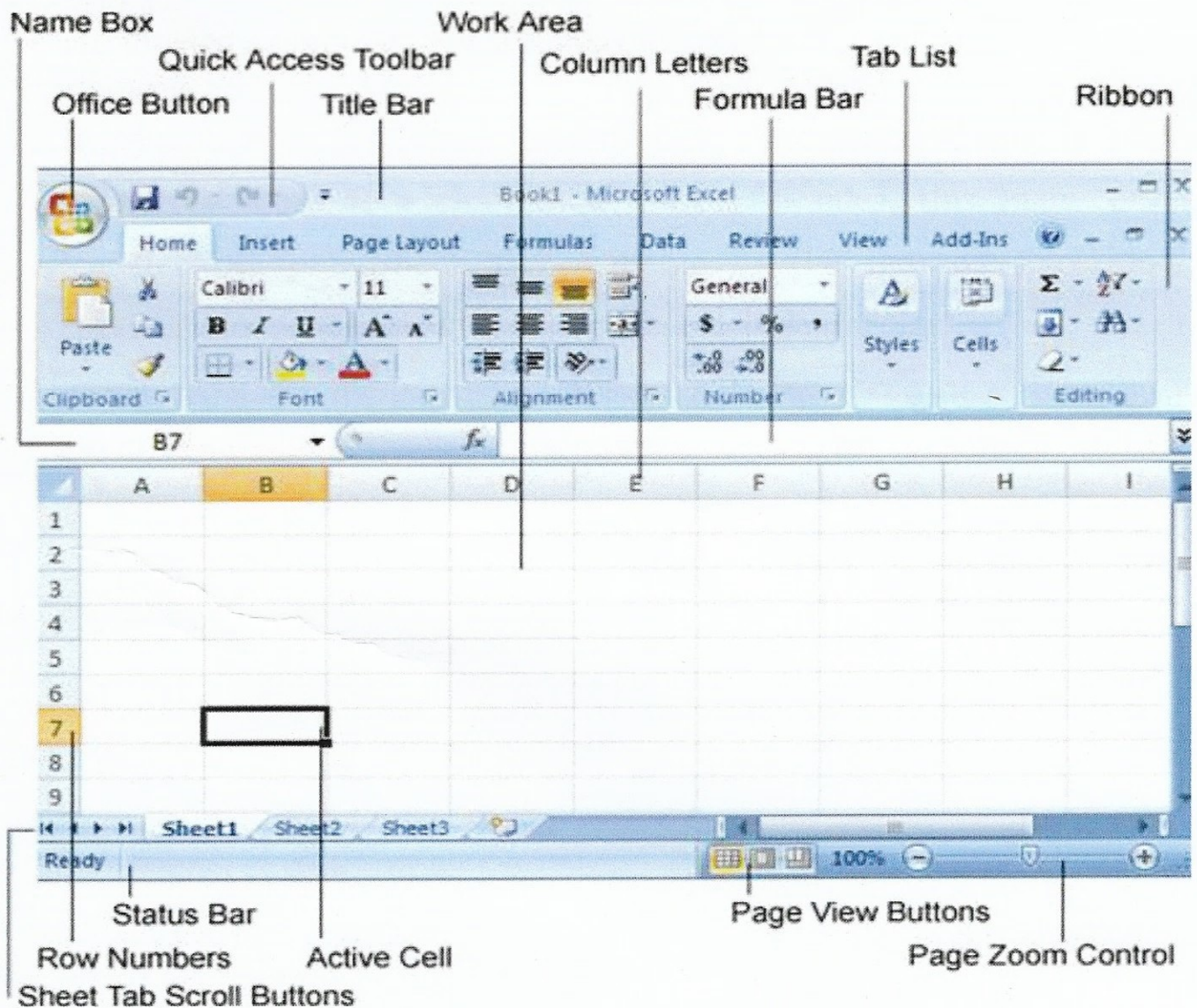
It displays the name of the application (Excel) and the worksheet.

2. Menu Bar:

It displays various options available in the main menu bar of Excel.

3. Standard Tool Bar:

It has almost the same option as word: New, open, save, print, magnify, text, cut, copy, paste etc.



UNIT-II

Internet

Internet is the short name of Internet System. Internet is the widest WAN of the world (WAN = Wide Area Networks). This provides fastest information in the cheapest and easiest way in addition to providing communication facility to the people. Internet needs two types of programmes eg. Server and Client.



Internet is a very big and complete learning weapon. A teacher, a student and an entrepreneur can communicate with each other even when they are far apart from each other. It acts like an encyclopedia. Anyone can find information on any subject as per his desire.

Ways of using the Internet

1. A telephone connection.
2. A modem-this communicates between computers through telephone. It can be external or internal.
3. A computer with a modem.
4. Client programmes.

5. Account from a company which gives internet connection eg. HCL, Satyam etc.
6. In school for transferring information to the parents regarding their annual report, syllabus and other related things.

Basic Modes of Use

E-mail:

E-mail (electronic mail) is the exchange of computer-stored messages by telecommunication. E-mail messages are usually encoded in ASCII text. However, you can also send non-text files, such as graphic images and sound files, as attachments sent in binary streams. E-mail was one of the first uses of the internet and is still the most popular use. A large percentage of the total traffic over the Internet is E-mail. E-mail can also be exchanged between online service provider, users and in networks other than the Internet, both public and private.

File- Exchange:

File exchange allows transferring files from one FTP server to another FTP server using an FTP client. The data is transferred from one remote FTP server to another inter-server without routing the data through the client's connection.

FTP enables a direct connection between two hosts and reduces the time by removing the middle step of transferring files from an FTP server to a local machine. In a FTP session, there is a standard FTP connection established between two servers by the client. Either of the two servers can be directed to connect to the other to transfer data. The data transfer rate is

independent of the internet connection speed of the client machine because it only depends on the connection speed of the two hosts, which is generally faster than the user's internet connection. Though FTP is effective, the network administrators disable FTP in the FTP server software because of the security risks such as server vulnerability to ware and FTP bounce.

Discussion Group

A discussion group is a group of individuals with similar interest who gather either formally or informally to bring up ideas, solve problems or give comments. The major approaches are in person via conference call or website.

Characteristics of a Group Discussion

1. Accessibility:

Students feel comfortable engaging in the discussion.

2. Non-combative:

There is a cordial and pleasant tone to the conversation and no hostility.

3. Diversity:

A variety of opinions and points of view get articulated.

4. Cohesion and Focus:

Discussions should be about something with a pedagogical goal.

5. Trust:

Environment should allow students to take intellectual risks.

Live Conference

A video conference is a live connection between people in separate locations for the purpose of communication usually involving audio and often text as well as video. At its simplest, video conferencing provides transmission of static images and text between two locations. At its most sophisticated, it provides transmission of full-motion video images and high-quality audio between multiple locations.

Benefits

1. The classroom has become geographically limitless. No longer do students have to feel confined to their rooms, schools or even to their countries. With a video conference set-up, they can reap the benefits of wisdom from all over the world. The learning is endless.
2. While actually participating in a video conference session, students need to articulate their thoughts and communicate clearly and effectively. It is only when there is a two way sharing that a video conference is successful.
3. Students actively participate in video conferences by default learn ability to out together presentations. There is a certain level of pre-knowledge needed to gain the most from a video conference interaction. As a result, they inculcate in themselves the logic of presentations, and the value of quality research.

Knowledge Navigation

It is a personalized navigation service which supports the process of self-learning and is based on the Interpretive Structural Modeling (ISM). In particular, this system allows to evaluate the learning performance, by figuring out of the already learned information and those that is to learn or review again.

It helps to navigate all the information outside the school boundaries and now children have access to different media through which they can learn new concepts and new ideas like those in western countries.

Searching Information

Information search is a stage in the consumer decision process during which a consumer searches for internal or external information.

During the information search, the options available to the consumer are identified or further clarified.

An internal search refers to a consumer's memory or recollection of a product, oftentimes guided by personal experiences.

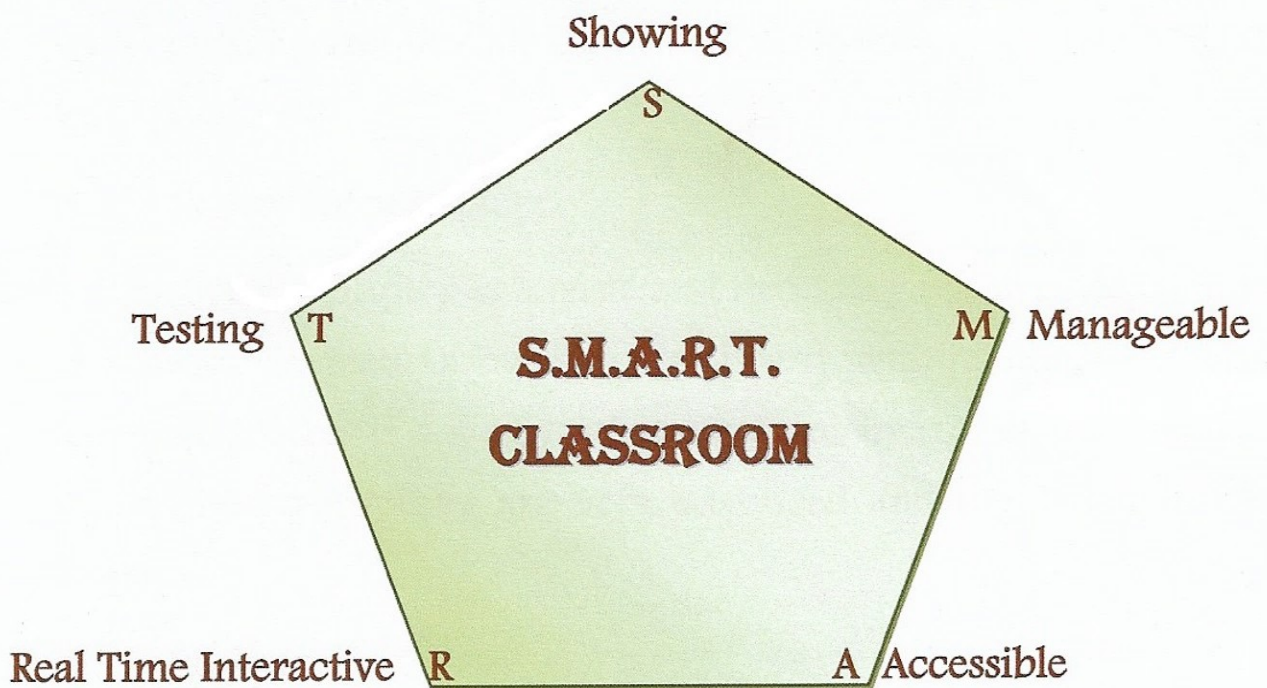
An external search is conducted when a person who has no prior knowledge about a product seeks information from personal sources and/or public sources or marketer dominated sources.

Children these days search information on various sites and gather information. These are different modes of gathering information like live conferencing, e-mail, file exchange and other modes which actually make children accessible to different mediums.

Smart Classroom

Concept

A smart classroom relates to the optimization of teaching content presentation, convenient access of learning resources, deep interactivity of teaching and learning, contextual awareness and detection, classroom layout and management etc. It may be summarized as SHOWING, MANAGEABLE, ACCESSIBLE, REAL TIME INTERACTIVE and TESTING, which nickname as S.M.A.R.T. The five dimensions just embody the wisdom of a smart classroom feature, which can be referred to as “SMART “concept model.



Concept Model of Smart Classroom

Equipment and Organization

Smart classrooms are the classrooms enhanced with technological equipment for the purpose of better learning and teaching.

Based on the equipment available smart classrooms can be categorized as follows:

1. **Basic Smart Classes:**

The classrooms with basic smart technology include gadgets like laptops or computers, Projector, DVD or VCD player and a viewing screen etc.

2. **Intermediate Smart Classes:**

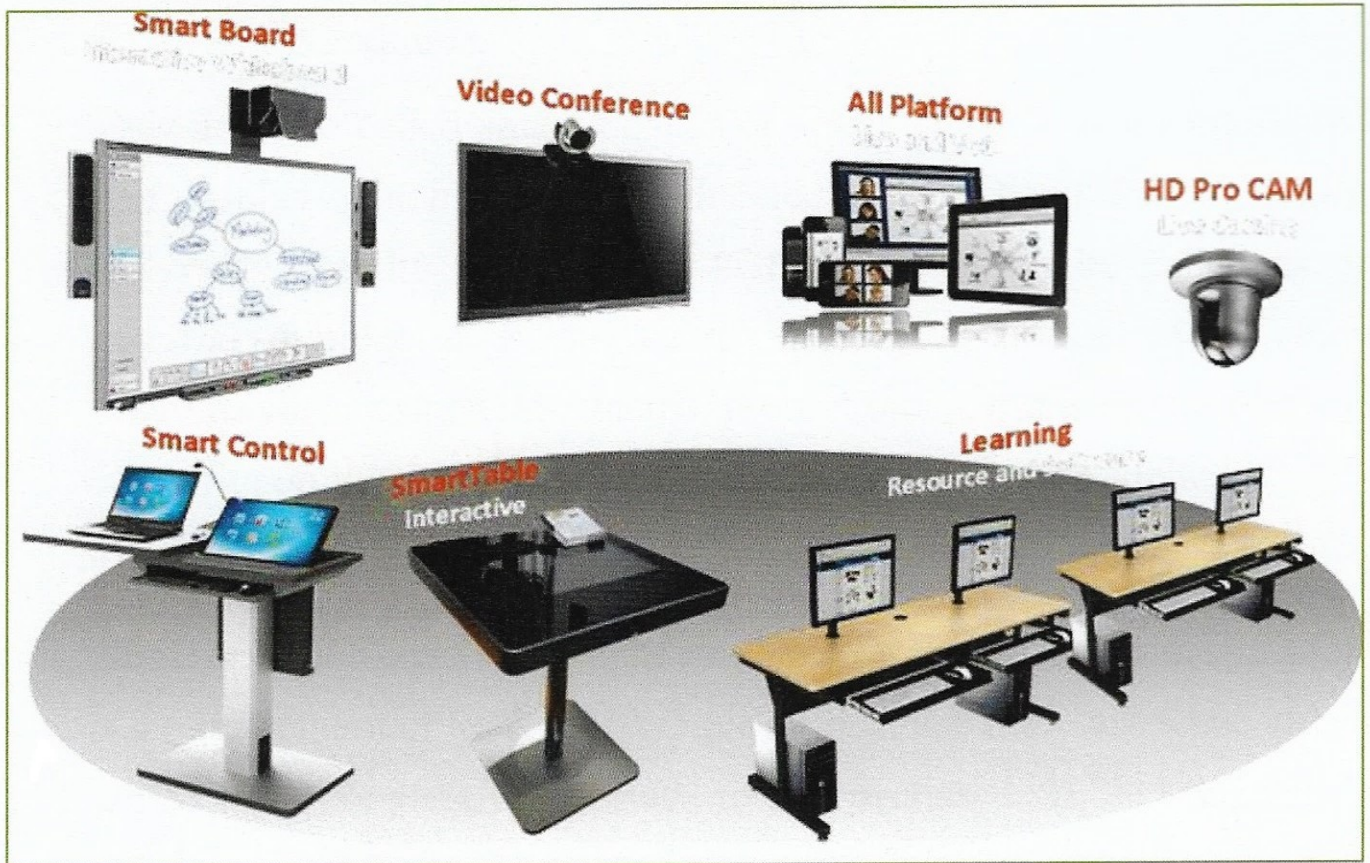
The intermediate smart classrooms are one step ahead of the basic technology smart classrooms. They include gadgets like smart podium with control panel in addition to laptop, projector, screen and DVD or VCD player etc.

3. **Computer or Laptop:**

A Computer or Laptop is a basic and necessary requirement of a smart classroom. Instead of writing on board with a chalk or marker, teaching process is done by presentation or images or multimedia in a smart classroom. They are very advanced and organized in today's scenario.

4. **Projector:**

It is an optical device. It projects stationary or moving objects onto a screen. They create an image by shining light through a transparent lens or by a laser.



5. Screen:

It is a surface used to display the images projected by a projector. The screens may be rigid wall mounted screens, pull down screen, fixed frame screens, electrical screens, switchable projection screens or mobile screens.

6. Microphone:

It is generally called as mic or mike. It is a device which converts audio signals into electrical signals. These signals are then transmitted, amplified or recorded.

7. Amplifier and Speaker:

These are the electronic devices which are used to increase the volume of the sound.

8. Podiums:

It is a platform usually made of wood, which raises the person standing on it so that he becomes visible to all the audience.

9. Smart Podiums:

They are also called smart boards or smart LCDs. It is an interactive pen display which can be connected to the computer or laptop externally via the USB port or RGB ports. It can be called as an external monitor with the facility of digital inking. With smart podiums we can open documents, presentations, multi-media files and can write on them with a digital pen. We can also save our work.

10. DVD or VCD Player:

There is large number of videos available on the internet but still there is a requirement of VCD or DVD player because there are some videos which have copy-right and have to be purchased. These are often in the form of DVDs or CDs.

11. Overhead Projector:

It is a device which is used to display large images of a transparent acetate sheet placed on its base on a screen. This device was very famous a few years back, but now it is being replaced by computer based projectors.

Operation

Start up:

- Lower screen using the Up/Down switch on the wall or pull down manually.
- Log into computer.
- Press display power on the control panel. This turns on the projector.
- Choose the source you want to go to the projector by selecting it on the control panel.

- Volume may be adjusted using the silver knob on the panel.
- Turn on the VCR, DVD or document camera using the unit's power switch.
- Viewing video material (VCR, DVD or document camera) may be done through the small monitor on the podium. This is only for the instructor. To project the source selects it on the control panel.
- VCR functions (Play, Stop etc.) are done from the control panel as well.

Shut Down:

- Press and hold briefly the display power button on the control panel.
- Raise the screen using the Up/Down switch.
- Retrieve any media you may have brought.
- Be sure to log-off of the computer.
- Return the wireless mouse.
- Turn off VCR, DVD or document camera with the unit's power switch.

The older smart panels have following three sections and are located inside the console (mounted on wooden control box):

1. Projector Power on and off buttons.
2. Volume Up and Down buttons.
3. Source selection buttons.

When you press the projector power "ON" button, the red LED will illuminate while the projector is warming up. Once the projector is warmed up, it is fully on and the green LED will illuminate. From there use the volume "Up" or "Down" buttons to get set the volume to mid level.

Next select the source that you want to present on the projector. The corresponding selection will light up.

Importance

1. Access to online resources:

In a smart classroom, the teacher can use the resources available on the internet for the better understanding of the students. For every subject, there are numerous resources available on the internet which can be accessed by the teachers as well as the students at any time in the smart classroom. Internet plays a major role in learning process.

2. Digital Medium for Notes:

In a regular classroom, the teacher writes on the board and the students note it down on their notebooks. In this methodology or teaching the student's mind gets diverted in two directions one is listening to the teacher and understanding and the other is writing or making notes for future reference.

In a smart classroom, there is a digital approach for notes. The teacher instead of writing on the board, teaches using PowerPoint presentation, word documents, images, videos, audios. These resources are given to the students in pen drives, CDs, or they are e-mailed to them. In this way, the students do not have to write for making notes.

3. Advantageous for the Absentees:

If student who studies in the regular classroom is absent for one day, it becomes difficult for him to gather all the notes of those he missed.

But in a smart class, lecturers are recorded and whenever a student is absent he can anytime see the recorded lecture. These recorded lectures are also uploaded on the internet which can be accessed by

the students anytime by login id and password. The notes are also in digital form, so they can be easily provided to the student.

4. Ease of Understanding:

There are many topics in the curriculum which are very different to understand. They cannot be just taught by using a chalk and a blackboard. They require an interactive teaching approach. With smart classes, the teacher can use multimedia to teach that topic to the students. The students learn more from what they see rather than from what they listen.

5. Makes Learning Enjoyable:

If we go and look in a regular classroom, the students are feeling very sleepy. But it is not so in a smart classroom because use of smart technology in the class makes the classroom a fun room. The classroom becomes interesting and enjoyable for the students and no student feels sleepy. It makes learning a fun process.

6. Communication:

The technology used in a smart classroom makes video conferencing possible in the classroom itself. In this way, the students can communicate with the person who is expert in the subject.

In various schools and colleges with the facility of smart classrooms, guest lectures are organized weekly in which the students can communicate with the experts such as professors of IITs, IIMs or the people engaged in research work. This provides the students with extra information about their subjects which beyond the scope of text books. The students get to know about the ongoing issues related to their subjects. This proves very beneficial for them in the near future.