ESSENCE STATEMENT

Information Communication Technology (ICT) is concerned with the use of computers and telecommunication systems to acquire, create, store, process and disseminate data and information for the purpose of supporting decision making at individual or organisational level. ICT subject at Senior School builds on the Pre-Technical Studies competencies developed at Junior School where learners acquired basic skills of computer hardware, computer software, safety, communication and visual programming.

The curriculum aims at equipping all learners at senior school with knowledge, skills, attitudes and values for creative and innovative use of ICT. It focuses on developing and imparting ICT skills as well as preparing learners who can safely, securely, socially and ethically use: ICT systems, ICT productivity tools, ICT applications and Internet technologies. These components aim to develop critical thinking, problem-solving, creativity, innovation, communication and digital literacy skills, all considered essential to prepare learners for further studies in higher level of education

This subject is anchored on National Goals of Education No. 2 to provide the learners with the necessary skills and attitudes for industrial development, Kenya Vision 2030 on making education responsive to education needs, Sessional Paper No 1 of 2019, which recommended the promotion of technical and vocational education with an emphasis on Science, Technology, and Innovation (ST&I) in the school curriculum. It is also informed by the National ICT Policy of Kenya 2016 (revised 2020), which emphasises on use of ICT as a foundation for the creation of a more robust economy.

SUBJECT GENERAL LEARNING OUTCOMES

By the end of Senior School, the learner should be able to:

a) Communicate effectively through the use of information and communication technological innovations.

b) Demonstrate knowledge of information and communication technology applications that enhances their personal and professional productivity

c) Recognize potential risks associated with the use of ICT, and means by which they can mitigate the risks in a responsible way.

d) Make valuable contributions to the social and economic development of the society through the use of information and communication technology skills.

e) Apply knowledge, skills, attitude and values in information and communication technologies in daily live activities and lifelong learning.

f) Demonstrate information and communications skills that can impact current and new methods of working in the outside world and on social, economic, ethical and moral issues.

SUMMARY OF STRANDS AND SUB STRANDS

1.0 ICT AND SOCIETY

1.1 Introduction to ICT

1.2 Application areas of ICT

1.3 Operating systems

2.0 PRODUCTIVITY TOOLS

2.1 Word Processing

2.2 Presentation

2.3 Desktop Publishing

3.0 INTERNET AND WEB TECHNOLOGIES

3.1 The Internet

3.2 Digital Communication

3.3 Digital Citizenship

STRAND 1: INFORMATION AND COMMUNICATION TECHNOLOGY (ICT)

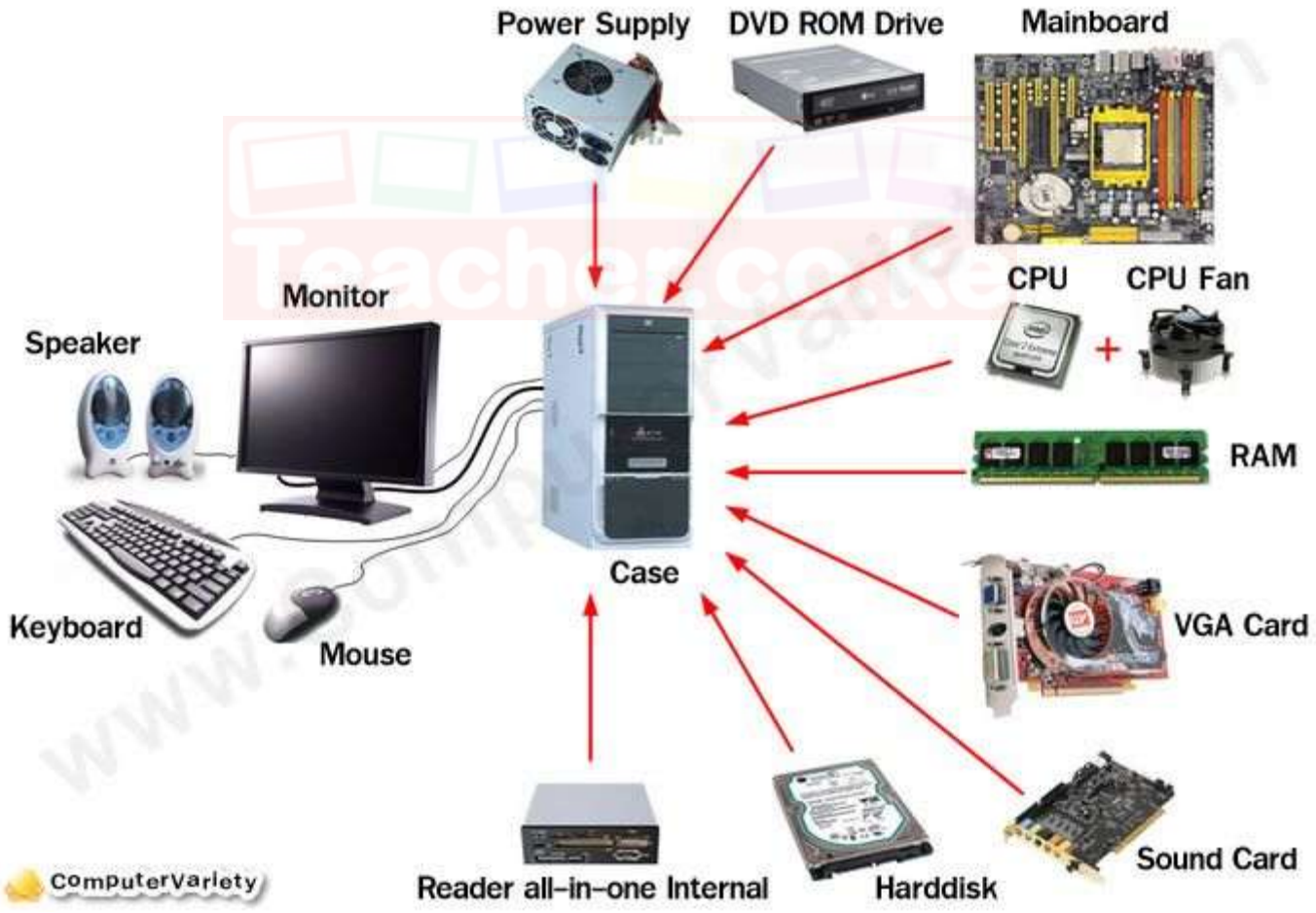
Sub-Strand 1.1: Introduction to ICT

What is ICT?

- ✓ **Information:** Processed data that is meaningful and useful.
- ✓ **Communication:** The exchange of information between two or more entities.
- ✓ **Technology:** The application of scientific knowledge for practical purposes.
- ✓ **ICT:** The intersection of information technology and telecommunications.

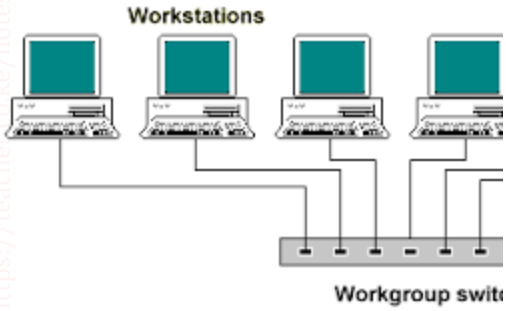
Components of ICT in an Organization

- ✓ **Hardware:** Physical components of a computer system (e.g., CPU, monitor, keyboard).



Computer with labels for hardware components

- ✓ **Software:** Programs that instruct the hardware to perform specific tasks (e.g., operating systems, applications).
- ✓ **Network:** A system of interconnected devices that allows for communication and resource sharing.



Network diagram showing interconnected devices

- ✓ **Data:** Raw facts and figures that are processed into information.
- ✓ **People:** Individuals who use and manage ICT systems.

Importance of ICT in Society

- ✓ **Communication:** Facilitates faster and more efficient communication.
- ✓ **Education:** Provides access to a wealth of educational resources.
- ✓ **Business:** Streamlines operations and improves productivity.
- ✓ **Healthcare:** Improves patient care and medical research.
- ✓ **Government:** Improves service delivery and citizen engagement.
- ✓ **Entertainment:** Provides a wide range of entertainment options.

Suggested Learning Experiences

- ✓ **Brainstorming:** Discuss the meaning of ICT terms and their relevance in daily life.
- ✓ **Research:** Use digital media to search for information on technologies used in communication.
- ✓ **Interactive Activities:** Engage in activities that involve sending and receiving information using ICT devices.
- ✓ **Group Discussions:** Share experiences on the importance of ICT in society.

Key Inquiry Questions

- ✓ How do different digital technologies facilitate communication and information exchange in society?
- ✓ What are the ethical considerations of using ICT?
- ✓ How can ICT be used to solve societal challenges?

Sub-Strand 1.2: Application Areas of ICT

Application Areas of ICT

ICT has permeated nearly every aspect of modern life. Understanding these application areas helps us appreciate its significance and potential.

1. Education:

- ✓ **E-learning platforms:** Online courses, virtual classrooms, and digital learning resources.

Students using laptops in a virtual classroom

- ✓ **Educational software:** Interactive programs for learning specific subjects.
- ✓ **Online research:** Accessing vast amounts of information for assignments and projects.
- ✓ **Communication:** Connecting students, teachers, and parents through email and online portals.
- ✓ **Administration:** Managing student records, timetables, and communication within educational institutions.

2. Business and Commerce:

- ✓ **E-commerce:** Online buying and selling of goods and services.

Person shopping online using a laptop

- ✓ **Marketing and Advertising:** Utilizing digital channels to reach customers.
- ✓ **Financial Transactions:** Online banking, mobile money transfers, and digital payment systems.
- ✓ **Inventory Management:** Using software to track stock levels and manage supply chains.
- ✓ **Communication and Collaboration:** Email, video conferencing, and project management tools for internal and external communication.

3. Healthcare:

- ✓ **Electronic Health Records (EHR):** Digital storage and management of patient information.

Doctor using a tablet to access patient records

- ✓ **Telemedicine:** Providing remote healthcare services through video conferencing and other technologies.
- ✓ **Medical Imaging:** Advanced technologies like MRI, CT scans, and X-rays that rely heavily on ICT.

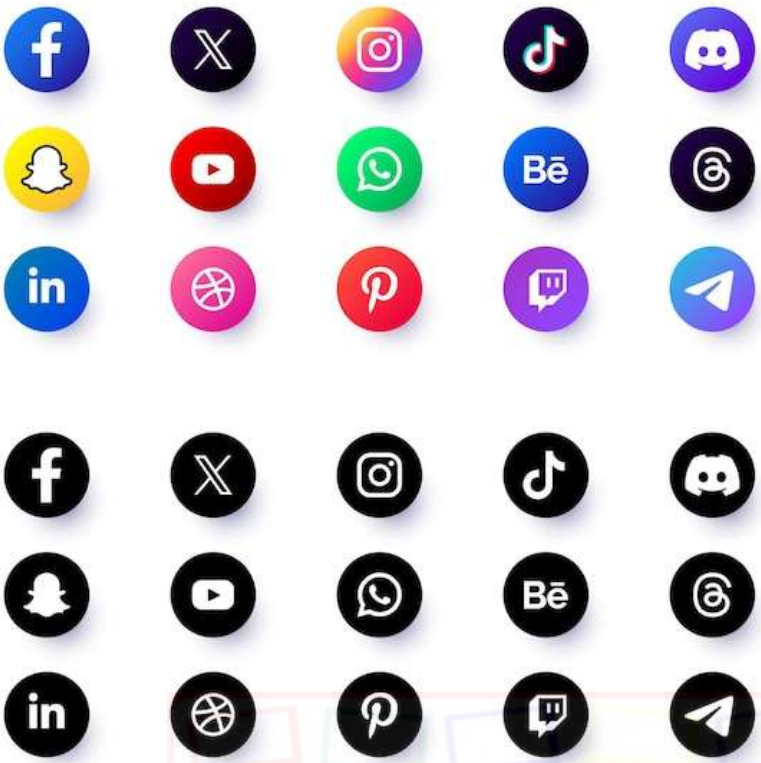
- ✓ **Medical Research:** Using computers to analyze large datasets and accelerate discoveries.
- ✓ **Hospital Management Systems:** Managing appointments, billing, and other administrative tasks.

4. Government and Public Services:

- ✓ **E-governance:** Providing government services online (e.g., applying for IDs, paying taxes).
- ✓ **Citizen Engagement:** Using social media and online platforms for communication and feedback.
- ✓ **Law Enforcement:** Utilizing databases and digital tools for crime investigation and management.
- ✓ **Traffic Management:** Intelligent traffic systems that optimize flow and reduce congestion.
- ✓ **Disaster Management:** Using communication technologies to coordinate relief efforts and disseminate information.

5. Communication and Media:

- **Internet and Email:** Fundamental tools for personal and professional communication.
- **Social Media:** Platforms for connecting, sharing information, and building communities.



Various social media logos

- **Digital Media:** Creation and consumption of digital content like videos, music, and podcasts.
- **Online Journalism:** Dissemination of news and information through websites and apps.

6. Entertainment and Leisure:

- **Gaming:** Video games on various platforms (consoles, PCs, mobile).
- **Streaming Services:** Accessing movies, TV shows, and music online.
- **Social Networking:** Connecting with friends and family online.
- **Virtual Reality (VR) and Augmented Reality (AR):** Immersive entertainment experiences.

7. Agriculture:

- **Precision Farming:** Using sensors, GPS, and data analytics to optimize resource use (water, fertilizers).

- **Livestock Management:** Tracking animal health and location using technology.
- **Market Information:** Accessing online platforms for market prices and trends.

8. Transportation:

- **GPS Navigation:** Guiding drivers and providing real-time traffic updates.
- **Online Booking Systems:** For flights, trains, and buses.
- **Intelligent Transportation Systems:** Aiming to improve safety and efficiency of transportation networks.

Suggested Learning Experiences

- **Research:** Use print or digital media to research specific examples of ICT applications in different areas and share findings.
- **Observation:** Visit school or community areas (administration office, accounts office, supermarket) to observe how ICT is used in practice.

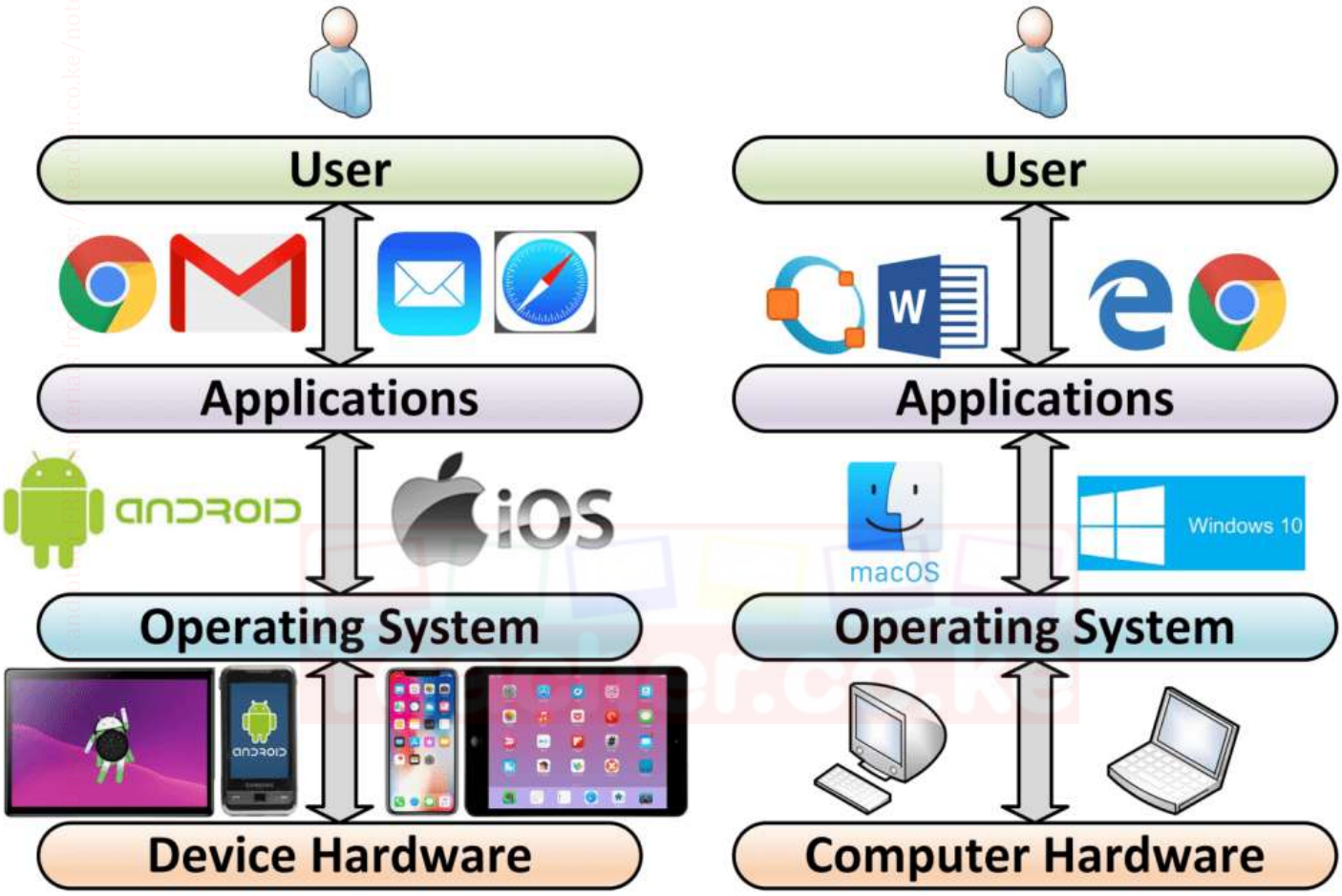
Supermarket checkout with a POS system

- **Discussion:** Discuss the benefits and challenges of using ICT to solve community problems.
- **Sharing Experiences:** Share personal experiences of how ICT has impacted their lives and communities.

Sub-Strand 1.3: Operating Systems

What is an Operating System (OS)?

An Operating System (OS) is the **most important software** that runs on a computer or any digital device. It acts as an **interface** between the user, the application software, and the computer hardware. Think of it as the **conductor of an orchestra**, managing all the different parts so they work together harmoniously.



[Diagram illustrating the layers of a computer system with the OS in the middle, connecting hardware, applications, and the user.]

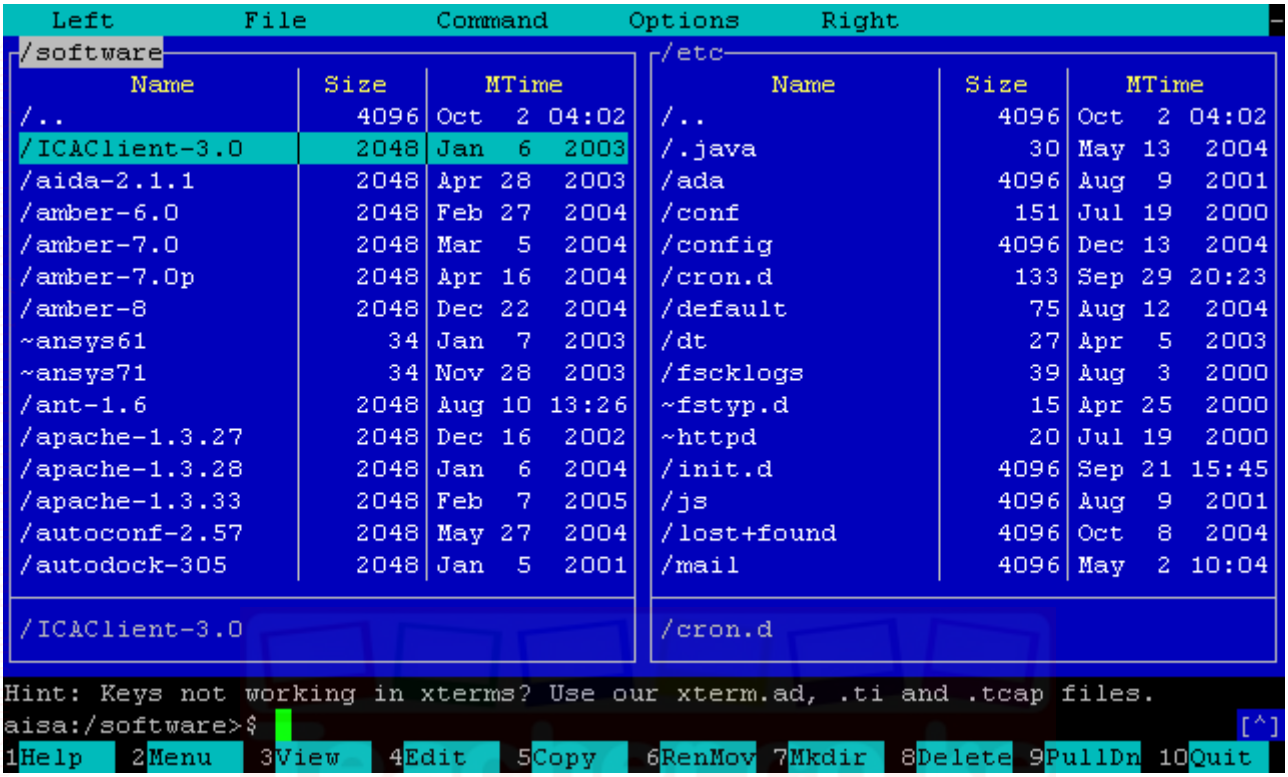
```
+--------------------+
|       User         |
+--------------------+
         |
+--------------------+
| Application Software| (e.g., Word, Browser, Games)
+--------------------+
         |
+--------------------+
|  Operating System   | (e.g., Windows, Linux, macOS, Android, iOS)
```

```
+--------------------+
        |
+--------------------+
|     Hardware       | (e.g., CPU, Memory, Disk, Peripherals)
+--------------------+
```

Importance of Operating Systems in Digital Devices

1. **Resource Management:** The OS manages the computer's resources, including:
   - ✓ **CPU (Central Processing Unit):** Allocates processing time to different applications.
   - ✓ **Memory (RAM):** Manages how applications use the computer's memory.
   - ✓ **Storage (Hard Disk, SSD):** Organizes files and folders and manages storage space.
   - ✓ **Peripherals (Printers, Keyboards, Mice):** Enables communication between the hardware and software.
2. **User Interface:** The OS provides a way for users to interact with the computer through either a **Graphical User Interface (GUI)** (using icons, menus, and windows) or a **Command Line Interface (CLI)** (using text-based commands).

[Image showing a typical Graphical User Interface (GUI) with icons and windows.]



[Screenshot showing a Command Line Interface (CLI) with text-based commands.]

3. **Application Execution:** The OS provides the environment for applications to run. It loads applications into memory, allocates resources they need, and manages their execution.
4. **File Management:** The OS organizes files and folders in a hierarchical structure, allowing users to store, retrieve, and manage their data efficiently.
5. **Security:** The OS provides security features to protect the computer system and user data from unauthorized access and malicious software.

Types of Operating Systems Used in Digital Devices

Operating systems are designed for different types of devices and purposes. Some common types include:

1. **Desktop Operating Systems:** Designed for personal computers (PCs) and laptops.

- ✓ **Windows:** Developed by Microsoft, the most widely used desktop OS globally. [Windows logo]
- ✓ **macOS:** Developed by Apple, used on Macintosh computers. [Apple logo]
- ✓ **Linux:** An open-source OS with various distributions (e.g., Ubuntu, Fedora). Known for its flexibility and customizability. [Linux/Tux the penguin logo]

2. **Mobile Operating Systems:** Designed for smartphones and tablets.
   - ✓ **Android:** Developed by Google, the most popular mobile OS worldwide. [Android robot logo]
   - ✓ **iOS:** Developed by Apple, used on iPhones and iPads. [Apple logo]
3. **Server Operating Systems:** Optimized for running servers that provide services to other computers on a network. Examples include Windows Server and various Linux distributions.
4. **Embedded Operating Systems:** Designed for specific devices with limited resources, such as smart TVs, digital cameras, and industrial control systems. Examples include embedded Linux and specialized real-time operating systems (RTOS).
5. **Operating Systems in Dedicated Digital Devices:** Many specialized devices like ATMs, point-of-sale (POS) systems, and industrial machinery run on customized operating systems tailored to their specific functions. These might not be as feature-rich as desktop or mobile OS but are highly efficient for their intended purpose.

Operating System Interfaces

Users interact with the operating system through different types of interfaces:

1. **Graphical User Interface (GUI):** Uses visual elements like icons, menus, windows, and pointers (usually controlled by a mouse or touch) for user interaction. This is the most common type of interface for personal computers and mobile devices.

   [Image showing a desktop environment with icons, windows, and a taskbar.]

2. **Command Line Interface (CLI):** Requires users to type text-based commands to interact with the OS. While less intuitive for beginners, it offers powerful control and automation capabilities. Often used by system administrators and programmers.

   [Screenshot showing a terminal or command prompt with typed commands and system responses.]

3. **Menu-Driven Interface:** Presents users with a series of menus to navigate and select options. Common in older systems and some embedded devices.

   [Image showing a menu-driven interface with a list of options.]

Basic Operating System Manipulations

Most operating systems allow users to perform fundamental tasks such as:

- **Changing Desktop Background:** Personalizing the visual appearance of the desktop.
- **Adjusting System Settings:** Configuring display, sound, date/time, and other system preferences.
- **Locating Applications:** Finding and launching installed programs.
- **Managing Windows:** Opening, closing, resizing, and arranging application windows.

File and Folder Management

The operating system provides tools (like **File Explorer** in Windows, **Finder** in macOS, and file manager apps in Linux and mobile OS) to organize files and folders:

- **Navigation:** Browsing through the file system to locate files and folders. [Screenshot of File Explorer (Windows) or Finder (macOS) showing file and folder structure.]
- **Creating:** Making new folders to organize files.
- **Renaming:** Changing the names of files and folders.
- **Moving:** Transferring files and folders from one location to another.
- **Copying:** Creating duplicates of files and folders.
- **Searching:** Finding specific files or folders based on name or content.
- **Deleting:** Removing files and folders from the storage device (often moved to a "Recycle Bin" or "Trash" for potential recovery).

Implementing Security Control Measures on Files and Folders

Operating systems offer features to protect files and folders from unauthorized access:

- **File Permissions:** Define who can access, modify, or execute specific files and folders. Different user accounts can have different levels of access. [Screenshot showing file permissions settings in an operating system.]
- **User Access Controls:** Manage user accounts and their privileges on the system. Requiring passwords for login is a basic form of user access control.

- **Passwords:** Strong passwords protect user accounts and the data associated with them.
- **File Backups:** Creating copies of important files and folders to prevent data loss in case of hardware failure or other issues. Operating systems often have built-in backup utilities.

Appreciating the Use of Operating Systems in a Digital Device

Operating systems are **essential** for using any digital device effectively. They provide the foundation for all other software to run and enable users to interact with the hardware in a user-friendly way. Without an OS, a computer would be just a collection of electronic components unable to perform any meaningful tasks. Efficient file organization and security measures provided by the OS are crucial for managing and protecting valuable digital information.

Suggested Learning Experiences

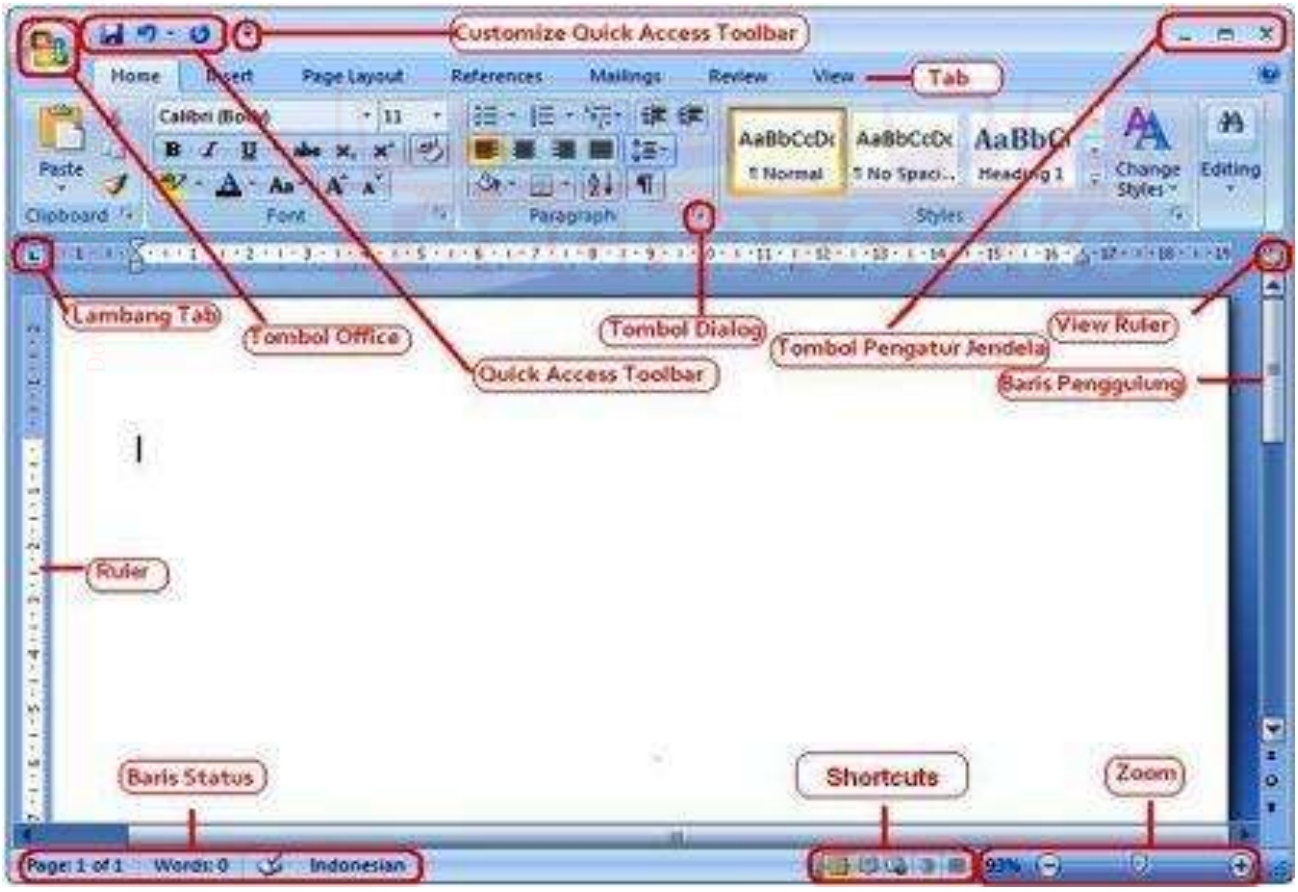
- **Brainstorming:** Discuss the meaning and importance of operating systems in digital devices.
- **Identification and Discussion:** Identify and discuss various types of operating systems used in different digital devices (Windows, Linux, macOS, Android, iOS, and those in dedicated devices like ATMs).
- **Interface Exploration:** Explore different operating system interfaces (GUI, command line - if feasible, menu-driven - through examples).
- **Basic OS Manipulation:** Practice basic OS tasks like changing the desktop background, adjusting system settings, and locating applications.
- **File Explorer/Finder Usage:** Use the file explorer (or equivalent) to navigate the computer system.
- **File and Folder Manipulation:** Engage in activities involving creating, renaming, moving, copying, searching, and deleting files and folders.
- **Security Feature Application:** Explore and apply operating system features for file security, such as understanding file permissions (demonstration if direct manipulation is not possible), user access controls (understanding the concept of passwords), and the importance of file backups.

STRAND 2: PRODUCTIVITY TOOLS SUB-STRAND

2.1: Word Processing

What is Word Processing?

Word processing involves using computer software to create, edit, format, store, retrieve, and print text-based documents. It has revolutionized how we produce written communication, offering far more flexibility and features than traditional typewriters.



Importance of Word Processing in Document Production

1. **Efficiency:** Speeds up the process of creating and editing documents. Mistakes can be easily corrected without retyping entire pages.
2. **Flexibility:** Offers a wide range of formatting options to enhance the appearance and readability of documents (fonts, sizes, colors, alignment, etc.).
3. **Organization:** Facilitates the organization of text using features like headings, bullet points, numbering, tables, and sections.
4. **Professionalism:** Enables the creation of professional-looking documents for various purposes (reports, letters, essays, etc.).
5. **Collaboration:** Many word processors offer features for collaboration, such as track changes and comments, allowing multiple users to work on the same document.
6. **Storage and Retrieval:** Documents can be saved electronically, making them easy to store, organize, and retrieve as needed.
7. **Sharing:** Documents can be easily shared electronically through email, cloud storage, or printing.
8. **Advanced Features:** Offers tools like spell checkers, grammar checkers, thesaurus, mail merge, and more to improve document quality and efficiency.

Selecting a Word Processing Productivity Tool

Several word processing applications are available, each with its own strengths and features. Some popular options include:

- ✓ **Microsoft Word:** A widely used commercial word processor with a comprehensive set of features.

[Microsoft Word logo]

- ✓ **Google Docs:** A free, web-based word processor that allows for real-time collaboration.

[Google Docs logo]

- ✓ **LibreOffice Writer:** A free and open-source word processor, part of the LibreOffice suite.

[LibreOffice logo]

- ✓ **Apache OpenOffice Writer:** Another free and open-source word processor.

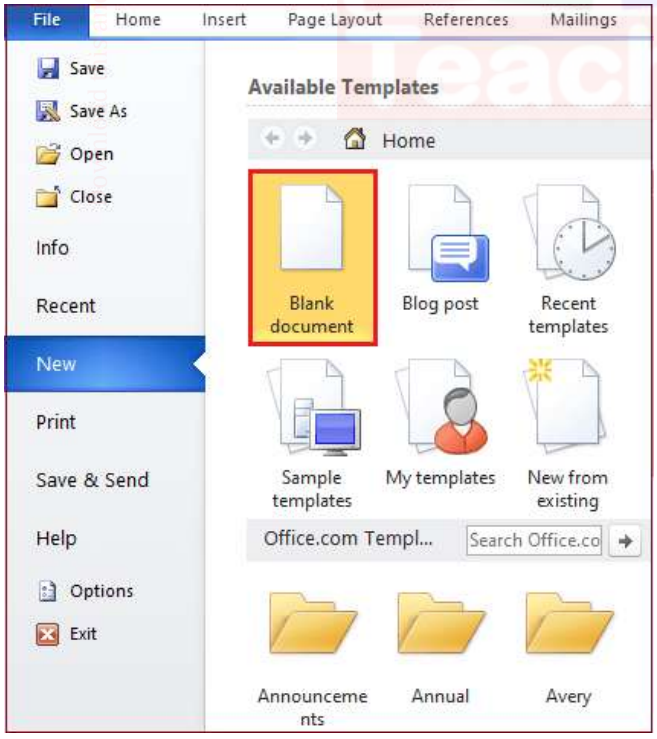
[Apache OpenOffice logo]

- ✓ **WPS Office Writer:** A free (with paid upgrades) word processor with a user-friendly interface.

[WPS Office logo]

The choice of tool often depends on factors like cost, required features, ease of use, and the need for collaboration.

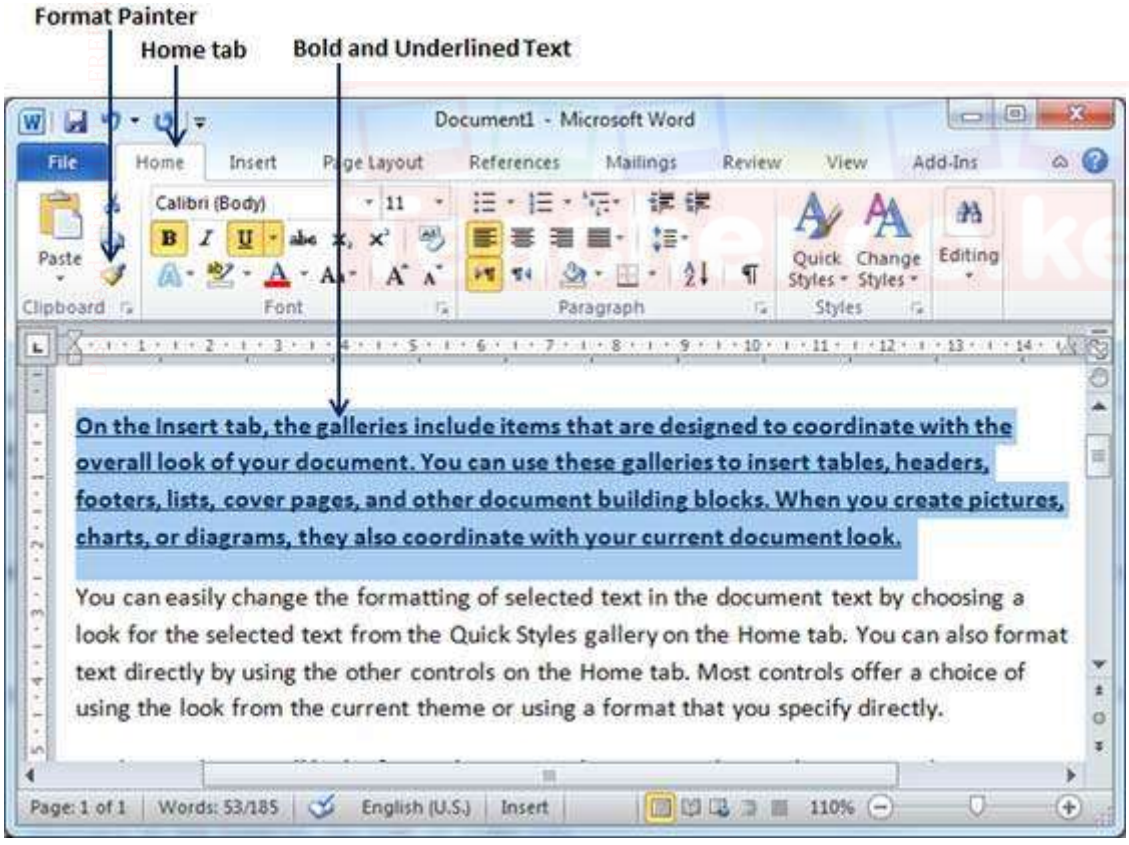
Creating a Text Document Using Word Processing Productivity Tools



The basic steps for creating a text document generally involve:

1. **Launching the Word Processor:** Opening the chosen application. [Screenshot of a word processing application window opening.]
2. **Typing Text:** Entering the content of the document using the keyboard. [Screenshot showing text being typed in a word processing document.]
3. **Saving the Document:** Storing the document electronically with a chosen filename and format (e.g., .docx, .doc, .odt, .pdf). [Screenshot showing the "Save As" dialog box with options for filename and format.]
4. **Navigating the Document:** Using the scroll bar, keyboard shortcuts (e.g., Ctrl+Home, Ctrl+End), or the navigation pane to move through the document.
5. **Closing the Document:** Exiting the currently open document.
6. **Retrieving a Document:** Opening a previously saved document. [Screenshot showing the "Open" dialog box for selecting a saved document.]

Formatting a Text Document



Formatting enhances the visual appeal and readability of a document. Common formatting features include:

- **Character Formatting:**
  - ✓ **Font:** Changing the typeface (e.g., Times New Roman, Arial).
  - ✓ **Font Size:** Adjusting the size of the text.
  - ✓ **Font Style:** Applying bold, italics, or underline.
  - ✓ **Font Color:** Changing the color of the text.
  - ✓ **Highlighting:** Adding color behind the text to emphasize it.
- **Paragraph Formatting:**
  - ✓ **Alignment:** Aligning text to the left, center, right, or justified.
  - ✓ **Indentation:** Moving the paragraph in from the left or right margin.
  - ✓ **Line Spacing:** Adjusting the vertical space between lines of text.
  - ✓ **Paragraph Spacing:** Adjusting the space before or after paragraphs.
  - ✓ **Bullets and Numbering:** Creating lists with bullet points or sequential numbers.
  - ✓ **Borders and Shading:** Adding borders around paragraphs or applying background color.
- **Page Layout:**
  - ✓ **Margins:** Setting the blank space around the edges of the page (top, bottom, left, right).
  - ✓ **Paper Size:** Selecting the dimensions of the paper (e.g., A4, Letter).
  - ✓ **Page Orientation:** Choosing between portrait (vertical) and landscape (horizontal) layout. [Diagram illustrating portrait and landscape orientation.]
  - ✓ **Page Numbering:** Adding sequential numbers to the pages of the document.
- **Columns:** Formatting text into multiple columns, like in a newspaper.

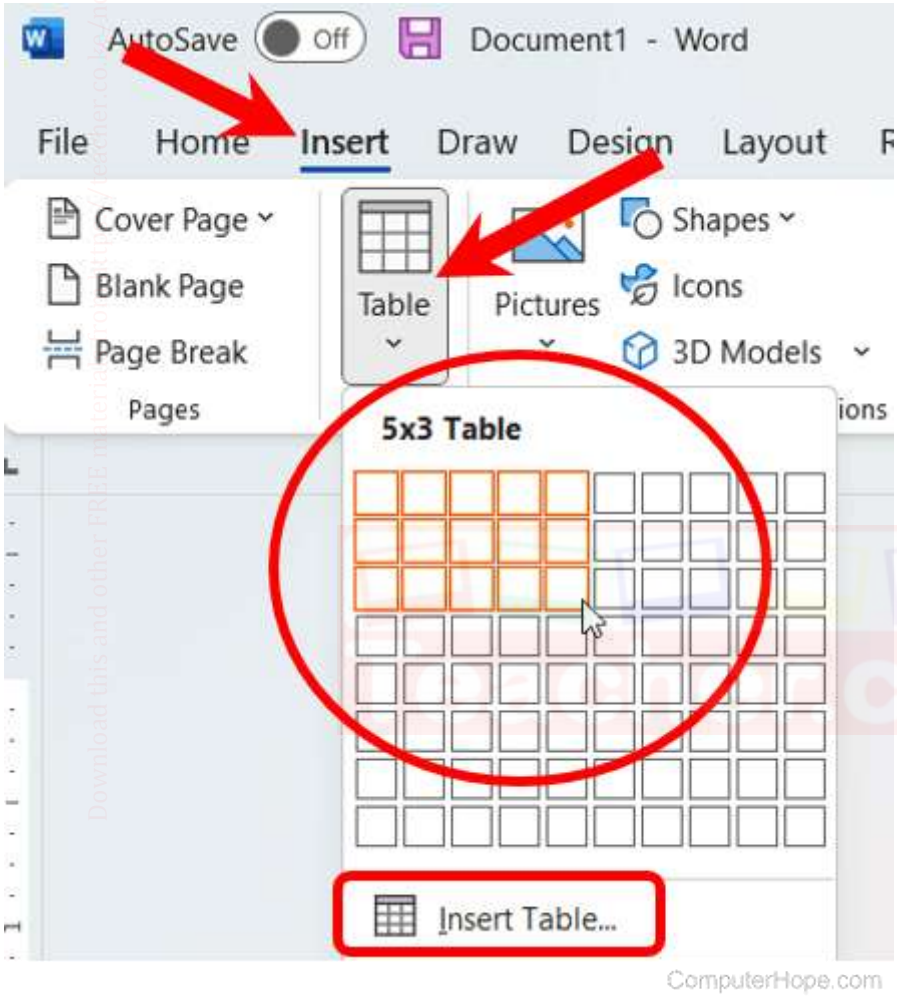
Using Editing Tools

Word processors provide tools to help improve the accuracy and quality of writing:

- **Spell Checker:** Identifies and suggests corrections for misspelled words. [Screenshot showing a spell checker suggesting a correction.]
- **Grammar Checker:** Identifies and suggests corrections for grammatical errors. [Screenshot showing a grammar checker highlighting a potential error.]
- **Thesaurus:** Provides synonyms and antonyms for selected words. [Screenshot showing a thesaurus suggesting alternative words.]

- **Auto-Complete:** Suggests words or phrases as you type, speeding up the process.
- **Auto-Correct:** Automatically corrects common typing errors as you type.

Inserting and Formatting Tables



Tables are used to organize data in rows and columns:

1. **Inserting a Table:** Selecting the number of rows and columns needed. [Screenshot showing the table insertion dialog box.]
2. **Entering Data:** Typing information into the cells of the table.
3. **Formatting a Table:**
    - **Borders and Shading:** Adjusting the appearance of table borders and cell backgrounds.
    - **Cell Alignment:** Aligning text within table cells.

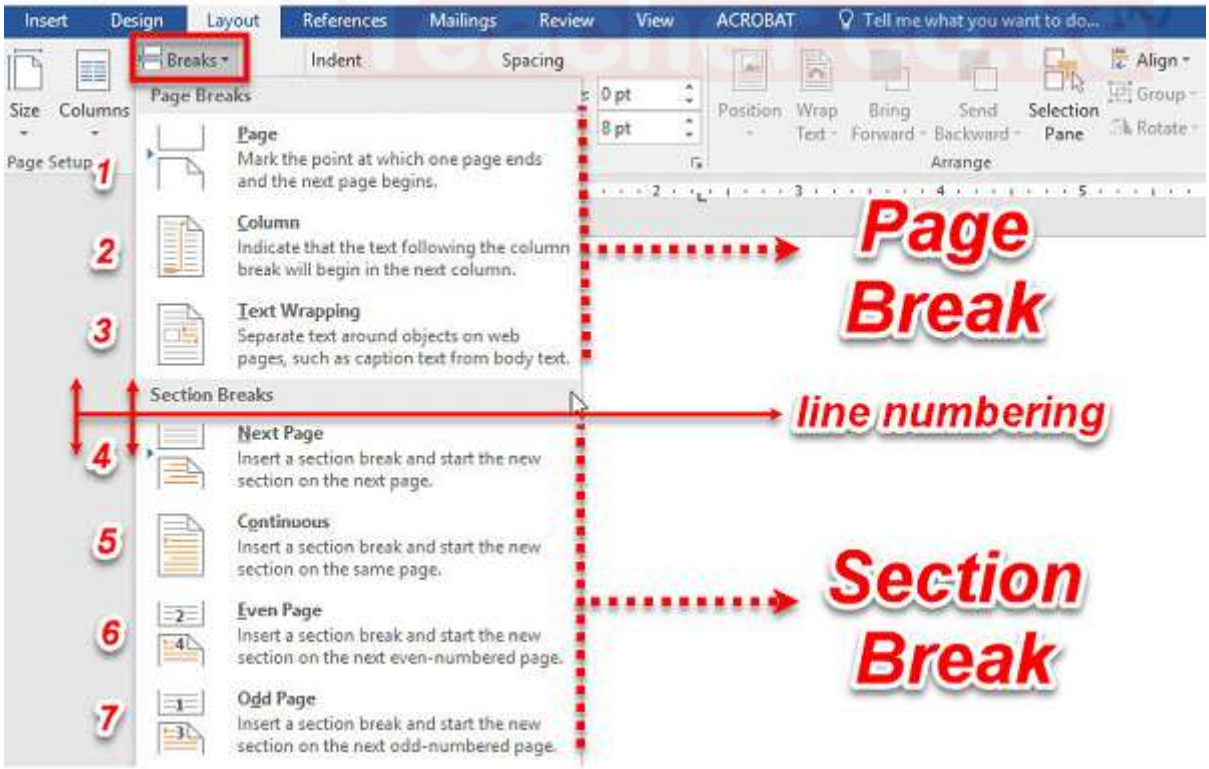
- **Merging and Splitting Cells:** Combining multiple cells into one or dividing a cell into multiple cells.
- **Adjusting Row Height and Column Width:** Changing the size of rows and columns.

Inserting and Formatting Table of Figures and Table of Contents

For longer documents, these features help readers navigate:

- **Table of Contents (TOC):** An automatically generated list of headings and subheadings in a document, along with their corresponding page numbers. This requires using heading styles consistently throughout the document. [Example of a Table of Contents.]
- **Table of Figures:** An automatically generated list of figures (images, charts, etc.) in a document, along with their captions and page numbers. This requires properly captioning figures. [Example of a Table of Figures.]
- **Updating:** Both TOC and Table of Figures can be automatically updated if changes are made to headings, captions, or page numbers.

Inserting Section and Page Breaks, Styles, Headers and Footers, Hyperlinks, Cross-Referencing



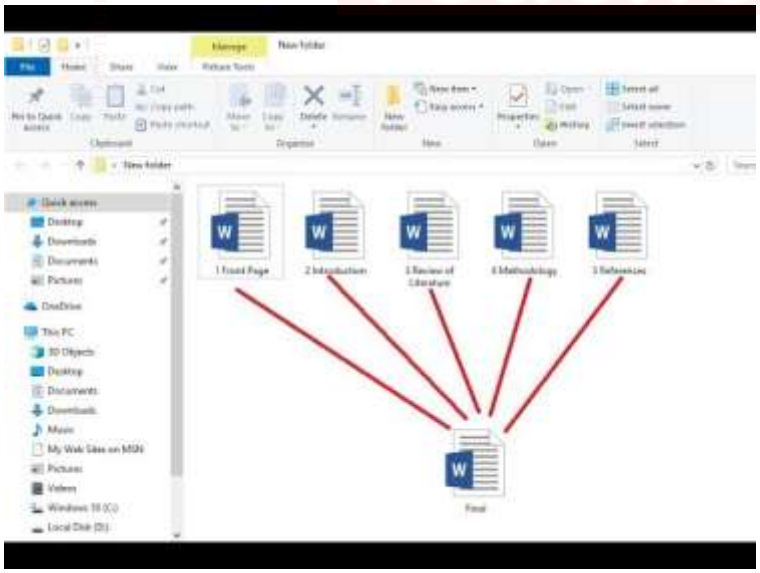
These features enhance document structure and navigation:

- ✓ **Section Breaks:** Divide a document into sections with different formatting (e.g., different column layouts or page numbering).
- ✓ **Page Breaks:** Force text to start on a new page.
- ✓ **Styles:** Pre-defined formatting options for headings, body text, etc. Using styles ensures consistency and makes formatting changes easier. [Example of a Styles pane in a word processor.]
- ✓ **Headers and Footers:** Text or graphics that appear at the top (header) or bottom (footer) of every page or specified pages (e.g., page numbers, document titles, dates). [Example of a header and footer in a document.]
- ✓ **Hyperlinks:** Clickable text or graphics that take the user to another location within the document, a web page, or another file. [Example of hyperlinked text.]
- ✓ **Cross-Referencing:** Links to specific elements within the document, such as figures, tables, or headings. If the page number of the referenced item changes, the cross-reference can be updated automatically.

Creating and Manipulating Tables

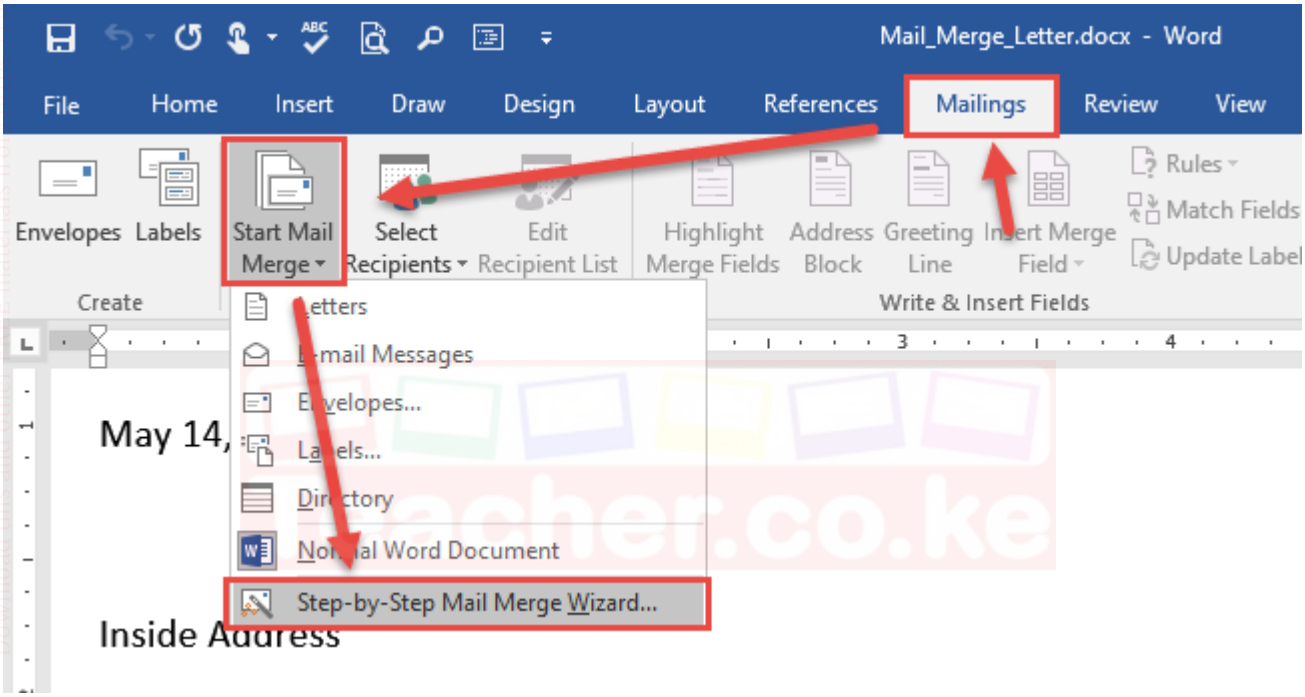
(Covered in the "Inserting and Formatting Tables" section above)

Generating Merged Documents (Mail Merge)



Mail merge is a feature that allows you to create personalized documents (e.g., letters, envelopes, labels) for multiple recipients using a data source (e.g., a spreadsheet or database) containing recipient information.

1. **Creating a Main Document:** The template for the document with placeholders for personalized information.
2. **Creating a Data Source:** A file containing the recipient information (names, addresses, etc.) organized in fields.
3. **Merging the Data:** Linking the data source to the main document and inserting the placeholders (merge fields).
4. **Generating Merged Documents:** The word processor creates individual documents for each record in the data source, replacing the placeholders with the corresponding information.



[Diagram illustrating the mail merge process.]

Inserting and Formatting Graphics (Symbols, Shapes, Images, Text Wrap)

Visual elements can enhance a document:

- **Symbols:** Inserting special characters not found on the keyboard (e.g., ©, ®, £).
- **Shapes:** Drawing various geometric shapes (e.g., rectangles, circles, arrows).
- **Images:** Inserting pictures or photographs from files or online sources. [Example of an image inserted into a document.]
- **Text Wrap:** Controlling how text flows around inserted graphics (e.g., square, tight, through, top and bottom, behind text, in front of text). [Diagram illustrating different text wrapping options around an image.]

Collaborating with Peers Using Track Changes and Comments

These features facilitate collaborative document editing:

- **Track Changes:** Records all modifications made to a document (insertions, deletions, formatting changes) by different users, allowing others to see and accept or reject these changes. [Screenshot showing a document with tracked changes.]
- **Comments:** Allow users to add notes or feedback to specific parts of the document without directly altering the text. [Screenshot showing a comment added to a document.]

Sharing a Text Document

Documents created in a word processor can be shared in various ways:

- **Hard Copy:** Printing the document.
- **PDF (Portable Document Format):** Saving the document in a format that preserves formatting and is easily viewable on different devices.
- **Email:** Attaching the document to an email.
- **Cloud Storage:** Uploading the document to platforms like Google Drive, OneDrive, or Dropbox for sharing and collaboration.

Emerging Trends in Word Processing Productivity Tools

- **Cloud-Based Collaboration:** Increased emphasis on real-time collaboration and accessibility from any device with an internet connection.
- **Artificial Intelligence (AI) Integration:** Features like AI-powered grammar and style suggestions, automated summarization, and even content generation.
- **Voice Typing and Dictation:** Improved accuracy and usability of voice-to-text features.
- **Integration with Other Applications:** Seamless integration with other productivity tools like spreadsheets, presentation software, and note-taking apps.
- **Mobile-First Design:** Word processors are becoming increasingly user-friendly on mobile devices.
- **Accessibility Features:** Enhanced tools to make document creation and consumption easier for users with disabilities.

Suggested Learning Experiences

- ✓ **Brainstorming:** Discuss the meaning and importance of word processing in document production.
- ✓ **Exploration:** Explore different word processing applications (Apache OpenOffice, LibreOffice, Microsoft Word, Google Docs, WPS Office Write).
- ✓ **Basic Tasks:** Perform fundamental word processing tasks: creating, saving, navigating, closing, and retrieving documents.
- ✓ **Formatting Practice:** Experiment with various character and paragraph formatting options.
- ✓ **Page Layout Exercises:** Practice setting margins, paper size, and page numbering.
- ✓ **Editing Tool Usage:** Use the spell checker, grammar checker, and thesaurus on created documents.
- ✓ **Table Manipulation:** Insert, format, and manipulate tables.
- ✓ **Table of Contents/Figures Generation:** Learn to insert and update a table of contents and a table of figures (if applicable based on document content).
- ✓ **Advanced Features Exploration:** Experiment with section and page breaks, styles, headers and footers, hyperlinks, and cross-referencing.
- ✓ **Mail Merge Activity:** If possible, perform a basic mail merge exercise.
- ✓ **Graphics Insertion:** Insert and format symbols, shapes, and images, and practice text wrapping.
- ✓ **Collaboration Practice:** Use track changes and comments features to collaborate on a document with peers.
- ✓ **Sharing Methods:** Practice sharing documents through different methods (printing, PDF, email, cloud upload).
- ✓ **Resource Person Engagement:** If possible, invite a resource person to discuss emerging trends in word processing.

Sub-Strand 2.2: Presentation

What is Presentation Productivity Software?

Presentation productivity software are tools that allow users to create visual presentations to communicate information effectively to an audience. These tools enable the combination of text, images, charts, multimedia, and interactive elements in a structured sequence of slides.

Importance of Presentation Productivity Tools

1. **Visual Communication:** Helps to convey information in a visually engaging and memorable way, enhancing audience understanding and retention.
2. **Organization of Ideas:** Provides a structured format (slides) to organize thoughts and present information logically.

3. **Audience Engagement:** Multimedia elements, animations, and interactivity can capture and maintain audience attention.
4. **Professionalism:** Enables the creation of polished and professional-looking presentations for various settings (e.g., school projects, business meetings).
5. **Support for the Speaker:** Speaker notes and presenter views help the presenter stay on track and deliver the information smoothly.
6. **Data Visualization:** Tools for creating charts and graphs make it easier to present and interpret data.
7. **Collaboration:** Some tools allow for collaborative creation and editing of presentations.

Selecting a Presentation Productivity Tool

Several presentation software options are available, each with its own features and interface. Popular examples include:

- **Microsoft PowerPoint:** A widely used commercial software with a comprehensive set of features and templates. [Microsoft PowerPoint logo]
- **Google Slides:** A free, web-based application that allows for real-time collaboration and easy sharing. [Google Slides logo]
- **LibreOffice Impress:** A free and open-source presentation software, part of the LibreOffice suite. [LibreOffice Impress logo]
- **Apple Keynote:** A presentation application developed by Apple, known for its elegant design and integration with the Apple ecosystem. [Apple Keynote logo]
- **Canva:** A user-friendly graphic design platform that also offers powerful presentation creation tools with a vast library of templates and design elements. [Canva logo]

The choice of software often depends on factors such as cost, required features, ease of use, accessibility (web-based vs. desktop), and the need for specific design capabilities or collaboration features.

Creating an Interactive Presentation for a Target Audience

Creating an effective presentation involves several steps:

1. **Planning:** Defining the purpose of the presentation, identifying the target audience, and outlining the key message.
2. **Content Creation:** Developing the content for each slide, including text, images, charts, and multimedia elements. Consider the audience's background and interests.
3. **Slide Design:** Choosing appropriate templates, layouts, colors, and fonts to ensure visual appeal and readability. Master slides can be used to maintain

consistency across the presentation. [Screenshot showing a master slide view in presentation software.]

4. **Incorporating Multimedia:** Adding relevant images, audio, and video clips to enhance engagement and understanding. [Example of a slide with an embedded image and a video placeholder.]
5. **Adding Interactivity:** Making the presentation more engaging through:
    - ✓ **Animations:** Applying visual effects to text and objects as they appear, disappear, or move on a slide. [Screenshot showing animation options in presentation software.]
    - ✓ **Transitions:** Adding visual effects when moving from one slide to the next. [Screenshot showing slide transition options in presentation software.]
    - ✓ **Hyperlinks:** Creating clickable links within the presentation to other slides, external websites, or files. [Screenshot showing how to insert a hyperlink.]
    - ✓ **Interactive Elements:** Some advanced tools may offer features like quizzes, polls, or buttons that the audience can interact with during the presentation.
    - ✓ **Seamless Slide Navigation:** Using clear and intuitive navigation elements or hyperlinks to move between slides in a non-linear way if needed.
6. **Adding Speaker Notes:** Including private notes for the presenter that are not visible to the audience during the presentation. [Screenshot showing the speaker notes section in presentation software.]
7. **Review and Practice:** Reviewing the presentation for clarity, accuracy, and flow. Practicing the delivery, including the timing and use of interactive elements.

Delivering a Slide Presentation Effectively on a Topical Area

Effective delivery is crucial for a successful presentation:

1. **Know Your Material:** Be familiar with the content of your slides and be prepared to elaborate beyond what is shown.
2. **Engage with the Audience:** Maintain eye contact, use a clear and confident voice, and vary your tone and pace.
3. **Use Visual Aids Effectively:** Ensure your slides are clear, concise, and visually appealing. Avoid overcrowding slides with too much text.
4. **Utilize Presenter Tools:**
    - ✓ **Presenter View:** Use features like presenter view (available in PowerPoint and Google Slides) to see your notes, upcoming slides, and

the timer while the audience only sees the current slide. [Screenshot showing a presenter view interface.]
    - ✓ **Timings:** Keep track of the allocated time and adjust your pace accordingly.
5. **Incorporate Interactivity:** If you have included interactive elements, guide the audience on how to participate and manage the interaction smoothly.
6. **Handle Questions:** Be prepared to answer questions from the audience thoughtfully and respectfully.
7. **Practice:** Rehearse your presentation multiple times to ensure a smooth and confident delivery.
8. **Connect with a Topical Issue:** When presenting on a topical issue in the community, aim to:
    - ✓ **Provide Context:** Clearly explain the issue and its relevance to the audience.
    - ✓ **Use Real-World Examples:** Illustrate your points with local examples and stories.
    - ✓ **Encourage Discussion:** Facilitate a dialogue and encourage audience participation.
    - ✓ **Offer Solutions or Perspectives:** Share potential solutions or different perspectives on the issue.

Appreciating the Emerging Trends in Presentation Productivity Tools

The field of presentation software is constantly evolving with new trends:

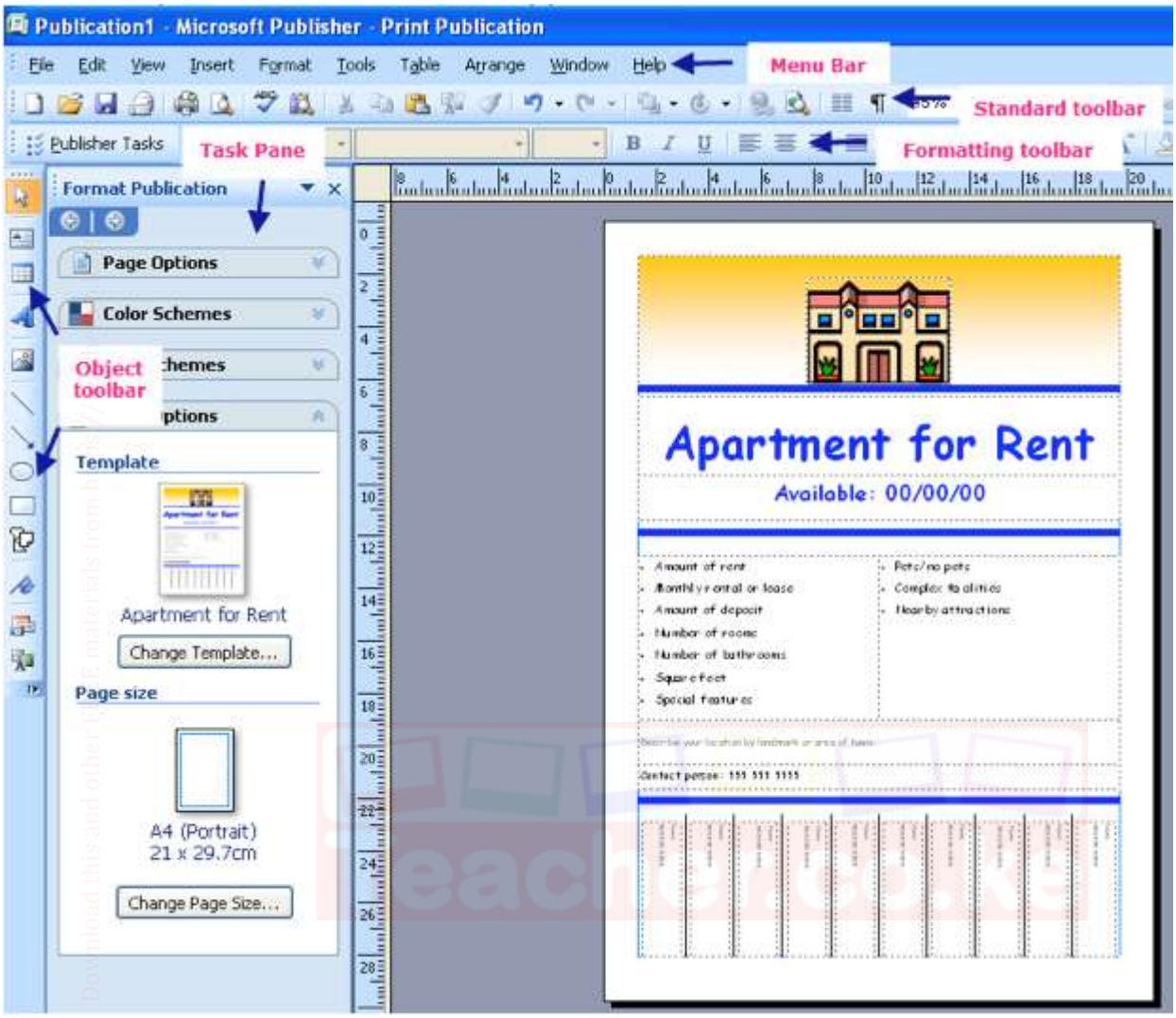
- **AI-Powered Design Assistance:** Tools that use artificial intelligence to suggest layouts, designs, and even content.
- **Enhanced Collaboration Features:** Real-time co-editing, integrated chat, and easier sharing options.
- **Interactive and Dynamic Content:** More sophisticated animation and transition effects, as well as the ability to embed live data and interactive elements like 3D models and simulations.
- **Web-Based and Cloud-Native Platforms:** Increased reliance on web-based tools that offer accessibility from any device and seamless cloud storage.
- **Integration with Multimedia Libraries:** Direct access to vast libraries of stock photos, videos, and audio within the presentation software.
- **Improved Data Visualization:** More advanced charting and graphing tools, as well as integration with data analysis platforms.
- **Virtual and Augmented Reality (VR/AR) Integration:** Exploring ways to incorporate VR and AR elements into presentations for more immersive experiences.

- **Accessibility Features:** Continued improvements in features that make presentations accessible to individuals with disabilities (e.g., closed captions, screen reader compatibility).

Suggested Learning Experiences

- ✓ **Brainstorming:** Discuss the meaning and importance of productivity tools for creating presentations.
- ✓ **Software Identification:** Identify and discuss examples of presentation software (LibreOffice Impress, PowerPoint, Keynote, Google Slides, Canva) and their basic features.
- ✓ **Exploration:** Explore the methods of creating and editing a presentation in a chosen software.
- ✓ **Slide Creation and Editing:** Create and edit slides by incorporating text, images, shapes, charts, multimedia elements, speaker notes, master slides, and using diverse templates.
- ✓ **Applying Effects:** Apply various slide transition effects, add styles, and adjust presentation speeds to enhance flow.
- ✓ **Adding Interactivity:** Incorporate animations, transitions, and explore other interactive elements and slide navigation techniques.
- ✓ **Hyperlink Implementation:** Add hyperlinks to clickable elements like text, images, or shapes.
- ✓ **Using Presenter Tools:** Practice using presenter tools like presenter view to manage notes and timings.
- ✓ **Interactive Presentation Delivery:** Create and deliver a presentation on a topical issue in the community, incorporating interactive elements to engage the audience.
- ✓ **Sharing Experiences:** Discuss and share experiences regarding emerging trends in presentation productivity tools.

2.3: Desktop Publishing (DTP)



What is Desktop Publishing?

Desktop Publishing (DTP) involves using computer software to create high-quality documents with complex layouts that combine text and graphics. It goes beyond basic word processing by offering precise control over typography, page design, and image placement, making it ideal for creating professional-looking publications.

Importance of Desktop Publishing Tools in Document Publication

1. **Professional Layouts:** Enables the creation of visually appealing and well-structured publications with precise control over design elements.
2. **Integration of Text and Graphics:** Facilitates the seamless integration of text, images, illustrations, and other graphic elements.
3. **Typography Control:** Offers advanced control over fonts, spacing, kerning, and other typographic features to enhance readability and visual appeal.

4. **Page Design Flexibility:** Provides tools for creating complex page layouts with columns, master pages, and precise element positioning.
5. **Consistency:** Master pages and styles help maintain a consistent design throughout multi-page documents.
6. **Pre-press Preparation:** Some DTP software includes features for preparing documents for professional printing.
7. **Versatility:** Suitable for creating a wide range of publications, including brochures, newsletters, magazines, books, posters, and more.

Selecting a Desktop Publishing Tool

Various DTP software options are available, ranging from free to commercial. Some popular examples include:

Open Source:

- **Scribus:** A powerful, free, and open-source DTP application with professional features. [Scribus logo]
- **LibreOffice Draw:** While primarily a vector graphics editor, it offers some DTP capabilities for creating basic layouts. [LibreOffice logo]
- **Scribble (Potential Misidentification):** There isn't a widely recognized professional DTP software specifically named "Scribble." It might refer to a more basic drawing or note-taking application.

Non-Open Source (Commercial):

- **Adobe InDesign:** An industry-standard DTP software known for its advanced features and integration with other Adobe products. [Adobe InDesign logo]
- **QuarkXPress:** A long-standing professional DTP application with a strong focus on print publishing. [QuarkXPress logo]
- **Affinity Publisher:** A relatively newer but powerful and affordable DTP software that has gained popularity. [Affinity Publisher logo]
- **Microsoft Publisher:** A more user-friendly DTP application suitable for creating simpler publications, often included in Microsoft Office suites. [Microsoft Publisher logo]

The choice of DTP tool depends on factors like the complexity of the publication, budget, required features, ease of use, and whether professional printing is involved.

Creating a Publication Using Desktop Publishing Tools

The general workflow for creating a publication in a DTP tool involves:

1. **Planning and Setup:** Defining the purpose, target audience, format (e.g., brochure, newsletter), page size, margins, and setting up master pages for consistent elements.
2. **Creating a New Document:** Launching the DTP software and creating a new project with the specified settings. [Screenshot showing the "New Document" dialog box in a DTP application.]
3. **Adding and Formatting Text:** Creating text frames and importing or typing text. Applying typographic controls like font selection, size, leading (line spacing), kerning (spacing between letters), and alignment. [Screenshot showing text frames and formatting options in a DTP application.]
4. **Inserting and Manipulating Graphics:** Importing images and other graphic elements (illustrations, logos). Resizing, cropping, positioning, and applying effects to graphics. [Screenshot showing image placement and manipulation tools.]
5. **Creating and Managing Layout:** Arranging text and graphics on the pages using frames and guides. Creating multi-column layouts and ensuring visual balance. [Screenshot showing a multi-column layout with text and images.]
6. **Using Master Pages:** Creating templates for consistent elements like headers, footers, page numbers, and recurring design features that appear on multiple pages. [Screenshot showing a master page view in a DTP application.]
7. **Applying Styles:** Defining and applying character and paragraph styles to ensure consistent formatting throughout the publication and make editing easier. [Screenshot showing a Styles panel in a DTP application.]
8. **Using Editing Tools:** Utilizing tools for spell checking, grammar checking (if available), and making precise adjustments to the layout and elements.
9. **Pre-press Checks (if applicable):** Ensuring the document meets the requirements for professional printing, such as color modes (CMYK), bleed, and resolution.
10. **Saving the Publication:** Saving the project in the native file format of the DTP software to allow for future editing. [Screenshot showing the "Save As" dialog box with the DTP software's file format.]
11. **Exporting for Distribution:** Exporting the publication in a suitable format for sharing (e.g., PDF for printing or digital distribution). [Screenshot showing the "Export" or "Publish" dialog box with different format options.]

Using Editing Tools in a Desktop Publishing Tool

DTP software provides various editing tools to refine a publication:

- **Text Editing:** Tools for modifying text content, checking spelling and grammar (sometimes through integration with external tools), and adjusting typography.

- **Image Editing:** Basic image manipulation tools like resizing, cropping, adjusting brightness and contrast, and sometimes more advanced features depending on the software.
- **Layout Adjustment:** Tools for moving, resizing, and aligning frames (for text and graphics), adjusting columns, and working with guides and grids for precise placement.
- **Color Management:** Tools for selecting and managing colors, ensuring consistency and proper output for printing.
- **Object Manipulation:** Tools for drawing and editing shapes, applying fills and strokes, and arranging objects in layers.

Sharing a Publication Created in a Desktop Publishing Tool

Publications can be shared in several ways:

- **Hard Copy (Printing):** Exporting the publication as a print-ready PDF and sending it to a printer.
- **PDF (Portable Document Format):** Exporting the publication as a PDF file for easy digital sharing and viewing across different devices. PDF/X standards are often used for professional printing.
- **Email:** Attaching the exported PDF file to an email.
- **Upload:** Uploading the PDF to online platforms for sharing or distribution (e.g., websites, cloud storage).

Integrating a Publication with Other Applications and Applying Mail Merge

- **Integration with Other Applications:** DTP software often allows importing content from other applications. For example:
    - **Text from Word Processors:** Importing text documents (.docx, .odt).
    - **Images from Graphics Editors:** Importing image files (.jpg, .png, .tiff, .ai, .psd).
    - **Data from Spreadsheets:** Importing data for creating charts or for mail merge.
- **Mail Merge:** Similar to word processing, DTP software can also perform mail merge to personalize publications like brochures, postcards, or certificates for multiple recipients using a data source (e.g., a CSV file or spreadsheet).
    1. **Creating a Main Publication:** Designing the template with placeholders for personalized information.
    2. **Connecting to a Data Source:** Linking the publication to a file containing recipient details.
    3. **Inserting Merge Fields:** Placing placeholders in the publication where personalized information should appear.

4. **Previewing and Merging:** Previewing the merged output and generating the personalized publications.

Appreciating Emerging Trends in DTP Productivity Tools

The field of DTP is also evolving with trends like:

- **Cloud-Based DTP:** Some newer tools are emerging that offer DTP capabilities in the cloud, allowing for collaboration and accessibility from different devices.
- **AI-Powered Assistance:** AI features might be integrated to assist with layout suggestions, image optimization, and content generation.
- **Enhanced Digital Publishing Features:** Tools are increasingly catering to digital publications like eBooks, interactive PDFs, and online magazines.
- **Seamless Integration with Digital Workflows:** Better integration with web design tools, social media platforms, and content management systems.
- **Focus on User Experience:** Newer software often emphasizes a more intuitive and user-friendly interface.
- **Cross-Platform Compatibility:** More DTP tools are becoming available on multiple operating systems (Windows, macOS, Linux).
- **Subscription Models:** A shift towards subscription-based pricing for some professional DTP software.

Suggested Learning Experiences

- **Brainstorming:** Discuss the meaning and importance of desktop publishing tools in document publication.
- **Research:** Use print or digital media to research examples and categories of DTP applications (Open Source: Scribus, LibreOffice Draw; Non-Open Source: Adobe InDesign, QuarkXPress, Affinity Publisher, Microsoft Publisher) and share findings.
- **Basic Tasks:** Perform basic DTP tasks: creating, saving, navigating, closing, and retrieving a publication in a chosen software.
- **Publication Creation:** Create a simple publication (e.g., a flyer or a newsletter page) using the key features of the DTP tool.
- **Editing Practice:** Use editing tools within the DTP software to refine the created publication, focusing on achieving a professional appearance.
- **Sharing Practice:** Share the created publication through different methods (hard copy, PDF, email, upload).
- **Integration Exploration:** If feasible, explore how to integrate content from other applications (e.g., importing text and images).
- **Mail Merge Introduction:** If possible, introduce the concept of mail merge and perform a basic mail merge activity.

- **Resource Person Engagement:** Invite a resource person to discuss emerging trends in DTP productivity tools.

STRAND 3: INTERNET AND WEB TECHNOLOGIES

Sub-Strand 3.1: The Internet

What is the Internet?

The Internet is a **global network** of interconnected computer networks that use a standardized set of communication protocols (primarily TCP/IP) to link billions of devices worldwide. It's often described as a "network of networks."

Purpose of the Internet in Society

The Internet serves numerous vital purposes in modern society:

1. **Communication:** Facilitates instant communication across geographical boundaries through email, instant messaging, video conferencing, and social media.

people communicating online using different devices.

2. **Information Access:** Provides access to a vast repository of information on virtually any topic through websites, online libraries, and search engines.

person searching for information on a computer.

3. **Education:** Supports online learning platforms, access to educational resources, and collaborative learning environments.

students participating in an online class.

4. **Commerce (E-commerce):** Enables online buying and selling of goods and services, facilitating global trade and creating new business opportunities.

online shopping website.

5. **Social Networking:** Connects people with shared interests, allows for building and maintaining relationships, and facilitates social movements. [Image showing logos of various social media platforms.]
6. **Entertainment:** Provides access to a wide range of entertainment options, including streaming services, online games, and digital media. [Image showing different forms of online entertainment.]
7. **Government Services (E-governance):** Allows citizens to access government information and services online, improving efficiency and transparency.

Government eservices portal.

8. **Healthcare (Telemedicine):** Enables remote medical consultations, access to health information, and improved healthcare management.

Doctor consulting a patient online.

9. **Remote Work:** Facilitates working from different locations, enabling flexibility and new employment opportunities.

Person working remotely on a laptop.

10. **Financial Services:** Supports online banking, mobile money transfers, and other digital financial transactions.

Online banking interfaces.

Common Internet Terms

- **Intranet:** A private network that is contained within an organization and uses Internet protocols to share company information and computing resources among employees. [Diagram illustrating an intranet within a company.]
- **World Wide Web (WWW):** A system of interlinked hypertext documents (webpages) accessed via the Internet. It's one of the most popular services on the Internet. [Diagram illustrating the concept of linked webpages.]
- **Extranet:** A network that allows controlled access from outside an organization to specific parts of its intranet. Often used for collaboration with suppliers, customers, or partners. [Diagram illustrating an extranet connecting a company with external partners.]
- **Website:** A collection of related webpages hosted on a web server, usually accessible via a single domain name.

website homepage.

- **Webpage:** A single document on the World Wide Web, identified by a unique URL. [Screenshot of a webpage.]
- **URL (Uniform Resource Locator):** The address of a specific webpage or other resource on the Internet.
- (e.g., https://www.example.com/page.html)
- https://kec.ac.ke/
- [Example of a URL with its components labeled.]
- **Server:** A powerful computer or software that provides services or resources to other computers (clients) on a network. Web servers host websites.

computer servers in a data center.

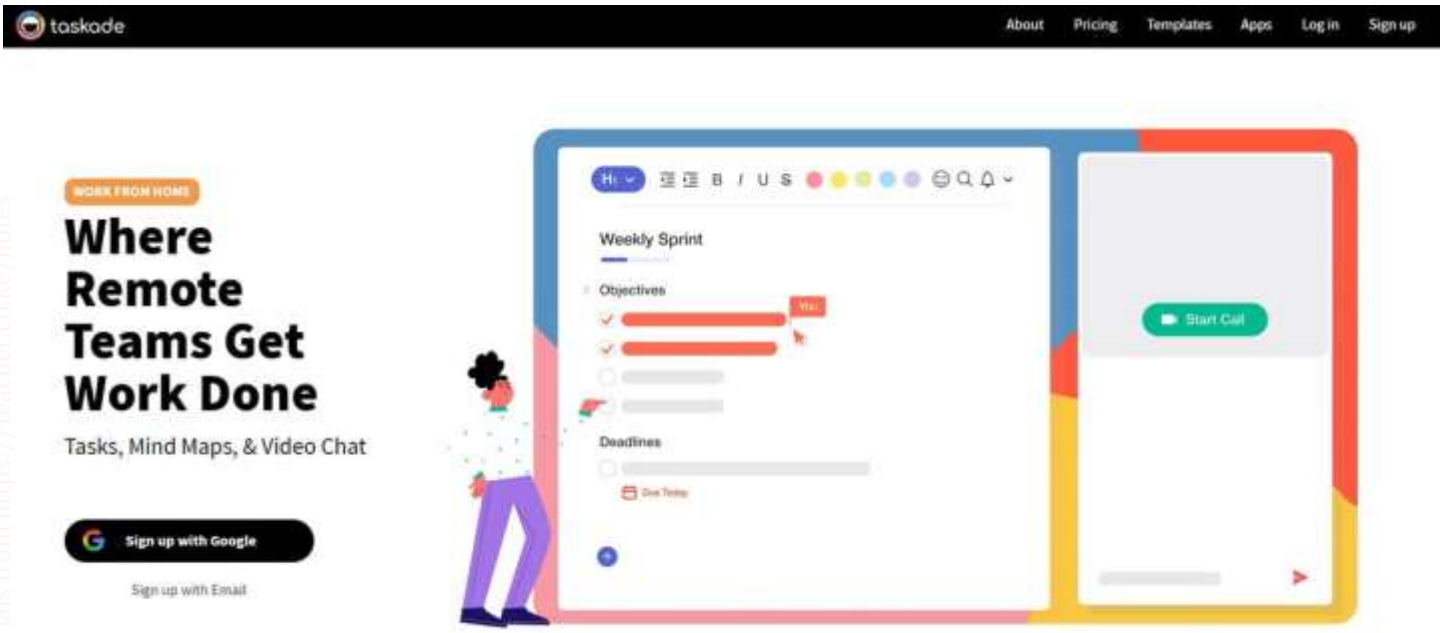
- **Web Browser:** A software application used to access and view webpages on the World Wide Web (e.g., Chrome, Firefox, Safari, Edge).

[Logos of popular web browsers.]

- **Search Engine:** A web-based tool that allows users to find information on the World Wide Web by entering keywords (e.g., Google, Bing, DuckDuckGo).

[Logos of popular search engines.]

- **Web Application:** Software that runs on a web server and is accessed by users through a web browser (e.g., online email, social media platforms).



[Examples of web application interfaces.]

- **Internet Service Provider (ISP):** A company that provides individuals and organizations with access to the Internet (e.g., Safaricom, Airtel).

[Logos of common Kenyan ISPs.]

- **Surfing (the Web):** The act of browsing the World Wide Web, moving from one webpage to another by following hyperlinks.

Fundamental Components Required to Set Up an Internet Connection

The specific components can vary depending on the type of connection, but generally include:

1. **A Device:** A computer, laptop, smartphone, or tablet that you will use to access the Internet.

various internetenabled devices.

2. **Internet Service Provider (ISP):** You need an account with an ISP that offers internet services in your area.
3. **Modem:** A device that converts the digital signals from your device into a format that can be transmitted over the ISP's network (and vice versa). For some connections (like fiber), this functionality might be integrated into a router.

modem.

4. **Router (Optional but Recommended):** A device that creates a local network (usually Wi-Fi) and allows multiple devices to connect to the Internet through a single modem. It also provides security features.

wireless router.

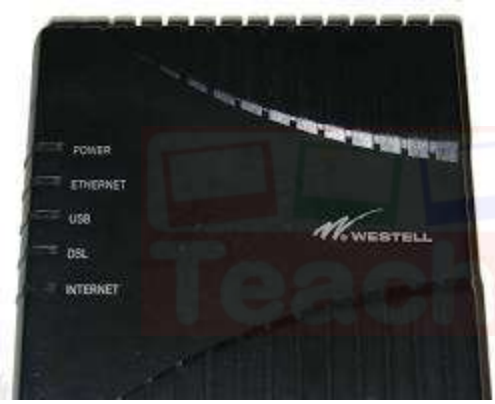
5. **Connection Medium:** The physical or wireless method used to connect your device to the ISP's network. Common types include:
    - **Ethernet Cable:** A physical cable connecting your device directly to the modem or router.

Ethernet cable.

    - **Wi-Fi (Wireless Fidelity):** A wireless technology that allows devices to connect to the router's network using radio waves. [Symbol for Wi-Fi.]
    - **Mobile Data (3G, 4G, 5G):** Wireless connection provided by mobile network operators, often accessed through a smartphone or a mobile hotspot device. [Logos for 3G, 4G, and 5G networks.]
    - **Fiber Optic Cable:** A high-speed connection using thin strands of glass or plastic to transmit data as light pulses. Requires a specific modem/router.

fiber optic cable and connector.

- **DSL (Digital Subscriber Line):** Uses existing telephone lines to transmit data. Requires a DSL modem.



DSL modem.

- **Satellite Internet:** Provides internet access via communication satellites. Requires a satellite dish and modem.

satellite dish for internet.

6. **Subscription/Data Plan:** You need to have an active subscription or a data plan with your ISP to access the Internet.

Simulation of Setting Up an Internet Connection: This can involve physically connecting devices using Ethernet cables, configuring Wi-Fi networks on a router, enabling tethering on a smartphone to share its mobile data, and demonstrating how a portable hotspot works.

Using Search Engines to Gather Relevant Information

Effective searching involves using various techniques:

- **Keyword Search:** Entering relevant words or phrases related to the information you need.
- **Operators:** Using symbols or words to refine your search (e.g., quotation marks for exact phrases, minus sign to exclude words).
  - "solar energy" (exact phrase)
  - renewable energy -wind (exclude results with "wind")
- **Filters:** Applying filters based on date, region, file type, etc., to narrow down search results.
- **Boolean Operators:** Using words like AND, OR, and NOT to combine or exclude keywords for more precise results.
  - climate change AND Kenya
  - solar power OR photovoltaic
  - healthy recipes NOT vegetarian
- **Related Search:** Exploring suggestions provided by the search engine for related topics.
- **Autocomplete:** Using the search engine's suggestions as you type to refine your search terms.
- **Settings:** Adjusting search settings for language, region, and other preferences.
- **Image and Video Search:** Using the image or video search functions to find visual content.

Using Email Application to Communicate with Peers

Email applications (e.g., Gmail, Outlook, Yahoo Mail) allow you to send, receive, and manage electronic messages. Basic steps include:

1. **Composing an Email:** Clicking "Compose" or "New Email," entering the recipient's email address in the "To" field, adding a subject line, and typing your message in the body.
2. **Sending an Email:** Clicking the "Send" button to transmit your message.
3. **Customizing Email Application:**
    - **Account Setup:** Configuring your email account within the application.
    - **Organizing Folders:** Creating folders to categorize and manage emails.
    - **Email Filters (Rules):** Setting up rules to automatically sort or manage incoming emails.
    - **Notifications:** Customizing alerts for new emails.
    - **Signature:** Creating a personalized block of text that is automatically added to the end of your outgoing emails.
    - **Default Settings:** Adjusting default font, message format, etc.
    - **Security:** Understanding and using security features like spam filters and password management.
    - **Sync Settings:** Configuring how and when emails are synchronized across devices.
    - **Layout Customization:** Personalizing the appearance of the email application.
    - **Backup and Storage:** Understanding how emails are stored and options for backup.

Positive Impacts of the Internet on Society

The Internet has brought about numerous positive changes:

- **Increased Connectivity:** Bridging geographical distances and connecting people globally.
- **Democratization of Information:** Making information more accessible to a wider audience.
- **Economic Growth:** Enabling new businesses, creating jobs, and facilitating global trade.
- **Educational Opportunities:** Expanding access to learning resources and online education.
- **Improved Communication:** Facilitating faster and more efficient communication.
- **Enhanced Social Interaction:** Connecting people with shared interests and fostering communities.
- **Innovation and Technological Advancement:** Driving innovation in various fields.
- **Access to Services:** Providing online access to government, financial, and healthcare services.

- **Empowerment of Individuals:** Giving individuals a platform to express themselves and share their ideas.
- **Cultural Exchange:** Facilitating the sharing and understanding of different cultures.

Suggested Learning Experiences

- **Brainstorming:** Discuss the meaning, history, and purpose of the Internet.
- **Terminology Research:** Use print or digital media to define common Internet terms (intranet, WWW, extranet, website, webpage, URL, server, web browser, search engine, web application, ISP, surfing).
- **Service Identification:** Identify and discuss common services offered through the Internet (communication, e-commerce, education, social media, financial services, remote work tools, gaming).
- **Component Research:** Research and present information on the fundamental components required for an internet connection.
- **Connection Simulation:** Simulate setting up an internet connection using available equipment (hotspot, ethernet cables, wireless routers, tethering, portable hotspot).
- **Search Engine Practice:** Use search engines to find and access information, experimenting with keywords, operators, filters, and Boolean operators.
- **Email Communication:** Compose and send an email to peers and customize aspects of the email application.
- **Positive Impact Exploration:** Explore and share experiences of the positive impacts of the Internet on various aspects of society.

Sub-Strand 3.2: Digital Communication

What is Digital Communication?

Digital communication refers to the exchange of information, ideas, and messages electronically using various online platforms and technologies. It has transformed

how individuals, groups, and organizations interact and share information across distances and time zones.

Importance of Digital Communication in Society

1. **Global Connectivity:** Enables instant communication with people across the world, breaking down geographical barriers.
2. **Speed and Efficiency:** Facilitates rapid transmission of information compared to traditional methods.
3. **Accessibility:** Offers various platforms and tools accessible through different devices, making communication more convenient.
4. **Cost-Effectiveness:** Often more affordable than traditional communication methods, especially for long-distance interactions.
5. **Multimedia Integration:** Allows for the sharing of diverse content formats, including text, images, audio, and video.
6. **Collaboration:** Supports real-time collaboration on projects and shared documents.
7. **Information Sharing:** Facilitates the widespread dissemination of news, ideas, and knowledge.
8. **Social Interaction:** Provides platforms for building and maintaining social relationships and communities.
9. **Business Operations:** Essential for internal and external communication, marketing, customer service, and remote work.
10. **Educational Advancement:** Supports online learning, virtual classrooms, and access to educational resources.

Online Platforms Used to Support Digital Communication

Numerous online platforms cater to different communication needs:

- **Email:** A fundamental tool for asynchronous (not real-time) written communication.
- **Chat Apps (Instant Messaging - IM):** Platforms for real-time text-based conversations (e.g., WhatsApp, Telegram, Signal).
- **Video Conferencing:** Tools for live audio and video communication, often with screen sharing capabilities (e.g., Zoom, Google Meet, Microsoft Teams).
- **Collaboration Platforms:** Tools designed for teams to work together on projects, share files, and communicate (e.g., Slack, Microsoft Teams, Discord).
- **Learning Management Systems (LMS):** Platforms used in education for online learning, communication between students and teachers, and sharing course materials (e.g., Moodle, Google Classroom).
- **Social Media:** Platforms for sharing updates, connecting with others, and building online communities (e.g., Facebook, Twitter, Instagram).
- **Online Forums (Discussion Boards):** Platforms where users can post questions, share information, and participate in discussions on various topics (e.g., Reddit, dedicated forums).
- **Cloud-Based Document Platforms:** Tools that allow multiple users to collaborate on documents in real-time (e.g., Google Docs, Microsoft Word Online, Zoho Docs).
- **File-Sharing Services Platforms:** Platforms for storing and sharing files with others (e.g., Dropbox, Google Drive, OneDrive).

- **Project Management Platforms:** Tools for planning, organizing, and tracking tasks and projects, often including communication features (e.g., Asana, Jira, Trello).
- **Video and Audio Streaming Media Platforms:** Platforms for sharing and consuming video and audio content (e.g., YouTube, Vimeo, Spotify, Apple Music, Podcasts).

Key Features of Online Platforms for Digital Communication

These platforms often include features such as:

- **User Profiles:** Personal pages or accounts where users can share information about themselves.
- **Customizable Interfaces:** Options for users to personalize the look and feel of the platform.
- **Accessibility Features:** Tools and settings designed to make the platform usable for individuals with disabilities.
- **Search Functionality:** Features that allow users to find specific information or content within the platform.
- **Privacy and Security Settings:** Controls that allow users to manage their personal information and communication privacy.
- **Integration with Other Services:** Connections to other online tools and platforms for seamless workflow.
- **Support and Help Resources:** Documentation, tutorials, and customer support to assist users.

Using Digital Online Platforms to Communicate

This involves:

- **Creating Accounts:** Signing up and setting up user profiles on the chosen platforms.
- **Sending and Receiving Messages:** Utilizing the platform's messaging features (e.g., sending emails, chat messages, social media posts).
- **Sharing Content:** Uploading and sharing various forms of content (text, images, videos, files).
- **Participating in Discussions:** Engaging in conversations on forums, social media posts, or within collaboration tools.
- **Using Multimedia Features:** Incorporating images, audio, and video into communication.
- **Managing Contacts:** Adding, organizing, and communicating with connections.

- **Adjusting Privacy Settings:** Configuring who can see your content and communicate with you.

Example: Using social media platforms like discussion forums where students can post questions and answers on topical issues, fostering peer-to-peer learning and knowledge sharing.

Using Online Forums to Collaborate and Share Content

Online forums provide a space for asynchronous collaboration and content sharing:

- **Posting Questions and Information:** Users can initiate discussions by posting questions or sharing relevant information.
- **Responding to Threads:** Participants can contribute to existing discussions by posting replies and offering insights.
- **Sharing Resources:** Forums often allow users to share links, documents, and other resources.
- **Building Communities:** Forums can create communities around shared interests or topics.
- **Moderation:** Forums often have moderators who oversee discussions and ensure they remain relevant and respectful.

Using Digital Collaboration Tools

These tools facilitate teamwork and productivity:

- **Cloud-Based Document Platforms (Google Docs, Zoho Docs):** Allow multiple users to edit the same document simultaneously, providing real-time collaboration and version history.
- **File-Sharing Services Platforms (Dropbox, Google Drive, OneDrive):** Enable easy sharing and synchronization of files among team members, facilitating access to resources.
- **Project Management Platforms (Asana, Jira):** Help teams organize tasks, assign responsibilities, track progress, and communicate about projects, often including features for file sharing and discussions.

By using these tools, teams can work collaboratively, share resources efficiently, manage projects effectively, and enhance productivity through seamless communication and real-time updates.

Evaluating Video and Audio Streaming Media Platforms

These platforms offer various features and content:

- **Content Libraries:** Different platforms offer diverse selections of videos, movies, TV shows, music, and podcasts.
- **Subscription Models:** Platforms may offer free (often with ads) or paid subscription options with ad-free content and additional features.
- **Streaming Quality:** Different platforms offer varying video and audio quality.
- **User Interface and Experience:** The ease of navigation and user-friendliness of the platform.
- **Social Features:** Some platforms allow users to share content, comment, and interact with others.
- **Original Content:** Many platforms produce their own exclusive content.
- **Accessibility Features:** Availability of subtitles, closed captions, and audio descriptions.

Using Audio or Video-Based Platforms to Create Podcasts: Learners can create podcasts on various subjects, sharing their learning experiences, insights, and discussions in an audio format. This encourages creativity, communication skills, and knowledge sharing.

Appreciating the Impact of Artificial Intelligence (AI) in Digital Communication Platforms

AI is increasingly being integrated into digital communication platforms, bringing several impacts:

- **Enhanced Personalization:** AI algorithms can analyze user data to provide personalized content recommendations, targeted advertising, and tailored communication experiences.
- **Improved Customer Service:** AI-powered chatbots can handle customer inquiries, provide support, and automate responses.
- **Spam and Fraud Detection:** AI helps filter out spam emails and identify fraudulent activities.
- **Content Moderation:** AI can assist in identifying and removing inappropriate or harmful content.
- **Language Translation:** Real-time translation features facilitate communication across language barriers.
- **Sentiment Analysis:** AI can analyze the emotional tone of text-based communication.
- **Smart Assistants:** AI-powered virtual assistants can help manage communication tasks, schedule meetings, and provide reminders.
- **Predictive Text and Autocorrect:** AI algorithms improve the accuracy and efficiency of text input.

While AI offers numerous benefits, it also raises ethical considerations related to data privacy, bias in algorithms, and the potential displacement of human roles in communication.

Suggested Learning Experiences

- **Brainstorming:** Discuss the meaning and importance of digital communication in society.
- **Platform Identification:** Search for and identify various digital communication platforms used for personal and professional communication (email, chat apps, video conferencing, collaboration platforms, LMS, social media).
- **Feature Exploration:** Explore the key features of online platforms supporting digital communication (user profiles, customization, accessibility, search, privacy, integration, support).
- **Platform Usage:** Use various online digital platforms, such as social media and discussion forums, to communicate with peers.
- **Collaboration Tool Exploration:** Explore digital collaboration tools (cloud-based documents, file-sharing services, project management platforms).
- **Collaborative Work:** Use digital collaboration tools to work collaboratively, share resources, and manage projects.
- **Streaming Platform Evaluation:** Evaluate different types of video and audio streaming media platforms (YouTube, Prime Video, Netflix, Spotify, Apple Music, Facebook Live).
- **Podcast Creation:** Use audio or video-based platforms to create podcasts on various subjects.
- **AI Impact Discussion:** Share experiences and discuss the impact of Artificial Intelligence (AI) on digital communication platforms.

3.3: Digital Citizenship

What is Digital Citizenship?

Digital citizenship refers to the responsible, ethical, and safe use of technology and the Internet. It encompasses a set of norms, rights, and responsibilities that guide individuals' behavior in the digital world.

Importance of Being a Good Digital Citizen in an Online Environment

Being a good digital citizen is crucial for:

1. **Safety and Security:** Protecting oneself and others from online threats like cyberbullying, scams, and identity theft.

2. **Respectful Communication:** Fostering positive and courteous interactions online, avoiding harassment and offensive language.
3. **Ethical Behavior:** Understanding and respecting intellectual property, avoiding plagiarism, and acting with integrity.
4. **Responsible Information Sharing:** Evaluating the credibility of online information and avoiding the spread of misinformation.
5. **Legal Compliance:** Understanding and adhering to laws and regulations governing online activities.
6. **Positive Digital Footprint:** Creating an online presence that reflects positively on oneself and avoiding actions that could have negative consequences.
7. **Community Well-being:** Contributing to a positive and constructive online environment for all users.
8. **Privacy Protection:** Understanding and managing personal information shared online.
9. **Healthy Technology Use:** Balancing online activities with offline life and adopting healthy digital habits.
10. **Environmental Responsibility:** Being mindful of the environmental impact of technology use and adopting sustainable practices.

Identifying Appropriate Netiquette Behaviors in an Online Environment

Netiquette (network etiquette) refers to the set of social conventions governing communication on the Internet. Appropriate netiquette behaviors include:

- **Respectful Communication:**
  - ✓ Using polite and considerate language.
  - ✓ Avoiding offensive, discriminatory, or harassing remarks.
  - ✓ Being mindful of cultural differences and sensitivities.
  - ✓ Respecting others' opinions, even if you disagree.
- **Clarity and Conciseness:**
  - ✓ Writing clearly and avoiding ambiguity.
  - ✓ Keeping messages concise and to the point.
  - ✓ Using proper grammar and spelling.
- **Appropriate Language:**
  - ✓ Avoiding excessive use of slang or jargon that may not be understood by everyone.
  - ✓ Refraining from using all caps, which can be interpreted as shouting.
- **Respecting Privacy:**
  - ✓ Not sharing others' personal information without their consent.
  - ✓ Being mindful of what you share about yourself publicly.
- **Understanding Context:**

- ✓ Recognizing that different online platforms may have different norms and expectations.
- ✓ Observing the tone and style of communication in a particular group or forum.

- **Avoiding Spam and Unsolicited Content:**
  - ✓ Not sending irrelevant or unwanted messages.
  - ✓ Being cautious of chain emails and hoaxes.
- **Giving Credit:**
  - ✓ Citing sources when using others' work or ideas.
  - ✓ Respecting copyright laws.
- **Being Forgiving:**
  - ✓ Accepting that online communication can sometimes lead to misunderstandings.
  - ✓ Being willing to clarify and resolve conflicts respectfully.

Observing Appropriate Netiquette Behaviors in an Online Environment

This involves actively practicing the identified netiquette guidelines in all online interactions, such as:

- When sending emails to classmates or teachers.
- When participating in online forums or discussion boards.
- When interacting on social media platforms.
- When using chat applications for group projects.
- When leaving comments on online content.

Role-playing online personas while adhering to netiquette behaviors can help learners practice these skills in a safe environment. Peer reviews can provide valuable feedback on their communication style and adherence to netiquette.

Using online platforms to simulate appropriate netiquette behaviors can involve setting up mock scenarios (e.g., a class forum) where learners practice posting and responding respectfully and appropriately.

Observing Healthy Practices When Using ICT Technologies

Maintaining healthy practices is essential for physical and mental well-being in the digital age:

- **Ergonomics:**
  - ✓ Maintaining proper posture when using computers and other devices.
  - ✓ Using ergonomic furniture and accessories (e.g., adjustable chairs, monitor stands).

  - ✓ Taking regular breaks to stretch and move around.
  - ✓ Ensuring adequate lighting to reduce eye strain.
- **Eye Care:**
  - ✓ Following the 20-20-20 rule (every 20 minutes, look at something 20 feet away for 20 seconds).
  - ✓ Adjusting screen brightness and contrast.
  - ✓ Using blue light filters.
- **Time Management:**
  - ✓ Setting limits on screen time.
  - ✓ Balancing online activities with offline hobbies and social interactions.
  - ✓ Avoiding excessive use of devices before sleep.
- **Mental Well-being:**
  - ✓ Being mindful of the content consumed online and its impact on mood and self-esteem.
  - ✓ Avoiding cyberbullying and engaging in positive online interactions.
  - ✓ Taking breaks from social media.
- **Physical Health:**
  - ✓ Avoiding prolonged sedentary behavior while using technology.
  - ✓ Staying physically active.

Identifying healthy ergonomic requirements in the user environment involves understanding the principles of ergonomics and how to set up a workstation that minimizes physical strain.

Analyzing Practices for Environmental Conservation to Mitigate Degradation Caused by the Use of Digital Technology

The use of digital technology has environmental impacts that need to be addressed:

- ✓ **Energy Consumption:** Data centers, manufacturing of devices, and internet usage consume significant amounts of energy, contributing to greenhouse gas emissions.
- ✓ **Electronic Waste (E-waste):** Discarded electronic devices contain hazardous materials and contribute to pollution if not properly recycled.
- ✓ **Resource Depletion:** The production of electronic devices requires the extraction of finite natural resources.

Good practices for environmental conservation include:

- **Energy Efficiency:**
  - Using energy-efficient devices and enabling power-saving settings.
  - Turning off devices when not in use.

    - Choosing service providers with green energy initiatives.
- **Electronics Recycling:**
    - Properly disposing of old electronic devices through designated recycling programs.
    - Avoiding landfill disposal of e-waste.
- **Digital Waste Management:**
    - Reducing unnecessary printing.
    - Using cloud storage and digital documents instead of physical copies.
    - Unsubscribing from unwanted emails and reducing digital clutter.
    - Extending the lifespan of devices through proper care and repair.
    - Choosing refurbished or second-hand devices when possible.
- **Sustainable Consumption:**
    - Being mindful of the environmental impact when purchasing new electronic devices.
    - Considering the longevity and repairability of products.

Brainstorming on good practices necessary for environmental conservation resulting from the use of digital technology can help learners understand their role in mitigating the environmental impact of ICT.

Appreciating the Importance of Responsible Use of Technologies

Understanding and practicing digital citizenship, netiquette, healthy habits, and environmental responsibility are crucial for navigating the digital world safely, ethically, and sustainably. Responsible use of technologies contributes to a positive online environment and minimizes negative impacts on individuals and the planet.

Adjusting Privacy Settings on Various Online Platforms

Learners should understand how to control the visibility of their personal information by adjusting privacy settings on platforms like social media and email. This includes understanding who can see their posts, profile information, and who they communicate with.

Maintaining Positive and Responsible Digital Footprints

A digital footprint is the trail of data you create while using the Internet. It's important to be aware that online actions can have long-term consequences. Maintaining a positive and responsible digital footprint involves:

- Thinking before posting.
- Being mindful of the content shared.
- Protecting personal information.

- Engaging in respectful online interactions.

Suggested Learning Experiences

- **Brainstorming:** Discuss the importance of being a good digital citizen in an online environment.
- **Netiquette Research:** Search for information on netiquette behaviors and present findings.
- **Scenario Analysis:** Analyze and present real-world online scenarios, identifying netiquette issues and suggesting improvements.
- **Ethical Behavior Discussion:** Brainstorm unethical behaviors on the Internet.
- **Information Evaluation:** Evaluate online information for biases, misinformation, and source credibility.
- **Role-Playing:** Role-play online interactions adhering to netiquette, with peer reviews.
- **Simulation:** Use online platforms to simulate appropriate netiquette behaviors.
- **Digital Footprint Discussion:** Discuss the importance of maintaining positive and responsible digital footprints.
- **Privacy Settings Adjustment:** Practice adjusting privacy settings on various online platforms.
- **Healthy Practices Brainstorming:** Brainstorm healthy personal practices when using digital devices and ergonomic requirements.
- **Environmental Conservation Discussion:** Brainstorm good practices for environmental conservation related to digital technology use.