



WORLD BANK



**Innovation Development
and Effectiveness
in the Acquisition of Skills**

An abstract geometric design consisting of several overlapping triangles in shades of orange, brown, grey, blue, green, and yellow, arranged in a star-like pattern. A large white circle is positioned to the right of the title box.

INTRODUCTION TO DIGITAL LITERACY/SKILLS

Course Modules/Outline

The contents of this course are designed to support the course objectives. The following focus areas are included in this course:

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OVERVIEW



Digital Literacy is an introductory program intended for those who have limited or no working experience of computers. The major emphasis of the program is to develop the basic skills that are required to create a wide range of standardized business documents. The main objective of this course is to explain to a beginner how a computer works. This course covers basics of computer, Office productivity tools and internet and email.

LEARNING OBJECTIVES



Upon successful completion of the course, participants would:

- Acquire foundational knowledge of essential digital skills necessary for effective teaching and instruction in technical subjects.
- Develop proficiency in using digital tools and technologies to enhance classroom instruction and student engagement.
- Learn effective strategies for incorporating digital resources into lesson planning, curriculum development, and assessment methods.
- Enhance their ability to adapt to the evolving digital landscape and stay updated with emerging technologies relevant to technical education.
- Build confidence in utilizing digital platforms for communication, collaboration, and professional development within the educational community.

LEARNING OUTCOMES



At the end of this course, participants will gain the necessary skills to confidently navigate the digital landscape, communicate effectively online, and leverage various digital tools for personal and professional growth, while maintaining online safety and adhering to ethical practices.

- Gain basic digital literacy skills, including computer fundamentals, troubleshooting, and file management.
- Understand the importance of digital skills in today's world and be aware of emerging technologies.
- Develop effective digital communication skills, such as web browsing, utilizing learning management systems, and evaluating online information.
- Use email and communication tools proficiently, including email etiquette and collaboration platforms.
- Utilize productivity tools for creating documents, spreadsheets, and presentations
- Understand internet and its functionalities.
- Understand and utilize Virtual Learning Environment.
- Practice online Safety.

MODULE 1. BASIC DIGITAL LITERACY

1:1 Definitions and Basic Concepts:

What Is Digital Literacy?

“**Digital literacy** refers to a set of competencies that allow you to function and participate effectively in a digital world”.

“**Digital literacy** refers to someone’s ability to use IT and digital technology to find, evaluate, create and communicate information,”

“**Digital literacy** means having the skills you need to live, learn, and work in a society where communication and access to information is increasingly through digital technologies like internet platforms, social media, and mobile devices.

“**Digital literacy** is an individual's ability to find, evaluate, and communicate information by utilizing digital media platforms. It is a combination of both technical and cognitive abilities in using information and communication technologies to create, evaluate, and share information.

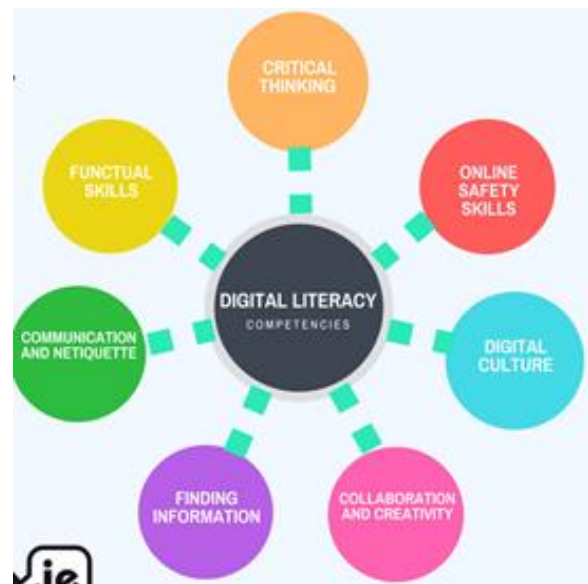


Figure 1.1 Digital Literacy Competencies

Difference between Computer Literacy and Digital Literacy

Computer literacy and digital literacy are related yet distinct.

Computer literacy encompasses the basics of how to use the computer itself. To be literate, for example, you should know how to turn on the computer, how to interact with its components, and how to troubleshoot the machine to resolve common issues.

Digital literacy requires broad knowledge of how to use the machine to accomplish your goals. To be digitally literate, you must know how to find information on the internet, how to avoid scams, and how to use digital tools.

Examples of Computer Literacy Skills

Basic Skills:

- Turn on and off a computer
- Run application software
- Use devices like a mouse or keyboard

- Download and upload a file

Advanced Skills:

- Install a motherboard
- Implement network security
- Write a computer program
- Design artificial intelligence processes

Examples of **Digital Literacy** Skills

- How to find relevant information online.
- What's dangerous? Users must know how to identify scams and protect their personal information online.
- Digitally literate people know the best practices for available programs. If they aren't familiar with a program yet, they also know how to learn more.
- How to communicate well. Digitally literate people understand available communication tools, social media platforms, and best practices for networking.



Figure 1.2 Digital Literacy

Bridging the Digital Divide

Failure to meet the increasing demand for digital skills causes a digital divide where individuals can't fully participate in society, democracy, or the economy without them.

Rather than teaching just technical skills such as computer skills, institutions can develop greater information literacy and teach the digital skills necessary to use technology effectively, hence bridging the digital divide!

1.1.1 Computer Fundamentals

Computer fundamentals refer to the basic functions and operations of the computer system from the time of its origin until modern times.

1.1.2 Introduction to Computer Hardware and Software

Any functional computer system is made up of two categories: hardware and software.

Computer hardware refers to the physical components of the computer system, while computer software refers to the programs and applications that run on the hardware.

Examples of computer hardware include:

1. Central Processing Unit (CPU)
2. Memory: Examples are RAM and ROM.
3. Storage Devices: Examples include hard disk drives, flash drives etc.
4. Input Devices: These keyboards, mice, touchscreens, scanners, and microphones.
5. Output Devices: Examples are monitors, printers, speakers, and headphones, etc.
6. Graphics Processing Unit (GPU).
7. Motherboard

Other examples of computer hardware include:

8. Monitor
9. Keyboard
10. Printer
11. Mouse
12. Photocopying machine
13. Light pen
14. Joystick
15. System Unit
16. Scanner etc.



Fig. 1.3 Computer Hardware

Examples of computer software:

1. Operating System (OS)
2. Application software
3. Utility software
4. Programming Languages
5. Drivers
6. Firmware

1.1.3 Operating Systems and Basic Troubleshooting

What is Operating System?

The operating software (OS) is a software program that acts as an intermediary between the computer hardware and the user.



The Operating System has its functions which includes:

1. Process Management
2. Memory Management
3. File System Management
4. Device Management
5. User Interface
6. Networking
7. Security

Popular operating systems include:

Android, Linux, Windows, Ubuntu, iOS, and macOS

Fig. 1.4 Operating System Components

1.1.4 File Management and Organizations

What is File management?

File management can be defined as the process of arranging, sorting, organizing, manipulating, and storing files on a computer system for easy access and retrieval.

The following are steps involved in file management:

1. File Organization
2. File Creation and Naming
3. File Copying and Moving
4. File Renaming
5. File Deletion
6. File Metadata
7. File Searching and Retrieval
8. File Compression and Archiving
9. File Security

Methods of Accessing Files

These files that are organized on the computer system can be accessed through any of the following methods:

There are several methods of accessing files on a computer or storage device, depending on the operating system and the user's preferences. Here are some common methods:

1. File Explorer/Finder
2. Desktop Icons
3. Start Menu/Dock
4. Recent Files/Recent Documents

5. Search Functionality
6. File Path/Directory Navigation
7. File Open Dialog Box
8. Shortcut/Hotkey
9. Cloud Storage Platforms

1.2 Introduction to Digital Skills

What are Digital skills?

Digital skills refer to the abilities required to use digital technologies effectively.

1.2.1 Importance of Digital Skills in the Modern World

As the world is fast becoming a global village, Digital skills have numerous benefits and importance which cannot be overemphasized. Some of them are listed below:

1. Employability
2. Access to Information and Learning
3. Communication and Collaboration
4. Digital Citizenship and Online Safety
5. Efficiency and Productivity
6. Entrepreneurship and Innovation
7. Civic Engagement and Participation
8. Lifelong Learning and Adaptability
9. Bridge the Digital Divide

1.2.2 Overview of Digital Technologies and Their Impact on Education

What is Digital Technology?

The term "digital technologies" refers to a broad range of equipment, programs, and apparatus that process, store, and transfer data using digital information.

Examples of Digital Technologies

1. Computers
2. Networking and the Internet
3. Mobile Devices
4. Big Data and Analytics
5. Digital media and entertainment

6. Robotics and automation



Figure 1.5 Digital Technology Ecosystem

Digital technologies have had a significant impact on education, changing the way students learn, teachers educate, and educational institutions operate. Here are some of the most significant effects of digital technologies on schooling:

1. Information Availability
2. Enhanced Learning Experiences
3. Engaging and Interactive Teaching Methods
4. Real-World Connections
5. Continuous Learning and Professional Development
6. Data-Driven Decision Making
7. Distance Learning and Online Education
8. Educational Software and Applications
9. Individualized/Personal Learning
10. Collaborative Learning

1.2.3 Digital Skills Trends and Job Opportunities

Examples of digital skills trend:

1. Automation and Robotic Process Automation (RPA)
2. Blockchain Technology
3. User Experience (UX) and User Interface (UI) Design
4. Digital Marketing and Analytics
5. Cybersecurity

6. Data Analysis and Data Science

1.2.4 Introduction To Emerging Technologies (Ai, Ar,4ir, Cloud Computing, Internet Of Things(Iot))

What are emerging technologies?

Emerging technologies are new advancements and developments that are in the early phases of development or adoption and have the potential to have a substantial impact on a variety of industries and aspects of society.

Examples of Emerging Technologies:

1. Artificial Intelligence:

Artificial intelligence (AI) is the simulation of human intelligence in devices that have been designed to reason and acquire knowledge similarly to humans.

Overview of Artificial Intelligence

AI seeks to construct intelligent computers capable of completing tasks autonomously and exhibiting human-like characteristics.

It entails the creation of algorithms, models, and systems capable of processing and analyzing data, learning from patterns, and making informed judgments.

There are two categories of AI: Narrow AI, which focuses on narrow tasks, and General AI, which strives to display human-like intelligence across numerous areas, are the two forms of AI.

Artificial Intelligence Techniques and Approaches:

- Machine Learning (ML) Deep Learning
- Natural Language Processing (NLP)
- Computer vision
- Robotics

AI Applications:

- Healthcare
- Finance
- Transportation
- Customer Service
- Education
- Smart Homes and IoT
- Cybersecurity

2. 4IR: (4th Industrial Revolution)

4IR is an abbreviation for the Fourth Industrial Revolution. It is a word that has been coined to define the current era of technological breakthroughs and its impact on numerous sectors of society, such as the economy, industry, governance, and human life. The Fourth Industrial

Revolution builds on the preceding three industrial revolutions, which saw substantial technology advances and socioeconomic upheavals.

The following are some of the key elements and trends related with the Fourth Industrial Revolution:

Automation and AI

- Internet of Things (IoT)
- Big Data and Analytics.
- Cloud Computing
- Edge Computing
- Additive manufacturing
- Biotechnology and Genetic Engineering
- Cybersecurity and privacy
- Ethical and Social Implications

3. Cloud Computing:

Cloud computing is the distribution of computing resources as a service via the internet.

Key features include:

- Self-service provisioning and access
- Wide network access
- Pooling computing resources
- Rapid elasticity
- Measurable service

Models of Cloud Deployment:

- Third-party cloud service provider
- Private Cloud
- Hybrid Cloud

Models of Cloud Services:

- Infrastructure as a Service (IaaS)
- Platform as a Service (PaaS)
- Software as a Service (SaaS)

The Advantages of Cloud Computing:

- Scalability
- Cost effectiveness
- Flexibility and access
- Reliability and availability
- Collaboration and Integration

4. Internet of Things (IoT)

The Internet of Things (IoT) is a network of physical objects, gadgets, vehicles, appliances, and other items that are equipped with sensors, software, and connections to collect and share data over the internet.

IoT Key Components:

Things are physical things or devices that have sensors, actuators, and connectivity to collect and transfer data.

- Connectivity
- Data Processing
- Applications and Services

IoT Applications:

- Smart Home
- Industrial Internet of Things (IIoT)
- Healthcare
- Smart Cities
- Agriculture
- Wearables (e.g fitness trackers and smartwatches)
- Transportation and Logistics

Advantages of IoT:

- Increased productivity
- Real-time Monitoring and Control
- Data-driven Insights
- Improved Safety and Security
- Improved Quality of Life

Considerations and Challenges:

- Interoperability
- Scalability and network management
- Ethical and Legal Implications

5. Augmented Reality (AR)

Augmented Reality (AR) is a technology that superimposes digital data and virtual objects on top of the real-world environment, improving the user's perception and interaction with their surroundings. Here's a quick primer on augmented reality:

It improves the user's impression of the physical environment by offering more information, context, or interactive experiences.

Important Ideas:

Real-time Overlay: AR systems seamlessly integrate virtual and physical aspects by overlaying digital content onto the real world in real-time.

AR uses computer vision, sensors, and location-based technologies to track and recognize objects, surfaces, and environments.

Interaction: AR allows users to interact with virtual items or digital content that is superimposed on the real world.

Wearable or Mobile Devices: AR experiences can be provided via wearable devices like smart glasses or headsets, as well as smartphones and tablets.

Augmented Reality Varieties:

Marker-based AR: This type of AR requires the use of predetermined markers or visual cues in order for the AR system to recognize and overlay digital material on them.

Markerless AR: Does not utilize markers and instead tracks the environment and places virtual items using computer vision techniques.

Projection-based augmented reality (AR) entails projecting digital content onto physical surfaces to create interactive and dynamic augmented experiences.

Virtual items are layered on the real environment in this sort of AR, aligning with the user's perspective and spatial context.

GPS or other location tracking technologies are used to give AR content and experiences based on the user's location.

AR Applications:

- Gaming
- Education and Training
- Retail and e-commerce
- Healthcare
- Architecture & Design
- Maintenance and Repair

Advantages of AR:

AR enables immersive and interactive experiences that merge virtual and real-world aspects, resulting in interesting user engagements.

Improved Visualization

Increased Efficiency and Accuracy

AR can help in dangerous areas or with important jobs by delivering real-time alerts, safety advice, or situational awareness.

Future Prospects:

AR is predicted to become more prevalent and integrated into a variety of businesses as technology advances.

AR is predicted to become more prevalent and integrated into numerous businesses as hardware, computer vision, and machine learning improve.

Wearable AR devices and smart glasses could improve the user experience and accessibility of AR technologies.

Augmented Reality has the potential to transform how we view and interact with the world by linking the physical and digital worlds. Its applications cover multiple fields, providing consumers and enterprises with unique experiences and practical benefits.

MODULE 2. DIGITAL COMMUNICATION SKILLS

2.1 Internet and Web Browsing.

We would like to highlight two key ideas that you presumably hear frequently to welcome you to this subject when discussing computer technology. They are.

Information technology (IT)

Information and communication technology (ICT).

IT refers to all the tools we use to gather, process, safeguard, and store data, including hardware, software, and computer networks.

ICT encompasses a much broader range of technologies and services involved in computing, data management, telecommunications provision, and the internet. Information transport and use are two key components of the ICT concept, which is the backbone of the economy and a major driver behind societal transformation in the twenty-first century.

For instance, working from home, distance learning, e-banking, and e-government are now feasible from any location with an Internet connection and a computing device. Distance is no longer a barrier to information access.

2.1.1 Understanding The Internet And Its Components.

Internet

The Internet, also known as the "network of all networks," is a global network of linked computers and computer networks that communicate with each other via the TCP/IP protocols. Although it originated from the necessity for straightforward data sharing, it now permeates every aspect of society, such as:

- Economy: electronic trading (stocks, various goods, intellectual services, etc.), internet banking (paying bills, transferring cash, access to account, access to credit debt, etc.), etc.
- Socializing: forums, social media...
- Websites with news, blogs, etc.
- Healthcare includes disease diagnosis, medical examinations (some of which can be performed remotely for people living on islands or in other remote locations), scheduling medical exams, the sharing of medical data between hospitals and research institutions, surgery, and remote surgery monitoring.
- Education: websites with tutorials, professional advice, online training, etc. Online universities with webinars (web + seminar). surgery, remote surgery monitoring, and the transmission of medical information between hospitals and academic institutions.

Internet really does have many applications and a huge social impact. Perhaps the most important trait is information exchange because information exchange among people enables collaboration,

collaboration of like-minded people leads to ideas and actions in real life and coordinated actions of people results in social change.

Take time to consider how technology and the internet's capacity to change the world may affect you and your personal life now that you know more about them.

2.1.2 Web Browsers and Navigating Websites

One of the most crucial digital literacy skills you may have is the ability to do online searches for information. By doing this, you can locate what you're looking for quickly and without having to go through many pages of useless results.

The search engine, a specialized website that searches for information across the Internet, is the most crucial instrument in this procedure. The most well-known ones, such as Google, Yahoo!, and Bing, are presumably ones you are already familiar with. While each of them is helpful, they can also produce distinct results.

Google is the most widely used search engine overall. In fact, it has gained so much traction that it has even evolved into a verb, as in the expression "I'm googling the address right now."

Go to your web browser, then enter your search phrases into the text box on the search engine's home page, such as google.com. You can either press the Enter key or click an icon, like the Google Search button or a magnifying glass, to display your results.

2.1.3 Use of Learning Management Systems to Enhance Delivery.

A Learning Management System (LMS) is a software application or platform that facilitates the administration, delivery, and management of educational courses and training programs. It provides a centralized hub where instructors can create, organize, and deliver content, and learners can access and interact with that content.

To enhance delivery here are some ways the LMS can be utilized:

1. **Centralized Content Repository:** LMS platforms provide a central hub for storing and organizing educational content. For example, Moodle is a widely used open-source LMS that allows instructors to upload and organize course materials such as lecture notes, presentations, and documents. Learners can access these materials through Moodle's web interface, facilitating easy web browsing within the LMS.
2. **Online Course Delivery:** LMS platforms enable instructors to create and deliver online courses. Canvas is a popular LMS that offers a user-friendly interface for designing and delivering online courses. Instructors can create multimedia-rich lessons, embed external web resources, and facilitate discussions within the course. Learners can browse through the course modules and access web-based content seamlessly.
3. **Collaboration and Communication:** LMS platforms often include communication tools to foster collaboration among learners and instructors. For instance, Blackboard Learn is an LMS that provides discussion boards, chat functionalities, and messaging systems. Learners

can engage in online discussions, collaborate on group projects, and seek guidance from instructors, all within the web browsing environment of the LMS.

4. **Tracking Learner Progress:** LMS platforms allow instructors to monitor and track learner progress. For example, Schoology is an LMS that provides comprehensive analytics and reporting features. Instructors can view learner activity logs, track completed modules, and analyze quiz or assignment performance. Learners can also see their own progress, motivating them to continue browsing and engaging with the course materials.
5. **Assessment and Feedback:** LMS platforms offer assessment tools for instructors to create and administer quizzes, assignments, and exams. For instance, Google Classroom is a user-friendly LMS that enables instructors to design online quizzes and assignments. Learners can complete these assessments within the LMS interface, receiving immediate feedback on their performance, thereby enhancing the web browsing experience and promoting learning through online assessments.
6. **Mobile Learning:** Many LMS platforms are designed to be mobile-responsive, allowing learners to access educational content and participate in learning activities using smartphones or tablets. For example, Edmodo is an LMS that offers a mobile app, enabling learners to browse course materials, view announcements, and engage in discussions through their mobile devices. This flexibility enhances the web browsing experience, catering to learners who prefer accessing course content on the go.

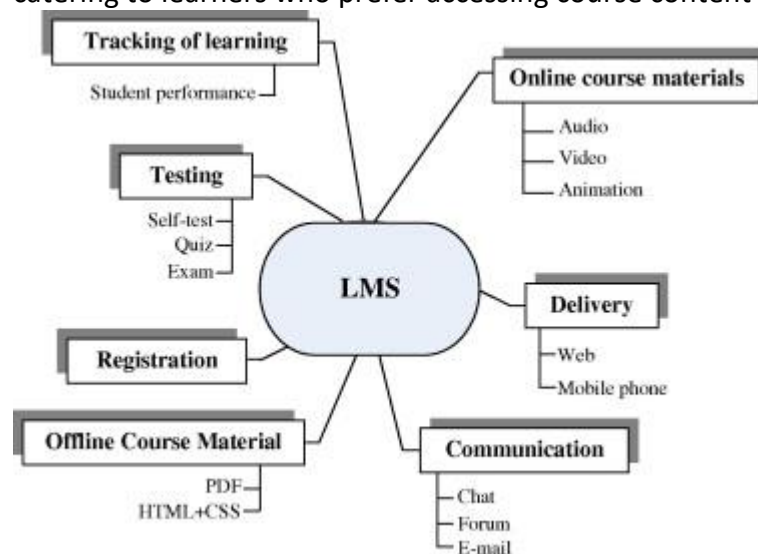


Fig 2.1 Learning Management System

2.1.4 Searching the Web Effectively and Evaluating Online Information.

You can locate practically anything you want using a few simple search techniques. These methods work regardless of whether you use Google or another search engine because they are effective everywhere you search.

- Use specific keywords: Choose keywords that accurately represent the topic you're researching. Be specific and use relevant terms to narrow down your results. For example, instead of searching for "animals," try "endangered species in Africa."
- Use quotation marks: If you're looking for an exact phrase, put it in quotation marks. This tells Google to search for the exact wording of the phrase, rather than individual words scattered throughout the text.
- Utilize Boolean operators: Google recognizes Boolean operators such as "AND" "OR" and "NOT." You can use them to combine or exclude keywords in your search query to refine your results. For example, "climate change AND impacts" will retrieve results that include both "climate change" and "impacts."
- Utilize site-specific search: If you want to search for information on a specific website, you can use the "site:" operator followed by the domain name. For example, "site: wikipedia.org global warming" will retrieve results only from Wikipedia related to global warming.
- Utilize filetype search: If you're looking for a specific type of file, such as a PDF or a PowerPoint presentation, you can use the "filetype:" operator followed by the file extension. For example, "filetype: pdf renewable energy" will retrieve results that include only PDF files related to renewable energy.
- Use Google's advanced search filters: Google offers advanced search filters that allow you to refine your results based on parameters such as date, location, and language. You can access these filters by clicking on "Settings" under the search bar and selecting "Advanced search."
- Explore related search suggestions: Google provides related search suggestions at the bottom of the search results page or in the dropdown menu as you type your query. These can be useful in discovering related keywords or alternative search terms that may yield more relevant results.
- Review search results critically: Evaluate the credibility and relevance of the search results by checking the sources, considering the expertise of the authors, and cross-referencing information from multiple sources to ensure accuracy.

By using a combination of these strategies, you can optimize your Google searches and improve the accuracy and relevance of your search results. Remember to refine and adjust your search queries as needed to obtain the most relevant information for your research or inquiry.

2.1.5 Introduction to Ai Tools

Examples of Ai Tools (Grammarly, Chat Gpt, Paraphrasing Tools)

AI tools have become increasingly popular in recent years, and there are many different types of AI tools available.

Some of the most used AI tools include Grammarly, Chat GPT, and paraphrasing tools.

Grammarly is an AI-powered writing assistant that uses machine learning and natural language processing to enhance your writing by detecting and correcting grammar, spelling, and punctuation errors.



Fig 2.2 Use of Grammarly

Chat GPT is an AI chatbot that uses natural language processing to create human-like conversational dialogue.

Paraphrasing tools are software applications that use artificial intelligence to rephrase text, and they can be a handy tool if you want to refresh your work, adapt it for different platforms or



audiences, and meet specific requirements.

These AI tools can help you improve your writing skills, generate quality text, and streamline your writing process.

Fig 2.2 Chat GPT

2.2 Email and Communication Tools

2.2.1 Basics of Email Communication and Etiquette.

Email communication refers to the exchange of messages between individuals or groups using electronic mail (email). It involves composing, sending, receiving, and managing messages through

an email service or client. Email has become a widely used and convenient method of communication, allowing individuals to send written messages, documents, images, and other files to recipients around the world instantaneously.

Basic etiquettes for email communication:

1. Use a Clear and Descriptive Subject Line. Example: "Meeting Request for Project Update - Urgent"
2. Start with a Proper Greeting. Example: "Dear Mr. Smith," or "Hello Jane,"
3. Keep the Email Concise and Clear. Example: "I am writing to follow up on the progress of the project. We need to discuss the upcoming deadlines and potential challenges. Could we schedule a meeting this week to go over the details?"
4. Be Polite and Professional. Use courteous language, avoid using all caps (which can be perceived as shouting), and double-check for spelling and grammar errors. Example: "Thank you for your prompt response. I appreciate your assistance in resolving this matter."
5. Utilize proper formatting techniques to enhance readability. Use appropriate fonts, font sizes, and colors. Break up the text into paragraphs and use white space effectively.
6. Respond to emails in a timely manner, especially if the sender has requested a response. If you are unable to reply immediately, acknowledge the email and inform the sender of when they can expect a response. Example: "Thank you for your email. I will review the information and provide a detailed response by the end of the day."
7. Conclude your email with an appropriate closing, such as "Sincerely," "Best regards," or "Thank you". Create a professional email signature that includes your full name, job title, company name, contact information, and any relevant links, such as your LinkedIn profile. Example: Best regards, John Doe Marketing Manager ABC Company Phone: 555-123-4567 LinkedIn: [LinkedIn URL]
8. Ensure that you don't share sensitive or confidential information in emails unless it's necessary and appropriate. Be cautious about the recipients and consider using encryption when needed. Example: Instead of including sensitive financial details in the email, you can write, "Let's discuss the financial figures in our meeting tomorrow to ensure confidentiality."
9. Always proofread your emails before sending them. Check for any errors, clarity, and tone. Read the email from the recipient's perspective to ensure it conveys the intended message.

2.2.2 Setting Up and Managing Email Accounts

Setting up and managing email accounts is a fundamental aspect of email communication. Here's a step-by-step guide on how to set up and manage an email account:

1. **Choose an Email Service Provider:** There are several email service providers to choose from, such as Gmail, Outlook, Yahoo Mail, and Zoho Mail. Consider factors like user interface, storage capacity, security features, and additional services offered.
2. **Sign Up for an Account:** Visit the website of your chosen email service provider and click on the "Sign Up" or "Create Account" button. Provide the required information, including your preferred email address and a strong password. Some providers may also ask for personal details like your name, phone number, and date of birth.

3. **Select Your Email Address:** Choose a unique and professional email address that reflects your identity or the purpose of the account. It should be easy to remember and preferably include your name or a variation of it.
4. **Set Up Two-Factor Authentication (2FA):** Enable two-factor authentication for enhanced security. This adds an extra layer of protection by requiring a verification code, usually sent to your mobile device, in addition to your password when logging in.
5. **Customize Account Settings:** Explore the account settings to personalize your email experience. You can modify display settings, notification preferences, language, time zone, and signature.
6. **Organize Your Inbox:** Create folders or labels to organize your incoming and outgoing emails. Use categories like work, personal, and subscriptions to keep your inbox clutter-free and easily searchable.
7. **Configure Email Client:** If you prefer using an email client (software) instead of the web interface, configure it to access your email account. Popular email clients include Microsoft Outlook, Mozilla Thunderbird, and Apple Mail. Follow the client's instructions to set up your account by entering your email address, password, and server details.
8. **Regularly Check and Respond to Emails:** Make it a habit to check your emails regularly and respond promptly to important messages. Prioritize emails based on urgency and importance. Use filters, search functions, and labels to efficiently manage and locate specific emails.
9. **Protect Your Account:** Take measures to protect your email account from unauthorized access. Keep your password strong, avoid sharing it with others, and be cautious of phishing attempts and suspicious email attachments. Regularly update your password and enable security features like account recovery options.
10. **Manage Storage:** Monitor your email storage usage, especially if there are limitations. Regularly delete unwanted emails, empty the trash folder, and archive important messages to free up space. Consider saving large attachments to a cloud storage service like Google Drive or Dropbox and including the link in your email instead.
11. **Update Account Information:** Keep your account information up to date. Update your profile details, alternate email address, and phone number in case account recovery or verification is needed.

2.2.3 Introduction to Online Collaboration Tools

Online collaboration tools are software applications or platforms that facilitate teamwork and communication among individuals or teams working remotely or in different locations. These tools provide a virtual workspace where users can collaborate in real-time, share documents, exchange ideas, assign tasks, and track progress. They enable seamless communication, coordination, and cooperation among team members, regardless of their physical distance. These have been grouped according to their functions.

Communication and Messaging Tools: These tools facilitate instant communication and collaboration through text, voice, and video. Examples include:

- Slack: A team communication platform that allows real-time messaging, file sharing, and integration with other productivity tools.

- Microsoft Teams: A chat-based collaboration tool that combines messaging, video conferencing, and file sharing in one platform.
- Zoom: A video conferencing tool that enables virtual meetings, webinars, and screen sharing for remote collaboration.

File Sharing and Document Collaboration Tools: These tools focus on sharing and editing documents, files, and folders in a collaborative manner. Examples include:

- Google Drive: A cloud-based storage and collaboration platform that allows users to create, store, and share files, including documents, spreadsheets, and presentations.
- Microsoft OneDrive: A file hosting service that integrates with Microsoft Office applications, enabling users to store, share, and collaborate on files in real-time.
- Dropbox: A cloud storage and file sharing platform that provides seamless collaboration features, allowing teams to work on shared files simultaneously.

Project Management Tools: These tools help teams plan, organize, and track projects, tasks, and deadlines. Examples include:

- Trello: A visual project management tool that uses boards, lists, and cards to organize tasks and track progress.
- Asana: A comprehensive project management platform that allows teams to create, assign, and track tasks, set deadlines, and collaborate on projects.
- Jira: A powerful project management tool primarily used for software development, allowing teams to track issues, bugs, and agile project workflows.

Virtual Whiteboarding and Mind Mapping Tools: These tools provide a digital space for brainstorming, idea generation, and visual organization. Examples include:

- Miro: An online whiteboard platform that allows teams to collaborate visually, create diagrams, and organize ideas in real-time.
- Lucid chart: A web-based diagramming and visualization tool that enables teams to create flowcharts, mind maps, and wireframes collaboratively.

How To Share Files Using The Google Drive Collaboration Tool.

Google Drive is a cloud service by Google to allow sharing of content digitally. It helps to save, sync, and access files across devices. Follow the below steps to share files (pictures, videos, and documents) via Google Drive.

Here are the steps to share a file on Google Drive:

1. Sign into your Google Drive account on a web browser.
2. Locate the file you want to share and click on it to select it.
3. Click on the "Share" button located in the upper right corner of the screen.
4. In the "Share with people and groups" section, enter the email addresses of the individuals you want to share the file with. You can also choose whether you want to give them editing, commenting, or viewing access.

5. If you want to share the file with anyone who has the link, click on "Change" next to "Anyone with the link" and select "On - Anyone with the link."
6. Choose whether you want the recipients to be able to edit, comment, or view the file.
7. If you want to notify the recipients that you have shared the file, check the box next to "Notify people."
8. Add a message to the email if you would like to, then click "Send" to share the file.

That's the end of it! The recipients will receive an email with a link to the file, which they can open in their own Google Drive account and save to their computer or device.

MODULE 3. PRODUCTIVITY TOOLS

3.1 Presentation Tools

3.1.1 Introduction to Word Processing Software

Word processing software is a computer program that allows users to create, edit, and format text documents. Word processing software is used for a wide variety of tasks, including writing letters, reports, essays, books, and more.

Word processing software is a powerful tool that can be used for a wide variety of tasks. By learning the basics of word processing software, you can create professional-looking documents that are easy to read and understand.

Common features of word processing software

Most word processing software programs include the following features:

- Text editing: Users can type and edit text, including changing the font, size, color, and style.
- Formatting: Users can format text using a variety of tools, such as bold, italics, underline, and alignment.
- Graphics: Users can insert images, charts, and other graphics into their documents.
- Tables: Users can create and edit tables in their documents.
- Collaboration: Users can share and collaborate on documents with others in real time.

Popular word processing software programs

Some popular word processing software programs include:

- Microsoft Word
- Google Docs
- Apple Pages
- LibreOffice Writer
- WordPerfect
- Google Apps

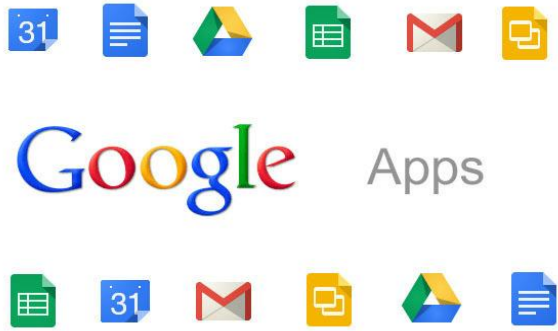


Fig. 3.1 Google Applications

Overview of Microsoft Word and Google Docs

Microsoft Word and Google Docs are two of the most popular word processing software programs. Both programs offer a wide range of features for creating, editing, and formatting text documents.



Fig. 3.2 Microsoft

Microsoft Word is a desktop application that is available as part of the Microsoft Office suite. It is the most popular word processing program in the world, and it is known for its powerful features and wide range of templates and formatting options.

Google Docs is a web-based word processing program that is part of the Google Workspace suite. It is free to use, and it offers a variety of features that are similar to Microsoft Word, such as text editing, formatting, tables, and collaboration tools.



Fig. 3.3 Google Docs.

Which word processing program should you choose?

The best word processing program for you will depend on your individual needs and preferences. If you need a program with powerful features and a wide range of templates and formatting options, then Microsoft Word is a good choice. If you are looking for a free and easy-to-use program with collaboration tools, then Google Docs is a good choice.

Feature	Microsoft Word	Google Docs
Cost	Paid Subscription	Free
Availability	Desktop App, Web App, Mobile App	Web App, Mobile App
Offline Access	Yes	Yes
Collaboration Tools	Yes	Yes
Templates	Yes	Yes
Formatting options	Extensive	Less Extensive

Table 3.1

3.1.2 Creating and Formatting Documents on Microsoft Word and Google Docs

In this section, we will delve into the essential steps of creating, editing, and formatting documents using Microsoft Word and Google Docs.

Getting Started with Microsoft Word and Google Docs

We'll begin by familiarizing ourselves with the user interfaces of both software applications and understanding the basic features they offer.

Microsoft Word:

Upon launching Microsoft Word, you'll be greeted by a user-friendly interface with a ribbon at the top containing various tabs. These tabs, such as Home, Insert, Page Layout, and References, provide access to different sets of tools and features. The document window occupies the main area where you can create and edit your document.

Creating and Formatting Documents in Microsoft Word

To create a new document in Microsoft Word, click the New button on the File tab. You can also create a new document by pressing Ctrl+N on your keyboard.

To create a new document in Microsoft Word:

1. Open Microsoft Word.
2. Click on the "File" tab at the top left corner.
3. Select "New" from the menu.
4. Choose a blank document template or select from available templates.
5. A new document will open, ready for editing.

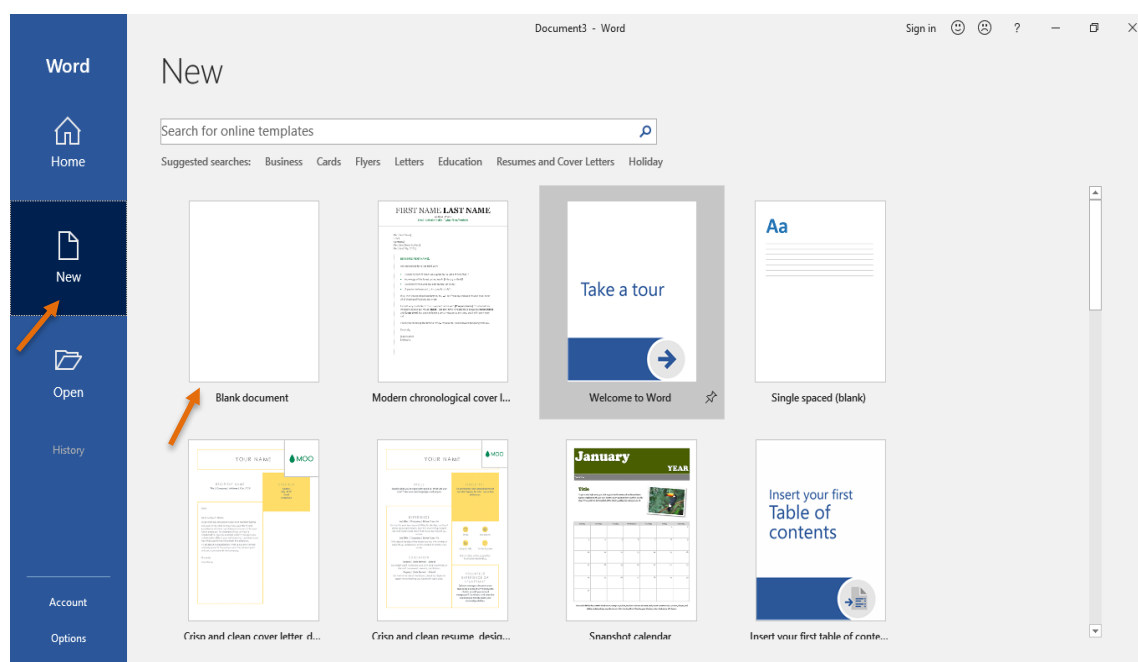


Fig. 3.4 Creating New Document in Microsoft word

Typing and editing text

Once you have created a new document, you can start typing text. To edit text, select the text that you want to change and then type the new text. You can also use the following keyboard shortcuts to edit text:

- Ctrl+C to copy text
- Ctrl+V to paste text
- Ctrl+X to cut text
- Ctrl+Z to undo the last action
- Ctrl+B to embolden text
- Ctrl+I to italicize text
- Ctrl+U to underline text

Formatting text

Microsoft Word offers a variety of formatting options for text. To format text, select the text that you want to format and then apply the desired formatting options.

Some common formatting options include:

- **Font:** Change the font, font size, and font color.
- **Alignment:** Align the text to the left, right, center, or justify.
- **Bold, italics, underline:** Make the text bold, italicized, or underlined.
- **Highlighting:** Highlight the text with a color of your choice.
- **Lists:** Create bulleted or numbered lists.
- **Tables:** Create and edit tables.
- **Borders and shading:** Add borders and shading to text and tables.

You will learn about **The Ribbon**, **Quick Access Toolbar**, **File Menu** and other key parts of Word.

The Ribbon

The Ribbon **runs along the top, contains all the Word tools**, and **is organized into three parts**:

- **Tabs** – represent a general activity area
- **Groups** – show related tools (commands) together
- **Commands** – a button, expandable menu, or a box for entering related information

Click the various Tabs: observe how the Groups and Commands change based on the selected Tab.

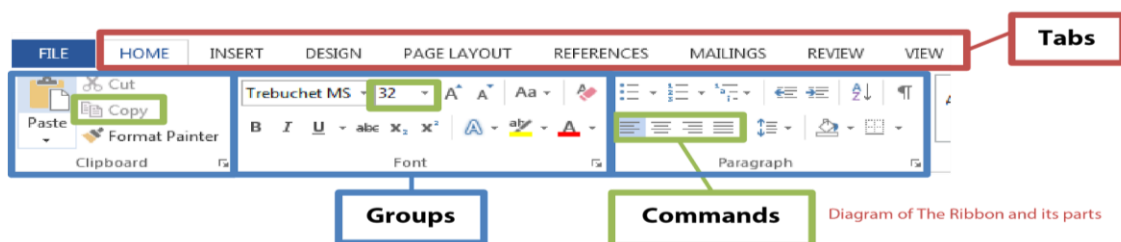


Fig. 3.5 Overview of Microsoft word Ribbon

Inserting images, tables, and other objects

Microsoft Word allows you to insert images, tables, and other objects into your documents.

To insert an image, click the Insert tab and then click the Pictures button. To insert a table, click the Insert tab and then click the Table button.

You can also insert other objects into your documents, such as shapes, charts, and equations. To do this, click the Insert tab and then click the desired object button.

Saving and sharing documents

Once you have finished creating and formatting your document, you can save it to your computer or share it with others.

To save a document in Microsoft Word, click the Save button on the File tab. You can also save a document by pressing Ctrl+S on your keyboard.

To share a document in Microsoft Word, click the Share button on the File tab. You can then choose to share the document with others by email, OneDrive, or other methods.

Here are some additional tips for creating and formatting documents in Microsoft Word:

- Use styles to format your text. Styles are a collection of formatting options that you can apply to text. To use styles, click the Home tab and then click the Styles button.
- Use templates to create documents quickly and easily. Microsoft Word includes a variety of templates for different types of documents, such as letters, reports, and resumes. To use a template, click the File tab and then click the New button. Then, click the Templates tab and choose a template.
- Use the proofing tools to check your documents for grammar and spelling errors. To do this, click the Review tab and then click the Proofing button.

Google Docs:

When you open Google Docs, you'll see a clean and minimalist interface. The toolbar at the top offers options for formatting, inserting elements, and collaborating. The document itself occupies the majority of the screen, providing ample space for content creation.

Creating a New Document in Microsoft Word and Google Doc

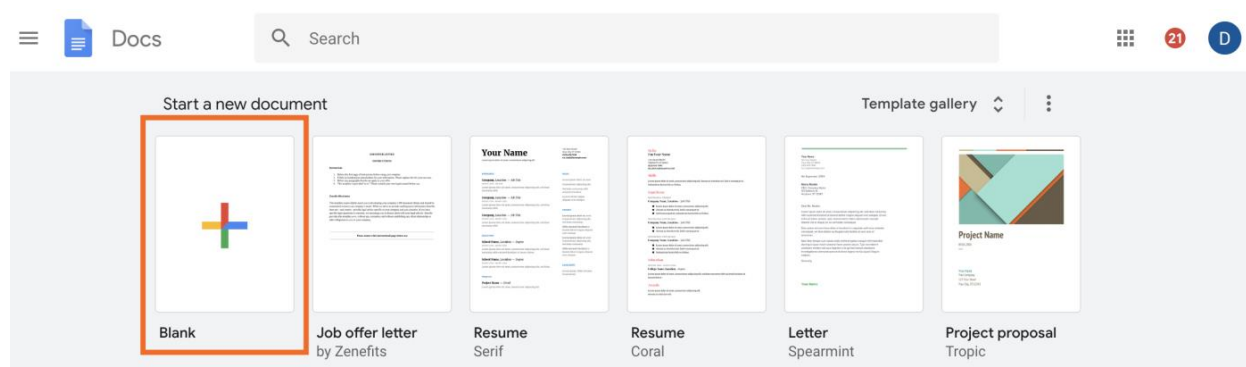


Fig. 3.6 creating new Document on google docs.

To create a new document in Google Docs:

1. Go to Google Docs (docs.google.com) in your web browser.
2. Sign in to your Google account if prompted.
3. Click on the "+" (plus) button in the lower right corner.
4. A new blank document will open, ready for editing.

Formatting Text and Paragraphs

Once you have created a new document, you can start typing text. To edit text, select the text that you want to change and then type the new text.

Formatting Text:

Both Microsoft Word and Google Docs offer a variety of formatting options for text. To format text, select the text that you want to format and then apply the desired formatting options.

Some common formatting options include:

- **Font:** Change the font, font size, and font color.
- **Alignment:** Align the text to the left, right, center, or justify.
- **Bold, italics, underline:** Make the text bold, italicized, or underlined.
- **Highlighting:** Highlight the text with a color of your choice.
- **Lists:** Create bulleted or numbered lists.

Inserting images, tables, and other objects

Both Microsoft Word and Google Docs allow you to insert images, tables, and other objects into your documents.

To insert an image, click the Insert tab and then click the Pictures button. To insert a table, click the Insert tab and then click the Table button.

Saving and sharing documents

Once you have finished creating and formatting your document, you can save it to your computer or share it with others.

To save a document in Microsoft Word, click the Save button on the File tab. In Google Docs, click the File menu and then click the Save button.

To share a document in Microsoft Word, click the Share button on the File tab. In Google Docs, click the Share button in the top right corner of the page.

Additional tips for creating and formatting documents

Here are some additional tips for creating and formatting documents in Microsoft Word and Google Docs:

- Use headings and subheadings to organize your text.
- Use bullet points and numbered lists to make your text more concise and easier to read.
- Use the formatting tools to make your documents visually appealing.
- Proofread your documents carefully before saving or sharing them.

3.1.3 Spreadsheet Basics Using Microsoft Excel or Google Sheets

In this section, we will explore the fundamentals of working with spreadsheets using Microsoft Excel and Google Sheets. Spreadsheets are versatile tools used for organizing, analyzing, and manipulating data.

Introduction to Spreadsheets and Their Applications

Spreadsheets are a powerful tool for managing numerical data, making calculations, and presenting information in a structured format. They find application in various fields, including finance, project management, data analysis, and inventory tracking. Understanding how to work with spreadsheets is essential for effective data management and analysis.

Overview of Microsoft Excel and Google Sheets

Microsoft Excel and Google Sheets are two widely used spreadsheet applications, each offering its unique features and capabilities.

To create a new document in excel, follow the same process used in creating a new document for Microsoft word.

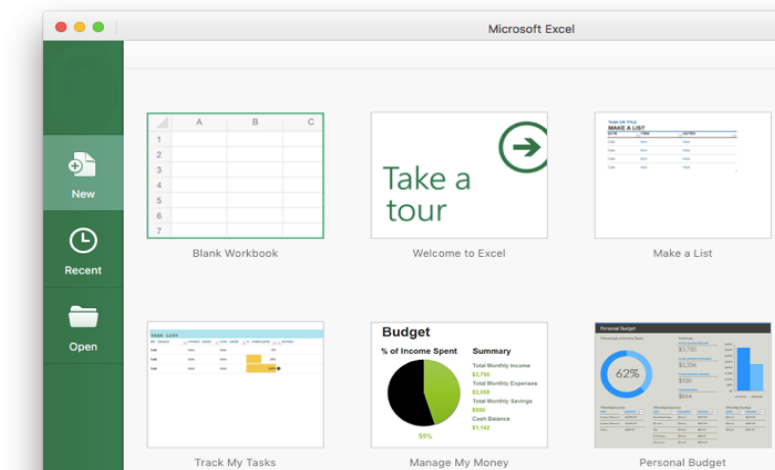


Fig 3.7 Microsoft Excel

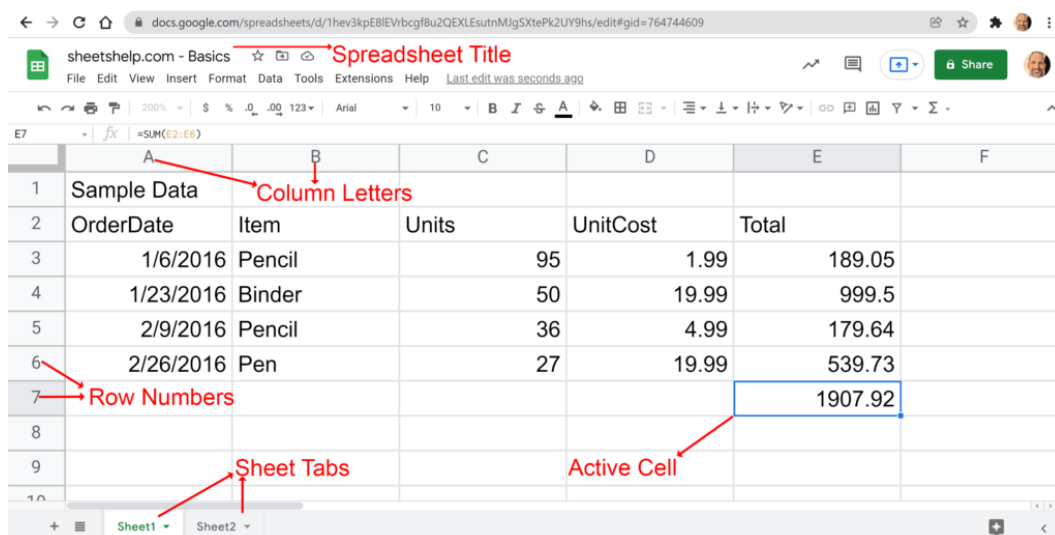


Fig. 3.8 Google Sheets

Data Entry, Formatting, and Manipulation

To effectively work with spreadsheets, it's important to understand data entry, formatting, and manipulation techniques in both Excel and Sheets.

Data Entry:

Both Excel and Sheets offer similar data entry methods:

1. Open the spreadsheet application (Excel or Sheets).
2. Click on the cell where you want to enter data.

3. Type the data into the selected cell.
4. Press Enter to move to the next cell.

Formatting:

Formatting steps for both Excel and Sheets:

1. Select the cells or range of cells you want to format.
2. Access the formatting options:
 - In Excel, click on the Home tab.
 - In Sheets, click on the Format menu.
3. Use the formatting options to format the selected cells, such as font, alignment, and number formatting.

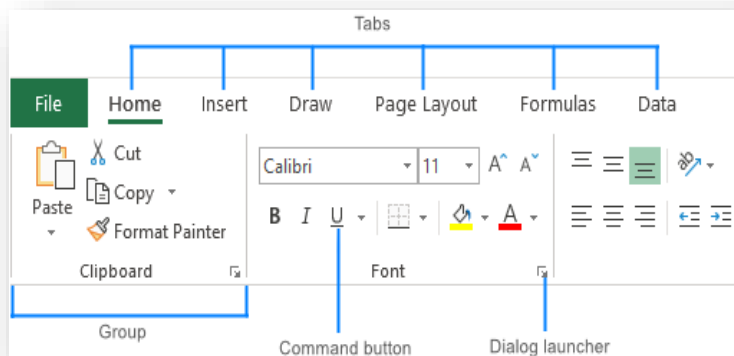


Fig. 3.9 Formatting Options in MS Excel

Manipulation:

Manipulation steps for both Excel and Sheets:

1. Select the data range you want to manipulate.
2. Use the available functions and features, such as sorting, filtering, and formulas, to manipulate the data.

Sorting:

- In Excel, click on the Data tab.
- In Sheets, click on the Data menu.
- Choose the sort order and apply the sorting to the selected range.

Filtering:

- In Excel, click on the Data tab.
- In Sheets, click on the Data menu.
- Enable filtering for the selected range.
- Use the filter arrows in the header row to set filter criteria.
- Formulas and Functions:
 - Select the cell where you want the result to appear.
 - Type the equal sign (=) to start a formula.
 - Enter the formula using cell references, mathematical operators, and functions.
 - Press Enter to calculate the result.

Conditional Formatting

Conditional Formatting steps for both Excel and Sheets:

1. Select the data range you want to apply conditional formatting to.
2. Access the conditional formatting options:
 - In Excel, click on the Home tab.
 - In Sheets, click on the Format menu.
3. Specify the conditions for applying formatting.
4. Choose the desired formatting options based on the selected conditions.
5. Apply the conditional formatting to the selected range.

Sorting, Filtering, and Conditional Formatting

Sorting:

- Select the data range you want to sort.
- In Microsoft Excel, click on the Data tab. In Google Sheets, click on the Data menu.
- In both applications, choose the sort order by selecting the column you want to sort by and selecting either ascending or descending order.
- Apply the sorting to the selected range.

Filtering:

- Select the data range you want to filter.
- In Microsoft Excel, click on the Data tab. In Google Sheets, click on the Data menu.
- Enable filtering for the selected range.
- Filter arrows will appear in the header row of each column.
- Click on the filter arrow for a specific column and choose the filter criteria from the drop-down menu.
- Apply multiple filters to refine the data further.

Conditional Formatting:

- Select the data range you want to apply conditional formatting to.
- In Microsoft Excel, click on the Home tab. In Google Sheets, click on the Format menu.
- Access the conditional formatting options.
- Specify the conditions for applying formatting.
- Choose the desired formatting options based on the selected conditions.
- Apply the conditional formatting to the selected range.

Collaboration and Data Sharing Options

Both Excel and Sheets offer collaboration features that enable multiple users to work on the same spreadsheet and share data seamlessly.

Collaboration:

Excel allows users to collaborate on spreadsheets using SharePoint or OneDrive, allowing simultaneous editing, commenting, and tracking changes.

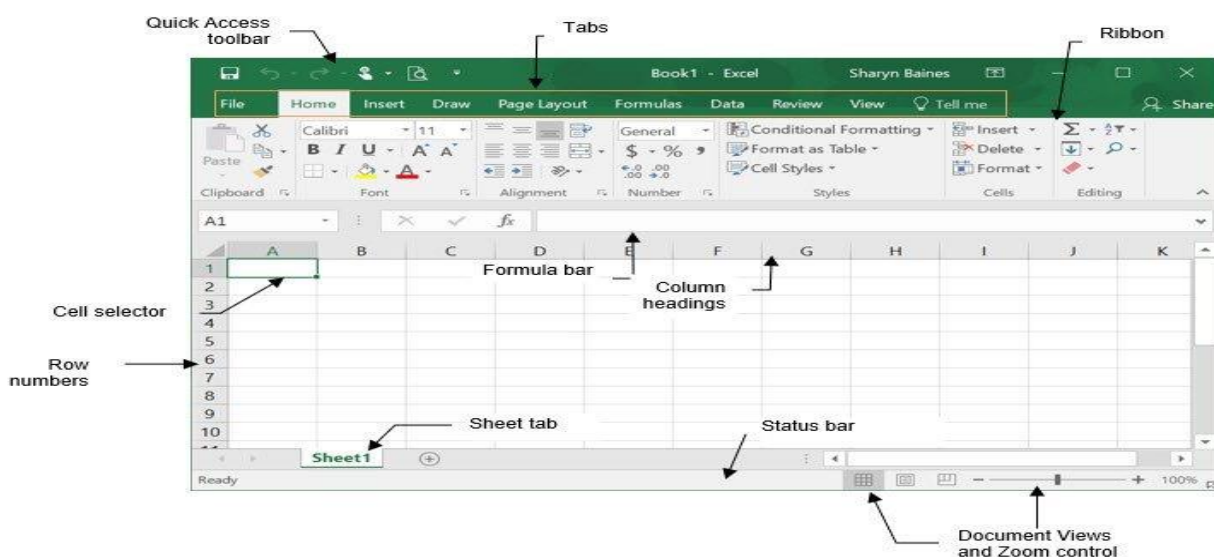
Sheets, being a web-based application, excels in real-time collaboration, where multiple users can work together on the same spreadsheet simultaneously.

Data Sharing:

Excel and Sheets provide options for sharing spreadsheets with others. You can specify access levels, such as view-only, commenting, or editing permissions. Shareable links or direct invites via email are commonly used for data sharing.

By mastering the skills covered in this section, you will gain a solid foundation in spreadsheet basics, data manipulation, and collaboration using both Microsoft Excel and Google Sheets. These skills will empower you to efficiently organize, analyze, and share data, boosting productivity in various personal and professional endeavors!

Fig 3.9.1 Microsoft Excel Interface



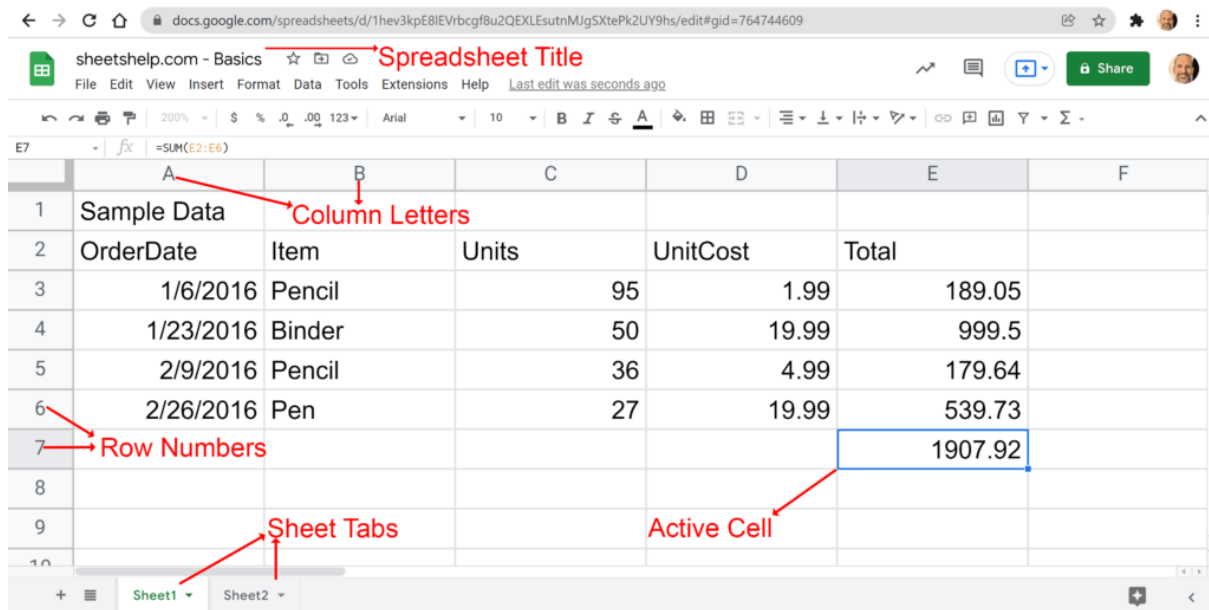


Fig. 3.9.2 Google Spreadsheet Interface

3.1.4 Designing Effective Presentations with Microsoft PowerPoint or Google Slides

Themes and transitions can significantly impact the overall visual appeal and coherence of your presentation. Let's delve into the theme and transition options offered by PowerPoint and Slides.

Applying Themes and Transitions

Themes:

Both applications provide a range of pre-designed themes and templates that define the visual style of your presentation. Here's how to apply and modify themes for a consistent and professional look:



Section Three- Microsoft PowerPoint:

1. Open your presentation in PowerPoint.
2. Click on the Design tab.
3. Browse the available themes and choose the one that suits your presentation.
4. To modify colors, fonts, and backgrounds, click on the Variants button in the Themes group and select the desired option.

Fig. 3.9.3 Microsoft Power Point

Google Slides:

1. Open your presentation in Slides.
2. Click on the Theme button in the toolbar.
3. Choose a theme from the available options or import a custom theme.
4. Customize colors, fonts, and backgrounds by clicking on the Customize button in the theme panel and making the desired changes.

Transitions:

Transitions add visual effects between slides to create smooth and seamless transitions. Here's how to apply transitions effectively in PowerPoint and Slides:

Microsoft PowerPoint:

1. Select the slide where you want to apply a transition.
2. Click on the Transitions tab.
3. Choose a transition effect from the available options.
4. Customize the transition duration and other settings using the options in the Timing group.

Google Slides:

1. Select the slide where you want to apply a transition.
2. Click on the Transition button in the toolbar.
3. Choose a transition effect from the available options.
4. Adjust the transition duration and other settings using the toolbar options.

Collaboration and Presentation Delivery Options

Both PowerPoint and Slides offer collaboration features and multiple options for delivering your presentation.

Collaboration:**PowerPoint:**

1. Save your presentation to SharePoint or OneDrive.
2. Share the presentation with collaborators by sending a link or inviting them directly.
3. Collaborators can access and edit the presentation simultaneously, making changes and leaving comments.

Slides:

1. Share the presentation with collaborators by sending a link or inviting them directly.
2. Collaborators can access and edit the presentation simultaneously, leave comments, and track changes.
3. The changes are saved in real-time, ensuring seamless collaboration.

Presentation Delivery:

Both PowerPoint and Slides provide options for delivering presentations in various formats.

1. Presenting directly from the software: Click on the presentation mode or slideshow mode to begin presenting directly from PowerPoint or Slides.
2. Saving as a video file: Look for the options to export or save as a video file in PowerPoint or Slides. This is useful for sharing your presentation without the need for the actual software.
3. Exporting as a PDF: PowerPoint and Slides enable you to export your presentation as a PDF file, retaining formatting and making it easy to share and view.

Additional features:

- PowerPoint offers features like presenter view, which allows you to see speaker notes and upcoming slides while presenting.
- Slides provide seamless integration with Google Meet, enabling you to present within a virtual meeting.

By mastering the skills covered in this section, you will gain the knowledge and expertise to design visually appealing and engaging presentations using both Microsoft PowerPoint and Google Slides. Remember to practice and explore the features of each application to maximize the impact of your presentations!

Course Summary:

"Productivity Tools: Microsoft vs. Google" is a comprehensive course that explores word processing, spreadsheets, and presentations using Microsoft and Google's productivity tools.

You'll start by learning about Microsoft Word and Google Docs, understanding their features and how to create and format documents.

Next, delve into spreadsheets with Microsoft Excel and Google Sheets, covering data entry, formatting, formulas, functions, sorting, filtering, and collaboration.

Then, discover the art of designing effective presentations using Microsoft PowerPoint and Google Slides. Learn to create and organize slides, add text, images, multimedia, apply themes, transitions, and collaborate on presentations.

By the end of the course, you'll have gained valuable skills in using these productivity tools, empowering you to enhance your productivity and effectively communicate ideas.

MODULE 4. VIRTUAL LEARNING ENVIRONMENT

4.1 Introduction to Online Learning and Conferencing Tools

4.1.1 Introduction to Collaborative Tools:

Software platforms or programs known as collaboration tools are created to promote and improve cooperation amongst individuals or teams working on common tasks or projects. These solutions offer a digital setting for teamwork and data exchange across time zones and locations, as well as for communication and effort coordination.

Some Examples of Collaborative tools:

1. Zoom
2. Google meet
3. Teams
4. Google Docs
5. Jira
6. Google Drive
7. Dropbox.
8. Slack Etc.

Zoom: It is a popular video and audio collaborator tool that allows individuals to communicate remotely. It offers a venue for holding online events including webinars, training sessions, and virtual meetings.

4.1.2 How to Use Zoom and Its Features for Learning:

Zoom could be a great platform for learning as it allows for video conferencing where face-to-face interaction can be utilized, it also allows screen sharing, allows a large number of participants, breakout rooms, a chat system, and so on. But first one needs to sign up or register to use

1. Sign up and download Zoom: Visit zoom.us and sign up for a free account, you could also download the app to your device
2. Schedule a meeting: After signing in to your Zoom account you could schedule a meeting by clicking "Schedule a meeting"
3. Start an instant meeting: On the home screen of the Zoom application, select "New Meeting" to launch a meeting right away. This will open a brand-new meeting space to which you may send out invitations.

4. Invite participants: You can send email invitations, copy the meeting URL to share, or use other communication methods to let others know about your scheduled or instant meeting by clicking the "Invite" option.
5. Join a meeting: If you have received an invitation, go to the meeting's URL or link by clicking on it. As an alternative, you can launch the Zoom application and, if necessary, provide the meeting ID and password.
6. Meeting controls: When you are at a meeting, you can use some controls. You can use these to manage participants, mute and unmute your audio, start and stop your video, share your screen, and start and stop chat.
7. Screen sharing: Click the "Share Screen" option if you need to show someone else your screen. You have the option of sharing your entire screen, particular programs, or documents.
8. Recording: Your meetings can be recorded using Zoom. Click the "Record" button to start recording. If available, you can record the meeting locally on your device or to Zoom's cloud storage.

4.2.2 Introduction to the K-Yan Digital Hardware and how to use it

The K-YAN is a single cable computer, projector, and multimedia device which converts any room or hall into an interactive classroom, creating an atmosphere that compels and enhances the learning experience while easing the challenges of teaching/training delivery with inbuilt multimedia resources as well as direct access to resources from the internet and the presenter's own material.



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In-Built Interactivity

K-Yan is equipped with an in-built interactive device, which does away with the need for a separate and expensive Interactive White Board. This also helps teachers to make real-time changes on the projected image, in a very easy and simple manner, giving the school a “Portable Interactive Virtual Whiteboard”

Parts & Features:



Fig. 4.2 K-YAN Parts

4.2 Learning Management System

4.2.1 Google Classroom

Overview

Google Classroom is very simple to create and to use. Here all available features are integrated. Once a new course space is created, the instructor can see three tabs. These are labeled as about, students and stream. In the same page, on the bottom of the right side, he or she can see a plus sign. If the instructor clicks on it, four different tabs will open named reuse post, create question, create assignment and create announcement. A teacher can keep all files save in the Google Drive. He or she can grade, attach you tube or any link for instructional purpose. From Google Classroom, a teacher can send mail to all students at a time.

Google created Google Classroom, an online learning management system (LMS), specifically for academic institutions. It is intended to facilitate communication and collaboration between professors and students while streamlining the process of creating, distributing, and marking assignments.

- Google Classroom is a free blended learning platform developed by Google for educational institutions that aims to simplify creating, distributing, and grading assignments.
- The primary purpose of Google Classroom is to streamline the process of sharing files between teachers and students. As of 2021, approximately 150 million users use Google Classroom.
- The application integrates several Google Applications for Education, such as Google Drive, Google Docs, Google Sheets, Google Slides, Google Forms, Google Sites, Gmail and Google Calendar.
- It has both the web and mobile application

Benefits of Google Classroom

a) **User-Friendly:** Google Classroom boasts a user-friendly interface intentionally designed for simplicity in delivering and tracking assignments. It also streamlines communication, facilitating announcements, emails, and push notifications (Janzen, M. 2014).

b) **Time-Efficient:** Google Classroom's primary goal is to save educators time. By seamlessly integrating various Google apps like Docs, Slides, and Spreadsheets, it simplifies tasks such as document distribution, grading, formative assessment, and feedback. The Google Classroom Software Engineer emphasized their commitment to time-saving features, such as exporting grades to Google Sheets and improved grading capabilities (source).

c) **Cloud-Powered:** Google Classroom leverages cloud-based technology, providing a professional and authentic learning environment. Google apps are widely used in enterprise communication tools, making this platform a fitting choice for educational purposes (Mary, 2014).

d) **Versatile:** Google Classroom offers flexibility for both face-to-face and fully online learning environments. This adaptability empowers educators to explore flipped instructional methods, automate assignment management, and facilitate communication across various teaching settings.

e) **No Cost:** While Google Classroom may require institutional access, many related apps like Drive, Docs, Spreadsheets, and Slides are freely accessible to anyone with a Google account.

f) **Mobile Accessibility:** Google Classroom is optimized for mobile devices, ensuring a responsive and user-friendly experience. In today's web-connected learning landscape, mobile access to engaging learning materials is essential (Janzen, M. 2014).

Google Classroom Features

To reach Google Classroom without G-Suite for education you must be signed into a Gmail account.

Features

- Create a class
- Invite or add students
- Post Materials
- Announcement
- Assignment
- Grading and Returning Assignment

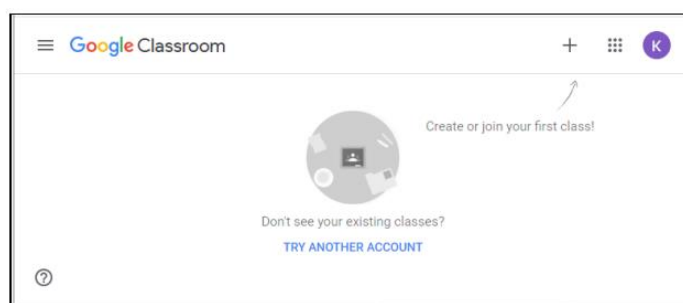


Fig. 4.3 Google classroom

Classroom Creation: For their courses, teachers can design virtual classrooms where they can oversee assignments, materials, and student interaction. Students can join by using a special code or link that is specific to each classroom.

Assignment Management: Within Google Classroom, teachers may create and share assignments. They can also include instructions or requirements, set deadlines, and attach papers, links, or multimedia items. Then, students can access and turn in their assignments remotely.

Announcement and Communication: Teachers can give updates, reminders, or critical information to the entire class. Through the platform's built-in communication facilities, students can also pose inquiries, take part in conversations, or request clarification.

Material Distribution: Within Google Classroom, instructors can exchange course materials like documents, presentations, or links. This guarantees that all necessary resources are readily available to students, doing away with the need for printed materials or several file-sharing websites.

Integration with Google Tools: Other Google productivity applications like Google Docs, Google Sheets, and Google Slides are smoothly integrated with Google Classroom. This enables students to use these technologies within the classroom setting to create, collaborate, and submit their work.

How to use Google Classroom:

Set up a Google Classroom:

a. Visit classroom.google.com and log in using your Google account.

- b. To create a new class, click the "+" button.
- c. Complete the class information, including the subject, section, and class name.
- d. To build your class, click "Create".

Invite Students:

- a. Click the "People" tab in the newly formed class.
- b. Select "+Invite Students" from the menu.
- c. Enter the students' email addresses or give them the class code.
- d. To invite students to attend your class, click "Invite".

Create and Post Assignments:

- a. Select the "Classwork" tab within the class.
- b. To create a new assignment, click the "+Create" button.
- b. Complete the assignment information, including the title, guidelines, due date, and points.
- d. Include any tools or resources that are required.
- e. Define whether the file attachments can be viewed or edited by students.
- f. Select "Assign" to upload the homework to the class stream.

4.2.2 E-Limi

E-Limi : E-Limi provides a huge selection of courses on numerous topics. You can take classes on E-Limi in a variety of subjects, including business, technology, arts & crafts, personal development, and language acquisition. The courses are available to students 24/7, enabling self-paced learning.

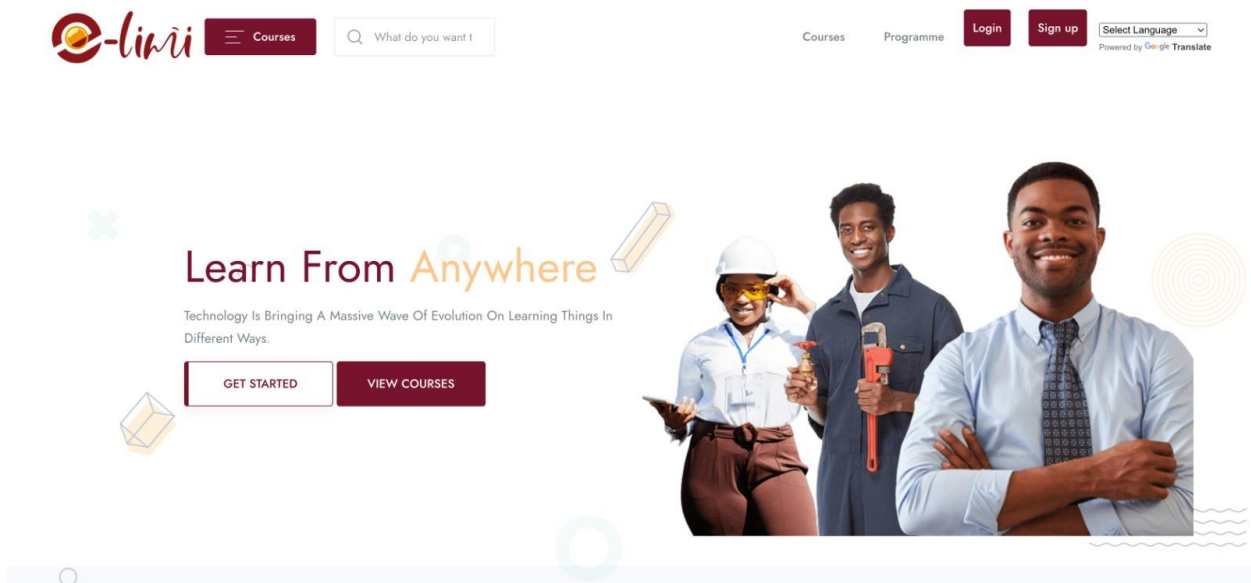


Fig. 4.4 E-LIMI User Interface

How to use E-Limi

The COVID-19 pandemic brought a new reality and perspective to teaching, training and learning for both formal and informal institutions.

This unexpected reality was gradually adjusted to by learners in some institutions of formal education by deploying technological solutions like zoom, google team meet, WhatsApp and other platforms. These were soon adopted as e-class rooms to ameliorate the challenge the pandemic brought.

The adjustment to the situation was however not the same for the TVET sector. Howbeit, leveraging on one of the cannons of TVET learning; which is Competence-based irrespective of where and how the learning was acquired, C-STEMP Edutech developed a TVET tailored LMS called E-limi (www.e-limi.Africa).

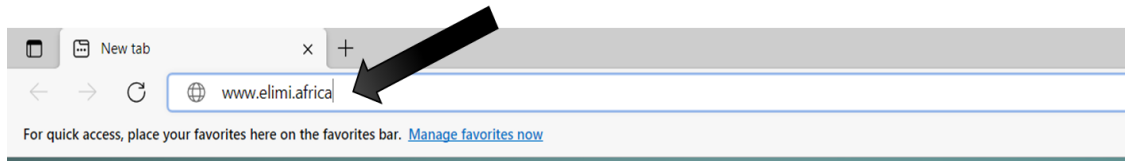
This platform allows young Nigerians who are interested in learning Vocational skills to take up trades of interest and learn online, complemented with hands-on practicals at the center.

The platform was rated top 50 LMS in Africa by the African Union (AU)

a. Serch e-limi.africa and login

PHASE 1: Registering on the E-limi

1. Type www.elimi.africa on your device browser (or click the link if its clickable here)



This will take you to the home page as in picture below

Fig. 4.5 How to register on E-LIMI Step 1

- b. Click on sign up, register and pick any course of your choice

Click on **SIGN UP** to register (see arrow below)

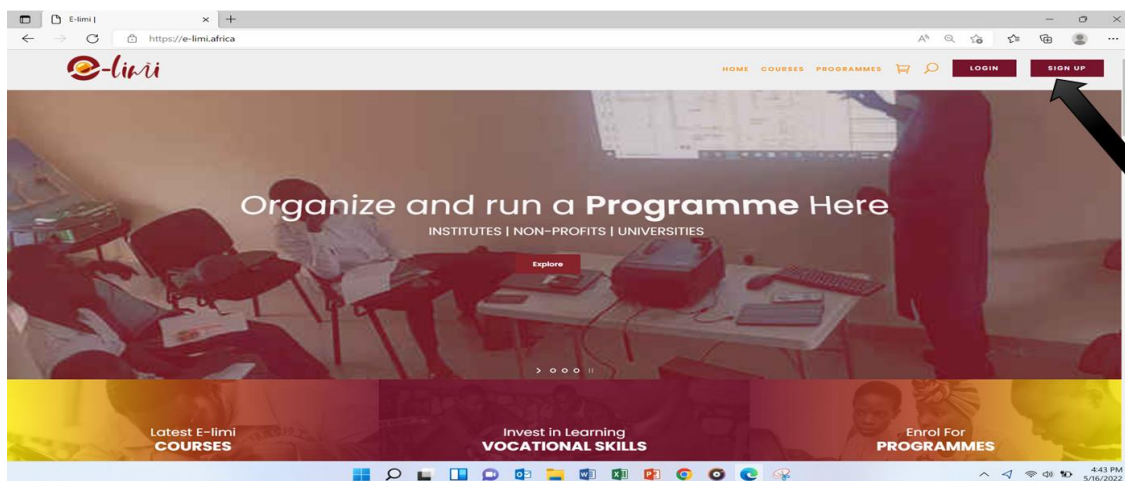


Fig. 4.6 How to register on E-LIMI Step 2

Fill the details and click **REGISTER**



Fig. 4.7 How to register on E-LIMI Step 3

4.2.3 Videos as Teaching Tools:

Video is an effective teaching tool that combines auditory and visual components to improve the learning process. By delivering material through gripping graphics, animations, and practical examples.

- Video footage improves comprehension
- Suitable for explaining procedures, experiments, or practical skills
- Enables realistic learning experiences by bringing real-world situations and expert viewpoints

Teachers can design memorable learning experiences that encourage participation, facilitate deeper knowledge, and accommodate various learning styles by including movies in their lesson plans.

4.3 Assessment and Grading Tools

4.3.1 Kahoot

Educators may create, share, and participate in engaging educational quizzes, surveys, and debates using the interactive learning platform Kahoot. It uses gamification and competition to engage students and encourage active learning. Here are some of Kahoot's main attributes and advantages:

1. **Quizzes and Assessments:** Teachers can use Kahoot to make interactive tests and assessments that gauge their students' knowledge and comprehension of a variety of subjects. To make studying more enjoyable and engaging, these quizzes may be personalized with multiple-choice questions, graphics, videos, and even timed challenges.
2. **Gamification and Competition:** Kahoot uses game components like scores, leaderboards, and countdown timers to make learning engaging and competitive. Individual or team competition among students encourages active engagement and improves learning outcomes.
3. **Collaboration and Discussion:** Features in Kahoot stimulate student involvement and conversation. It enables teachers to design interactive exercises, polls, and surveys where pupils may voice their opinions, exchange ideas, and have meaningful discussions.
4. **Creation and Sharing:** Teachers may quickly develop and edit their own Kahoot quizzes, which they can then distribute to students or other teachers. The portal also offers a sizable library of user-generated tests, offering a broad selection of pre-existing information that may be used and updated in accordance with the demands of the classroom.

How to use Kahoot:

Create a Kahoot Quiz or Survey:

- a. Select "Create" from the menu in the top right corner of the screen.
- a. Decide whether you want to make a presentation, survey, discussion, or quiz.
- b. Give your Kahoot a title and a description.

- d. Add questions, provide possible responses, and choose the right response (for quizzes).
- e. Personalize your Kahoot's appearance and feel by selecting themes and adding images.
- f. After finishing your Kahoot, save it.

Preview and Edit Your Kahoot

- a. To preview your Kahoot after creating it, click the "Play" button.
- b. Double-check each possible response to make sure it is correct.
- c. Modify any options or questions as necessary.

Share Your Kahoot:

- a. On the Kahoot editor screen, click the "Share" button.
- b. Decide whether you want to embed your Kahoot on a website, provide a link to it on social media, or both.
- c. Give your participants the URL or code provided.

Play Your Kahoot:

- a. Tell your audience to visit Kahoot. can download the Kahoot app to their mobile devices.
- b. Disseminate the special game PIN that is visible on your screen.
- b. To join the Kahoot session, participants enter the game PIN on their smartphones.
- d. Start the game and let the players use their electronic devices to respond to the questions.

4.3.2 Flubaroo:

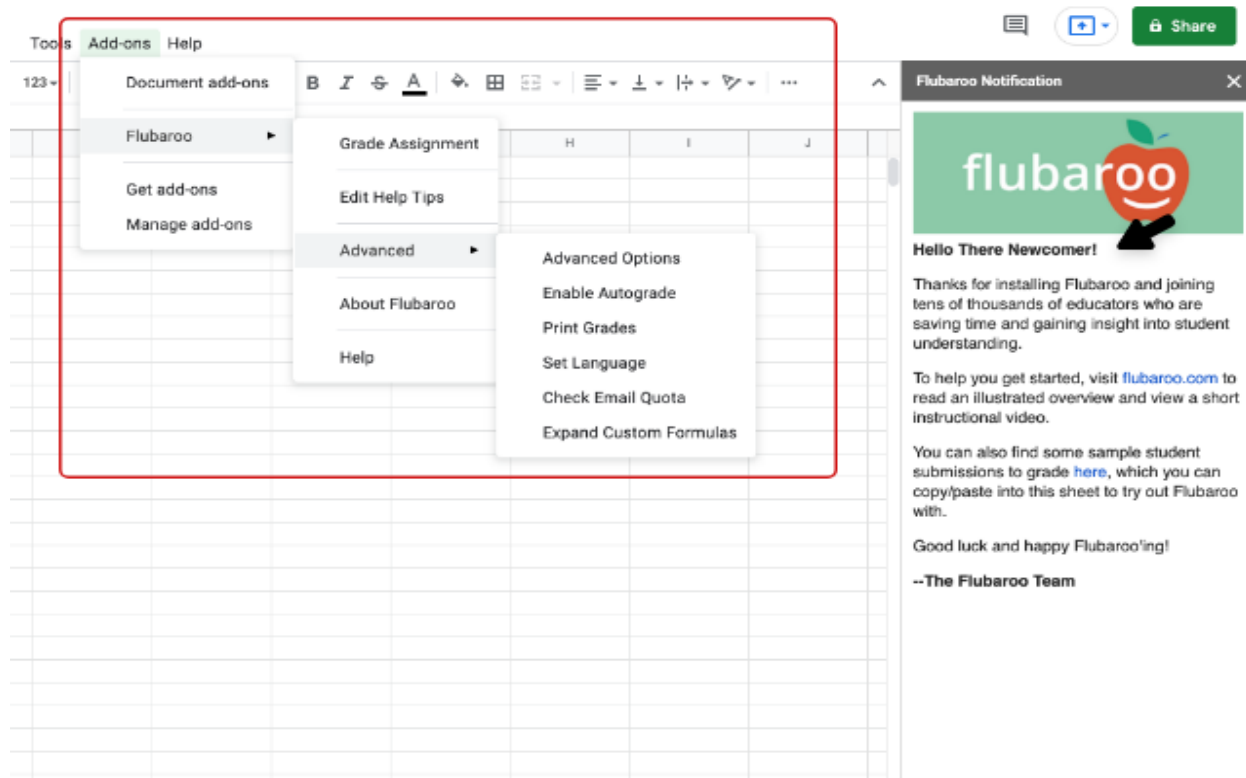


Fig. 4.8 Flubaroo

Flubaroo is a Google Sheets add-on tool that makes it easier to grade and provide feedback for quizzes and other assessments made in Google Forms. The grading procedure is automated, saving teachers a lot of time and work. Here are some of Flubaroo's main attributes and advantages:

1. **Automatic Grading:** Multiple-choice and fill-in-the-blank questions in Google Forms are graded automatically by Flubaroo. As soon as the students finish the test, Flubaroo compares their answers to the correct ones in the answer key and displays the results right away.
2. **Feedback and Scores:** Flubaroo calculates and assigns points depending on the proportion of accurate solutions, and it offers personalized feedback for each learner, highlighting correct and erroneous answers.
3. **Error Analysis:** Flubaroo offers a report on error analysis to assist teachers in identifying frequent errors made by students. To address certain weak areas, this knowledge can direct instructional choices and tailor interventions.
4. **Flexibility and Customization:** By enabling teachers to alter the answer key, grant partial credit, and add additional feedback or comments for particular questions or student responses, Flubaroo gives flexibility in grading.

4.3.3 Poll Everywhere:

In real time during presentations, lectures, meetings, or events, Poll Everywhere's interactive audience response system enables presenters, educators, and facilitators to communicate with their audience through live polls, surveys, and open-ended questions.

1. **Live Polling:** Presenters can develop and run live polls using Poll Everywhere, allowing audience members to react to multiple-choice or open-ended questions using their smartphones or PCs. Instantaneously gathered and shown in real time are the responses.
2. **Audience Engagement:** By actively integrating participants in the presentation or event, Poll Everywhere improves audience engagement. It promotes involvement and interaction, enhancing the experience and ensuring inclusivity.
3. **Versatile Question Types:** Questions of all kinds, including multiple-choice, word clouds, ranking, and open-ended ones, can be created by users. Due to their flexibility, presenters can elicit a range of opinions and insights from their audience.
4. **Integration with Presentations:** The presentation software Poll Everywhere smoothly interacts with includes Google Slides and PowerPoint. Through this interface, presenters can easily integrate polls into their slides, ensuring a seamless interaction between presenters and participants.
5. **Remote Participation:** By enabling participants to react to polls from any location using internet-connected devices, Poll Everywhere facilitates remote participation. This function is especially helpful for online classes, remote attendee events, and virtual meetings.

How to use Poll Everywhere:

Sign Up for a Poll Everywhere Account:

- a. Visit polleverywhere.com and create a free account there.
- b. Complete the required fields to establish your account.

Create a Poll:

- a. Select "Create" from the menu in the top right corner of the screen.
- a. Select the poll format, such as multiple-choice, open-ended, word cloud, or clickable picture, that you want to use.
- c. Type your poll's question or prompt.
- d. Personalize your poll's design and configuration, including its theme, layout, anonymity, and answer options.
- e. After you're through designing your poll, save it.

Launch the Poll:

- a. After creating your poll, click the "Present" button next to it.
- a. Determine the format in which you will deliver your poll: online, in PowerPoint, Keynote, or Google Slides.
- c. Use the instructions to start the poll and distribute it to your audience.

Audience Participation:

- a. Tell your audience to utilize the Poll Everywhere mobile app or visit pollev.com on their devices.
- a. Distribute the special poll code or URL that is visible on your screen.
- b. To participate in the polling session, participants enter the poll code or URL on their devices.
- d. Users respond to the poll by typing in their answers or picking their options from a list.

Display Live Results:

- a. The findings are shown on your screen in real time as participants react.
- b. Display the real-time results to your audience, either online or by incorporating the poll into your speech.
- c. Consult with your audience on the findings and analyze them.

MODULE 5.0 ONLINE SAFETY AND DIGITAL CITIZENSHIP

5.1 Understanding Digital Citizenship and Responsible Online Behavior

Internet Safety vs. Digital Citizenship

Internet Safety and Digital Citizenship are connected, but they are two separate ideas. While digital citizenship is focused on how behavior and actions spread and affect others on the web and the ways users should conduct themselves as good citizens of this digital world, internet safety includes concrete do's and don'ts to protect users. Where these two concepts meet is in the spread of information, whether it's the user's own personal information or personal information about other users.

Internet safety is crucial at every age, and it's good to start instructing individuals about how to stay safe online. In a digital age, it's important for them to understand that things don't just disappear, and they should be conscious about the information they share. Additionally, the rise of sites that allow you to compile information (like age, names, interests, potential triggers, and more) make it easier for those with bad intentions to infiltrate seemingly safe spaces. Individuals should be reminded that while not everyone on the internet is out to harm them, they should still be careful whom they trust, just like they would in real life.

Digital citizenship is all about being a good citizen online, the same way you would in your community in real life. Users can practice this while they're playing online multiplayer games, chatting on social media, doing research or attending online classes, or doing anything else they may do online! Technology can do powerful things, and it's important that individuals are able to harness that power while still being empathetic citizens of the world.

Some key Concepts in Digital Citizenship

Safety: Steps taken by a digital citizen to safeguard self. For example, using a strong password, avoiding cyberbullying and online harassment, and avoiding sharing personal information

Reputation: The public perception of an individual, business, or organization based on their online activities and interactions is referred to as their digital reputation. It is the image projected online based on the information available about the individual or organization.

Relationships: Any relationship that is established, maintained, or mediated through digital technologies, such as social media, messaging apps, or online dating sites, is referred to as a digital relationship.

Digital Ethics: This refers to the moral principles and values that govern the use of digital technologies and the internet. Examples of digital ethics include avoiding cyberbullying and online harassment, protecting personal privacy and security online, and promoting inclusivity and diversity in online communities.

Responsible Online Behavior

Being a responsible digital citizen means using technology appropriately and operating online safely and knowledgeably. The concept of digital citizenship is becoming more and more recognized as people communicate, shop, and share information online. Because of this, there's more need than ever to practice responsible habits. Understanding and operating according to the concept of responsible digital citizenship helps you respect, educate, and protect yourself and others online.

How to Be a Responsible Digital Citizen

Being a responsible digital citizen means using technology, the internet, and digital platforms in an ethical, safe, and respectful manner. Here are some key principles and practices to be a responsible digital citizen:

Respecting Yourself and Others Online

1. **Behave with etiquette while online:** Practice digital etiquette by following the proper standards of conduct and procedure online. Model appropriate behavior when online and be willing to teach and discuss digital etiquette with others, both online and in person. Most importantly: Be polite! Actively seek to present a positive image of yourself online. Appropriate digital etiquette also requires that you:
 - Reduce your sarcasm. Since facial expressions and body language cannot be conveyed via text, sarcastic comments can easily be perceived negatively.
 - Do not escalate disagreements. Do not use harsh, crass, or aggressive language.
 - Do not take part in cyber-bullying. Speak up when you witness cyberbullying. Support the target of the harassment and acknowledge that those users who are bullying are behaving inappropriately.
2. **Exchange information properly:** Digital communication, or the electronic exchange of information and correspondence, is rapidly becoming the main form of communication between one another. Take care, however, with what you post online. Do not share personal information electronically with people you do not know and on websites you do not trust. Understand that some forms of communication are more appropriate to undertake in person. Specifically:
 - Do not post about your vacation plans, your income, and anything that might endanger you or someone else in any way.
 - Do not post about your personal feelings regarding your job or a relationship. Have emotional or important conversations in private with the other people involved.

3. **Follow the law:** There are specific legal rights and restrictions governing the use of electronic technologies. Know that you are legally accountable for your online behavior. Educate yourself about copyright and fair use policies if you are unsure of the legality with which you want to acquire any form of media available online. Be especially careful using peer-to-peer (P2P) sharing services. More specifically:
 - Do not steal money, intellectual property, or someone else's identity.
 - Do not damage other people's work, identity, or online property.
 - Do not download music or movies that were made available illegally.
 - Do not create destructive malware, programs, or websites.
 - Do not send spam.

Advocating for Digital Citizenship Awareness

1. **Advocate the use of new technologies:** Work to improve digital literacy by learning and teaching others about the availability and uses of new technology. Recognize that new technologies are emerging with greater and greater frequency. Being a responsible digital citizen requires us to know how to use these technologies appropriately. Furthermore, recognize that teachers now need continual training on how to properly use technology in the classroom. Ensure that your children and those children in the school nearest your home are digitally literate by calling and asking whether they have the plan to increase students' digital literacy. There are several curricula and lesson plan available online to help guide educators. The New York City Department of Education has made a comprehensive guide called "Citizenship in the Digital Age" that includes lesson plans for grades K-12.
2. **Ensure Digital Access:** Digital access refers to the degree to which people are able to participate electronically in society. Be welcoming when interacting with others online. There are also more active ways to advocate for the increase of digital access for all people, regardless of socioeconomic status, abilities, and physical location. An important policy issue today is providing equitable access to technology for all students, and there are many organizations working to achieve this goal. Here are a few other ways you can help increase digital access:
 - Lobby your local politicians to prioritize public access to the Internet and the availability of computer equipment for public use. Support those politicians and community organizers who work for these causes.
 - Contribute your unused technological equipment to your local library or a school that can use it.
 - Volunteer with an organization that works to increase digital access.

3. **Recognize your own and others' rights and responsibilities:** Digital rights and responsibilities help to shape and ensure the freedoms that everyone should be able to enjoy online. Note that rights come with responsibilities. Be aware of your own rights and responsibilities in the location and network you are using and share this information with others if they are not behaving accordingly. This knowledge includes the degree of your freedom of speech and your freedom to visit most public websites. Respect everyone you interact with online and ensure that your own rights are not being violated.
 - Contribute to positive, respectful conversations about your rights and responsibilities as a digital citizen to help define the proper use of new technologies as society progresses.

Protecting Yourself Online

1. **Maintain digital security:** Take precautions with your technological equipment and online behavior to protect yourself as well as the material you share online. Be especially cautious with information associated with your identity. These are all important measures to operate with digital security:
 - Install virus protection on the equipment you use to go online.
 - Be cautious when opening up email attachments and clicking links.
 - Backup your data, preferably in multiple safe locations.
 - Use a surge protector to protect your equipment from more tangible dangers such as electrical surges during incremental weather, etc.
2. **Pay attention to your health:** Though you may not picture sitting at a computer as dangerous or unhealthy, your health and wellness are affected by your digital lifestyle. Be aware of the physical and psychological effects of operating in a digital world. Protect yourself from these dangers and encourage others to stay aware as well. Some risks involved with the heavy use of computers and other online devices include:
 - Carpal tunnel syndrome.
 - Eye strain.
 - Poor posture.
 - Internet addiction.
 - Repetitive stress syndrome.

3. **Engage in digital commerce responsibly:** Digital commerce encapsulates purchasing and selling goods and services online. Be aware of the risks associated with this practice. Make only well-informed and safe decisions before engaging in online transactions. Many goods and services available online are not lawfully allowed to be possessed in certain countries. Be sure that any transactions you take part in are legal and legitimate.

5.2 Cyber Security

Cybersecurity refers to the practices, measures, and technologies designed to protect computer systems, networks, and data from unauthorized access, cyber threats, and malicious activities. It encompasses a range of strategies and safeguards aimed at ensuring the confidentiality, integrity, and availability of digital assets. Cybersecurity is the protection to defend internet-connected devices and services from malicious attacks by hackers, spammers, and cybercriminals. The practice is used by organizations to protect against phishing schemes, ransomware attacks, identity theft, data breaches, and financial losses.

Cybersecurity measures, sometimes referred to as information technology (IT) security, are intended as counterattacks to threats, whether they come from inside or outside of an organization.

Cyber security vs information security

Cyber security is often confused with information security.

- Cyber security focuses on protecting computer systems from unauthorized access or being otherwise damaged or made inaccessible.
- Information security is a broader category that protects all information assets, whether in hard copy or digital form.

Key elements and concepts within cybersecurity include:

Confidentiality: The principle of confidentiality involves restricting data access strictly to authorized personnel i.e the protection of sensitive information from unauthorized access or disclosure. This involves implementing access controls, encryption, and secure transmission protocols to safeguard data privacy. Users have a responsibility to ensure they maintain secure access control systems, including both logical (e.g. PC passwords) and physical restrictions (e.g. ID cards).

Integrity: Upholding integrity means that measures are taken to ensure that data is kept accurate and up to date. Ensuring the accuracy, completeness, and trustworthiness of data and systems. Measures such as data backups, secure configurations, and integrity checks help detect and prevent unauthorized modifications or tampering.

Availability: Availability means guaranteeing reliable access to information by authorized personnel. In order to be readily accessible, data must be stored in a logical yet secure system. Ensuring that systems and data are accessible and operational when needed. This involves implementing redundancy, disaster recovery plans, and mitigating risks of service disruptions or downtime.

Common techniques used to maintain availability include load balancing, redundancy, and disaster recovery planning.

Risk management: The process of identifying, assessing, and mitigating potential cybersecurity risks. It involves conducting risk assessments, implementing security controls, and developing incident response plans to minimize the impact of threats. A consistent, systemic and integrated approach to risk management can help determine how best to identify, manage and mitigate significant risks.

Network security: Protecting networks from unauthorized access, intrusions, and attacks. This includes implementing firewalls, intrusion detection/prevention systems, network segmentation, and secure configurations.

Endpoint security: Securing individual devices, such as computers, smartphones, and IoT devices, from malware, unauthorized access, and data breaches. This involves using antivirus software, endpoint protection solutions, and secure configurations.

Identity and access management (IAM): Controlling and managing user access to systems and data. IAM includes practices such as strong authentication, access controls, and privileged access management to prevent unauthorized access.

Incident response: Developing and implementing plans to respond effectively to cybersecurity incidents. This involves detecting, containing, investigating, and recovering from security breaches or attacks, as well as learning from these incidents to improve security measures.

Security awareness and training: Educating users and employees about cybersecurity best practices, threats, and their roles in maintaining security. Regular training and awareness programs help foster a culture of security and reduce the risk of human error.

Vulnerability Management: Identifying and remediating software or system vulnerabilities to prevent exploitation. This includes performing regular vulnerability assessments, patch management, and monitoring security advisories.

Encryption: The process of converting data into an unreadable form to prevent unauthorized access. Encryption protects sensitive information both during transmission (e.g., SSL/TLS) and at rest (e.g., encrypted storage).

Security monitoring and analytics: Monitoring systems and networks for suspicious activities, intrusions, or anomalies. Security information and event management (SIEM) tools and intrusion detection/prevention systems help detect and respond to potential threats.

Penetration testing: Conducting authorized simulated attacks on systems and networks to identify vulnerabilities and assess the effectiveness of security controls. Penetration testing helps identify and address weaknesses before malicious actors exploit them.

Compliance and regulations: Adhering to industry-specific regulations and compliance standards, such as HIPAA, PCI DSS, or GDPR, to protect sensitive information and ensure legal and ethical responsibilities are met.

Effective cybersecurity requires a multi-layered approach, combining technical solutions, robust policies and procedures, regular updates and patching, user education, and ongoing monitoring and improvement. It is an ongoing and ever-evolving discipline in response to the constantly changing threat landscape.

5.3 Protecting personal information online

1. Use a firewall.

A firewall is a defense that creates a barrier between your information and the external world. Some operating systems such as Windows and macOS have default built-in firewalls. Firewalls serve as an intrusion prevention and intrusion detection mechanism that prevents unauthorized access to your business network and notifies you when there are unauthorized access attempts. Hardware firewalls from companies such as Sophos, Cisco or Fortinet are also of great benefit depending on the router in use, since this also has a default firewall that defends your network system. Ensure your firewall is activated before accessing the internet.

2. Use antivirus software.

Antivirus software is useful to prevent, detect and delete viruses and malware from your system. Antivirus programs such as Bitdefender, Avast, Kaspersky, McAfee, Panda Free Antivirus, and Malwarebytes can be installed to protect your computer against unauthorized or malicious code or software that may be a threat to your system. Viruses are disadvantageous because they slow down your system, and alter, delete or destroy important files thereby rendering them inaccessible. They can be inconspicuous hence making it difficult to easily and quickly detect them.

Antivirus software is useful in protecting your devices by serving as an IPS (Intrusion Prevention System) and an IDS (Intrusion Detection System). It prevents and detects threats in real-time to ensure your data is secure. Some antivirus software allows regular updates based on new threats discovered hence it protects your device from new threats. Keep a routine of running a regular scan on your device.

3. Install an anti-spyware package.

Anti-spyware is a kind of software that protects your system from a spyware attack. Spyware is a malicious code that secretly monitors and collects personal or organizational information. It is programmed to be difficult to detect and remove. It allows unsolicited ads or search results that are intended to direct you to certain unsolicited websites.

Spyware executes its activities by recording all keystrokes to gain access to financial information, passwords and other useful information. Anti-spyware function is included in some major antivirus packages. By scanning all information, anti-spyware blocks incoming threats and spyware.

4. Use complex passwords.

Using a strong password is an effective means to prevent unauthorized access to devices, networks, applications and other accounts. The more complex and longer a password is the more difficult and more time required to crack it hence the more difficult it is to access your device.

The characteristics of a secure password; it must contain at least 8 characters, combination of numbers, uppercase and lowercase letters, and computer symbols. The shorter a password is the faster and easier it is to crack it.

Don't use general words, words in a dictionary, words or combination of words that can be linked to you such as dates of birth, anniversaries, and family members' details. Avoid using old passwords. The use of password managers such as One Password, sticky password, Password boss, last password, and Dash lane is recommended to manage all your passwords securely.

5. Keep your OS, apps and browser up to date.

Always install new updates to your operating systems. Most updates include security fixes that prevent hackers from accessing and exploiting your data. The same goes for apps. Today's web browsers are increasingly sophisticated, especially in privacy and security. Be sure to review your browser security settings in addition to installing all new updates. For example, you can use your browser to prevent websites from tracking your movements, which increases your online privacy. Or use one of these private web browsers.

6. Ignore spam.

Beware of email messages from unknown parties, and never click on links or open attachments that accompany them. Inbox spam filters have gotten pretty good at catching the most conspicuous spam. But more sophisticated phishing emails that mimic your friends, associates and trusted businesses (like your bank) have become common, so keep your eyes open for anything that looks or sounds suspicious.

7. Backup your computer.

If your business is not already backing up your hard drive, you should begin doing so immediately. Backing up your information is critical in case hackers do succeed in getting through and trashing your system.

Always be sure you can rebuild as quickly as possible after suffering any data breach or loss. Backup utilities built into macOS (Time Machine) and Windows (File History) are **good places** to start. An external backup hard drive can also provide enough space for these utilities to operate properly.

8. Shut it down.

Many businesses, especially those operating a web server, are "all systems go" all the time. If you're not operating a complex internet-based company, however, switch off your machine overnight or during long stretches when you're not working. Always being on makes your computer a more visible

and available target for hackers; shutting down breaks the connection a hacker may have established with your network and disrupts any possible mischief.

9. Use virtualization.

Not everyone needs to take this route, but if you visit sketchy websites, expect to be bombarded with spyware and viruses. While the best way to avoid browser-derived intrusions is to steer clear of unsafe sites, virtualization allows you to run your browser in a virtual environment, like Parallels or VMware Fusion that sidesteps your operating system to keep it safer.

10. Secure your network.

Routers don't usually come with the highest security settings enabled. When setting up your network, log in to the router, and set a password using a secure, encrypted setup. This prevents intruders from infiltrating your network and messing with your settings.

11. Use two-factor authentication.

Passwords are the first line of defense against computer hackers, but a second layer boosts protection. Many sites let you enable two-factor authentication, which boosts security because it requires you to type in a numerical code – sent to your phone or email address – in addition to your password when logging in.

12. Use encryption.

Even if cybercriminals gain access to your network and files, encryption can prevent them from accessing any of that information. You can encrypt your Windows or macOS hard drive with BitLocker (Windows) or FileVault (Mac), encrypt any USB flash drive that contains sensitive information and use a VPN to encrypt web traffic. Only shop at encrypted websites; you can spot them immediately by the “https” in the address bar, accompanied by a closed-padlock icon.

Key takeaway: Combining security tools and best practices can protect your computers and your network from unauthorized access.

How to secure your phone from hackers

To secure your mobile device, you may need to take different security measures than you would to secure a computer. Follow these tips from Webroot to help you protect your mobile devices from hackers:

13. Turn off Bluetooth.

When you're not using Bluetooth, turn it off. Keeping your Bluetooth on but dormant opens another back door for computer hackers.

14. Don't use unsecured public Wi-Fi.

Password-free, widely used Wi-Fi networks have no security features. As such, they're prime targets for computer hackers.

15. Get a security app.

Install a security app on your phone, just as you should install a firewall, antivirus software and an anti-spyware package on your computer. Popular options include Avast, Kaspersky Mobile Antivirus and Bitdefender.

16. Use a better passcode.

Unlock codes like 0000 and 1234 are easy to remember, but they're also easy to guess. Instead, opt for a randomly generated, six-number passcode.

17. Switch off autocomplete.

Autocomplete is the feature that guesses what you're typing and completes the word, phrase or other information for you. While convenient, this tool all but hands your email address, mailing address, phone number and other important information to hackers. Switch it off.

18. Clear your browsing history.

Your mobile web browser has a browsing history, too. Clear it often – including cookies and cached files – to give hackers as little information as possible to work with if they do break into your phone.

Key takeaway: Mobile devices require additional efforts to protect, including deactivating certain features when they're not in use and installing security applications.

5.4 Recognizing and avoiding online threats

An online threat refers to any potential danger or malicious activity that occurs over the internet or through digital channels. These threats can target individuals, organizations, or computer systems, aiming to disrupt, damage, or gain unauthorized access to sensitive information. There are various types of online threats, including:

1. **Malware:** Malicious software designed to harm or gain unauthorized access to a computer system. This includes viruses, worms, trojans, ransomware, spyware, and adware.
2. **Phishing:** A technique used by cybercriminals to deceive individuals into revealing sensitive information such as usernames, passwords, or financial details. This is often done through fake emails, websites, or messages that appear legitimate.
3. **Identity theft:** The unauthorized acquisition and use of someone's personal information, typically for financial gain. Cybercriminals may use stolen identities to make fraudulent transactions or commit other illegal activities.

4. **Hacking:** The act of gaining unauthorized access to computer systems or networks. Hackers may exploit vulnerabilities to steal information, modify data, or disrupt services.
5. **Social engineering:** Manipulating individuals into divulging sensitive information or performing actions that may compromise security. This can involve psychological manipulation, impersonation, or exploiting human vulnerabilities.
6. **Denial-of-Service (DoS) attacks:** Overwhelming a target system or network with excessive traffic or requests, causing it to become unavailable to legitimate users.
7. **Data breaches:** Unauthorized access, disclosure, or exposure of sensitive information, usually due to security vulnerabilities or negligence. Data breaches can result in the compromise of personal, financial, or confidential data.
8. **Online scams and fraud:** Various fraudulent schemes are conducted over the internet, such as fake online stores, investment scams, lottery scams, or romance scams.

It is crucial for individuals and organizations to stay vigilant, employ security measures, and keep their software and systems up to date to protect against online threats.

How to recognize online threat

Recognizing online threats can be challenging, but there are several signs and indicators that can help you identify potential risks. Here are some key factors to consider when assessing whether you might be facing an online threat:

Suspicious emails or messages: Be cautious of unsolicited emails or messages that ask for personal or financial information. Look out for spelling or grammar mistakes, generic greetings, urgent requests, or emails that seem too good to be true. Avoid clicking on links or downloading attachments from unknown or untrusted sources.

Phishing attempts: Pay attention to emails, messages, or websites that mimic legitimate organizations, such as banks, social media platforms, or online retailers. Check for inconsistencies in URLs, logos, or design. Legitimate organizations typically do not request sensitive information via email.

Unexpected requests for personal information: Be wary of requests for personal or financial information through email, messaging apps, or phone calls. Trusted organizations will rarely ask for sensitive data without proper authentication.

Unusual website behavior: If you notice unexpected pop-ups, redirects, or a sudden change in the appearance or functionality of a website, it could indicate a security threat. Be cautious when entering personal information or making transactions on such sites.

Poorly secured websites: Before entering sensitive information on a website, ensure that it has a valid SSL certificate. Look for "https://" at the beginning of the URL and a padlock icon in the browser address bar. Avoid entering personal information on websites without proper security measures.

Unusual account activity: Monitor your online accounts for any suspicious or unauthorized activity, such as unrecognized logins, changes in account settings, or unexpected transactions. Enable two-factor authentication whenever possible to enhance security.

Unexpected software behavior: If your computer or mobile device starts acting strangely, such as frequent crashes, slow performance, or unexpected error messages, it could be a sign of malware or other malicious activity.

Social engineering tactics: Be cautious of individuals or organizations that try to manipulate you into revealing sensitive information or performing actions against your better judgment. Trust your instincts and verify requests through alternate channels before taking any action.

Unusual network traffic or data usage: Keep an eye on your internet connection and data usage patterns. Unexpectedly high data usage or network activity could indicate the presence of malware or unauthorized access.

Alerts from security software: Install reputable antivirus and anti-malware software on your devices and keep them up to date. Pay attention to security alerts and warnings provided by these tools.

It's essential to stay informed about the latest online threats and educate yourself on best practices for online safety. Regularly update your software, use strong and unique passwords, and be cautious when sharing personal information or clicking on suspicious links.

5.4 Online Threats Management Solutions

Managing online threats requires a proactive approach to safeguard your digital assets and mitigate potential risks. Here are some solutions and practices to help you manage online threats effectively:

1. **Antivirus and anti-malware software:** Install reputable security software on your devices and keep it up to date. These tools can detect and remove various types of malwares, providing an essential layer of protection.
2. **Firewall protection:** Enable and configure firewalls on your devices and network to monitor and control incoming and outgoing traffic. Firewalls can help block unauthorized access attempts and protect against certain types of cyberattacks.
3. **Regular software updates:** Keep your operating systems, applications, and security software up to date. Software updates often include security patches that address vulnerabilities and protect against known threats.
4. **Strong and unique passwords:** Use strong, complex passwords for all your online accounts. Avoid using the same password across multiple platforms. Consider using a password manager to securely store and generate unique passwords.

5. **Two-factor authentication (2FA):** Enable 2FA whenever possible. This adds an extra layer of security by requiring a second form of verification, such as a unique code sent to your mobile device, in addition to your password.
6. **Phishing awareness and training:** Educate yourself and your employees about phishing techniques and how to identify suspicious emails, messages, or websites. Regularly conduct training sessions to promote awareness and provide guidance on best practices.
7. **Secure browsing habits:** Be cautious when visiting websites, clicking on links, or downloading files. Stick to trusted sources and be wary of suspicious or unsecured websites. Use browser extensions that provide additional security features, such as blocking malicious websites.
8. **Data backup and recovery:** Regularly backup your important data to secure external storage or cloud services. This helps protect against data loss in case of a ransomware attack or system failure. Ensure backups are stored offline or in a separate location to prevent them from being compromised.
9. **Employee awareness and security policies:** Establish clear security policies and guidelines for employees, covering topics such as acceptable internet usage, data handling, and incident reporting. Foster a culture of cybersecurity awareness and provide ongoing training to reinforce good practices.
10. **Incident response planning:** Develop an incident response plan that outlines steps to be taken in the event of a cybersecurity incident. This includes procedures for containment, investigation, recovery, and communication.
11. **Network monitoring and intrusion detection systems:** Implement network monitoring tools and intrusion detection systems to detect and respond to unauthorized access attempts or suspicious activity. These systems can provide real-time alerts and help identify potential threats.
12. **Regular security assessments and audits:** Conduct periodic security assessments and audits to identify vulnerabilities in your systems and networks. This can involve penetration testing, vulnerability scanning, and risk assessments to proactively address weaknesses.

Remember that managing online threats is an ongoing process. Stay updated on the latest security practices, monitor your systems regularly, and adapt your defenses as new threats emerge. Collaborate with cybersecurity professionals or seek expert advice to enhance your organization's security posture.

5.5 Online Security Policies and Laws

Online security policies and laws are crucial for establishing legal frameworks, standards, and guidelines to protect individuals, organizations, and society from online threats. Here are some notable policies and laws related to online security:

Nigerian Data Protection Regulation (NDPR): enacted by NITDA, is a set of rules for the privacy and protection of personal data of Nigerians. It regulates how organizations in Nigeria collect, process, store, and transfer individual data and information. It complies with GDPR.

General Data Protection Regulation (GDPR): Implemented in the European Union (EU), GDPR sets rules for the protection and privacy of personal data of EU citizens. It regulates how organizations collect, process, store, and transfer personal data and grants individuals' greater control over their personal information.

Cybersecurity Information Sharing Act (CISA): Passed in the United States, CISA encourages the sharing of cybersecurity threat information between the government and private entities. It aims to improve cyber threat awareness and response capabilities.

Computer Fraud and Abuse Act (CFAA): The CFAA is a U.S. federal law that criminalizes unauthorized access to computer systems, including hacking, data theft, and computer-related fraud. It provides penalties for various cybercrimes.

Children's Online Privacy Protection Act (COPPA): In the United States, COPPA regulates the online collection of personal information from children under the age of 13. It requires verifiable parental consent and imposes obligations on website operators to protect children's privacy.

National Institute of Standards and Technology (NIST) Cybersecurity Framework: Developed by the U.S. NIST, this framework provides guidelines, standards, and best practices for improving cybersecurity risk management and resilience across critical infrastructure sectors.

Payment Card Industry Data Security Standard (PCI DSS): PCI DSS is a set of security standards established by major credit card companies to protect cardholder data. It mandates security requirements for organizations that handle payment card information.

Telecommunications and Internet Service Provider (TISP) regulations: Many countries have specific regulations that govern telecommunications providers and internet service providers (ISPs). These regulations often include provisions related to network security, data protection, and customer privacy.

Company-specific security policies: Many organizations develop their own internal security policies to protect their systems, networks, and sensitive information. These policies define acceptable use, access controls, incident response procedures, and other security-related guidelines for employees and stakeholders.

5.5 Creative Credit and Copyright

Creative credit and copyright are essential aspects of protecting intellectual property and ensuring proper recognition and attribution to creators. Here's an overview of these concepts:

Creative Credit: Creative credit refers to acknowledging and giving recognition to the original creator of a creative work. It is a way of honoring and respecting the efforts, talent, and contribution of artists, authors, musicians, photographers, and other creators. Providing proper credit is not only an ethical practice but also a legal requirement in many cases.

When giving creative credit, it is important to include the creator's name or pseudonym, the title of the work, and any additional information that helps identify and attribute the work correctly. This can be done through citations, acknowledgments in publications, captions for images, attributions in creative collaborations, or prominently displaying credits in public displays or performances.

Copyright: Copyright is a legal framework that grants exclusive rights to creators and authors over their original works, preventing others from copying, distributing, performing, or displaying their creations without permission. Copyright protection applies to various forms of creative expression, including literary works, music, art, photographs, films, software, and more.

Copyright protection is automatic upon the creation of an original work, providing the creator with exclusive rights for a specific period. In many jurisdictions, the duration of copyright extends for the lifetime of the creator plus a certain number of years after their death. During this period, others generally require permission from the copyright holder to use or reproduce the work.

Copyright infringement occurs when someone uses, copies, or distributes copyrighted material without the permission of the copyright holder. However, there are exceptions and limitations to copyright, such as fair use or fair dealing, which allow for certain uses of copyrighted material for purposes such as criticism, commentary, education, or research.

It's important to respect copyright laws and seek proper permissions or licenses when using copyrighted works. Additionally, providing creative credit alongside the use of copyrighted material helps ensure proper attribution and respects the rights of the original creators.

It's worth noting that copyright laws and regulations vary across countries, so it's advisable to consult the copyright laws applicable to your specific jurisdiction for precise information and requirements.

