

CHAPTER 4: DIGITAL LITERACY/DEMONSTRATE DIGITAL LITERACY

4.1 Introduction

Demonstrate digital literacy unit of competency is among the seven basic competencies units offered in all the TVET level 6 qualification. This unit covers the knowledge, skills, and behaviours required to effectively use computer and other PCs, digital devices such as smartphones, tablets, laptops and desktop. It entails identifying and using digital devices for purposes of communication, work performance and management at the work place. Digital literacy is significant to TVET level 6 curriculum due to the critical role that technology plays in societal and industrial growth. Digital literacy has also gained recognition as a valuable tool for lifelong learning and collaboration in this global village.

The critical aspects of competency to be covered include control of security threats, computer crimes, applying word processing and spreadsheet in accordance with workplace procedures, integrating emerging issues in computer ICT applications and applying laws governing protection of ICT. The basic resources required include digital devices such as desktop computers, laptop computers, smart phone, printers, internet access, computer software among others. The unit of competency covers six learning outcomes. Each learning outcome presents learning activities that cover performance criteria statements, thus creating opportunity for the trainees to demonstrate knowledge and skills in the occupational standards and content in the curriculum. Information sheets provide; definition of key terms, content and illustration to guide in training. The competency may be assessed through written tests, demonstration, practical assignment, interview/oral questioning and case study. Self assessment is provided at the end of each learning outcome. Holistic assessment with other units relevant to the industry sector workplace and job role is recommended.

4.2 Performance Standard

Apply security measures to data, hardware and software in solving tasks in automated environment in accordance with manufacturer's specifications, work procedures, prevailing technology and laws governing protection of ICT.


4.3 Learning Outcomes

4.3.1 List of learning outcomes

- a) Identify computer software and hardware.
- b) Apply security measures to data, hardware and software in automated environment.
- c) Apply computer software in solving tasks.
- d) Apply internet and email in communication at workplace.
- e) Apply desktop publishing in official assignments.
- f) Prepare presentation packages.

4.3.2 Learning Outcome No 1: Identify appropriate computer software and hardware

4.3.2.1 Learning Activities

Learning Outcome No 1: Identify appropriate computer software and hardware		
	Learning Activities	Special Instructions
1.1	Determine concepts of ICT in accordance with computer equipment.	Computer software and hardware to be provided. Activities may be carried out in groups or individually.
1.2	Determine classifications of computers in accordance with manufacturer's specification.	
1.3	Identify appropriate computer software (a collection of instructions or computer tools that enable the user to interact with a computer, its hardware, or perform tasks) according to manufacturer's specification.	
1.4	Identify appropriate computer hardware (collection of physical parts of a computer system such as monitor, keyboard, and mouse) according to manufacturer's specification.	
1.5	Determine functions and commands of operating system accordance with manufacturer's specification.	

4.3.2.2 Information Sheet No4/LO1: Identify appropriate computer software and hardware



Introduction

Digital literacy is an important topic in the modern world. Literacy is the urge to read and learn. So digital literacy is the process of acquiring knowledge and skills to effectively use computers and other technology devices. Some of the computer hardware are, desktop/monitor, printers, scanners, mouse, Keyboard, and storage devices (hard disk). The computer software includes Windows, Linux, UNIX. These are the operating system software.

Under the computer software's we also have application software's which include: word processors (e.g. Microsoft word), spreadsheets (e.g. Microsoft Excel), graphic presentations (e.g. Microsoft PowerPoint), and the database management systems (e.g. Microsoft access).

Definition of Key Terms

Information computer technology: This is an extensional term to IT that stresses on systems that enable users to access, store, transmit and manipulate information. ICT is a broad subject and the concepts are evolving. It covers any product that will store, retrieve, manipulate, transmit, or receive information electronically or in a digital form (e.g. emails).

Computer software: Computer software is a collection of instructions that enable the user to interact with a computer, its hardware, or perform tasks. It is used or needed for input,

processing, output, storage and management of activities. Softwares which are used for inputting data in the system include; word processors, spreadsheets, and presentation software. Software used for storage include cloud storage where the output is stored or hosted using resources in data centers and delivered to end users over the internet. Software for management of activities include database management systems which allow users to process data into useful information.

Computer hardware: This is any tangible device in the computer environment. Some of the hardware that maybe encountered in this topic are:

- **Monitor:** This is the main output device of a computer. It is commonly known as Visual Display Unit (VDU).
- **Printer:** is used to print information of paper.
- **Storage devices:** these include flash disks, hard disks and optical disks (e.g. CDs).
- **Input devices:** such as the mouse and keyboard.

Internet: This is a global system of interconnected computer networks that use internet protocol suite (TCP/IP) to link devices worldwide. The internet carries a vast range of information, resources and services. Picture information is shared via the internet.

Digital literacy: While literacy is defined as the ability to read and write, digital literacy is the ability to access, process, understand and create information in the digital environment.

Content/Procedures/Methods/Illustrations

1.1 Concepts and Functions of ICT

Functions of ICT

- **Data capture:** Process of compiling information e.g. Amazon uses internet cookies to capture data about the customers' purchases via the website. So, it use the data to suggest items to a user related to the previous orders via the website.
- **Data processing:** This involves converting, analyzing, computing and producing all forms of data information. After capturing data, the system must reorganize that data based on what the organization wants to use the information for.
- **Generation of information:** Involves organizing information into a useful form.
- **Storage of information** involves retaining information for future use e.g. Facebook stores user registration details.
- **Retrieval of information:** Process by which a computer device is used to find and copy data for future distribution and processing. A good example is Google or Yahoo who have data centers which store information which can be used at a later stage by the end user to search for information online.

Basic concepts of ICT

Information technology encompasses all the technology (hardware, software and computer networks) that we use to collect, process, protect and store information. Information computer technology involves transfer and use of all kinds of information. ICT is the

foundation of economy and a driving force of social change in the 21st century. Distance is no longer an issue when it comes to accessing information, e.g. working from home, distance learning, and e-banking are now possible from any place with an internet connection and a computing device.

Hardware: The physical and tangible parts of a computer, that is, electrical, electronic and mechanical parts e.g. monitor, keyboard, mouse, etc.

Software: These are the intangible parts of computer.

Software types

- i. Operating system: This is the program which manages computer hardware e.g. Linux, Windows, Mac OS X, etc.
- ii. Application software (utility programs): These are all programs that users use to perform different tasks or for problem solving. For example Microsoft word, Microsoft excel and Microsoft PowerPoint.
- iii. Computer networks: A computer network is comprised of at least two computers, connected by wire or wirelessly that can exchange data.

Types of networks:

- LAN (local Area Network): Covers a relatively small geographical area e.g. a university campus or office building. Examples include Ethernet and Wi-Fi.
- WLAN (Wireless Local Area Network): Links two or more devices using wireless communication within a limited area such as a campus or office building. Some WLANs exist to extend an existing wired network.
- WAN (Wide Area Network): Covers a relatively large geographical area e.g. cities or states. Connects a greater number of computers and local networks.

1.2 History and Classification of Computers

The computer as you know it today had its beginning with a 19th century. English mathematician called Charles Babbage (1791 – 1871) designed the analytical engine and it is this design that the basic framework of computers today is based on.

Computers can be classified into three generations. Each generation lasted for a certain period of time and each gave us either a new and improved computer or an improvement of the existing computer

- i. **First generation** (1937-1946): The first computer Atanasoh Berry computer (ABC) was built by Dr. JOHN B. Atanasoh and Clifford Berry. In 1943 an electronic computer named the colossus was built for the military. Other developments continued until 1946 when Electronic Numerical Integration and Computer (ENIAC) was built. There were no operating systems.
- ii. **Second generation** (1947-1962): The computers in this generation used transistors instead of vacuum tubes, which were more reliable. The Universal Automatic Computer (UNIVAC1) was introduced for commercial use. In 1953, the

International Business Machine (IBM) 650 and 700 series computers made their mark in the computer world. Over 100 programming languages were developed. Computers had memory and operating systems.

- iii. **Third generation** (1963-Present): The invention of integrated circuit brought us this generation. Computers became smaller, more powerful, and more reliable and they were able to run many different programs at the same time.

Classification of computers

Computers can be classified in the following basis:

- Basis of size
- Basis of functionality
- Basis of data handling

Classification on basis of size

- **Supercomputer:** This is the highest performing computer system. It has a high level of performance compared to general purpose computer. Examples include PERAM, Jaguar, and roadrunner.
- **Mainframe computer:** Commonly called big iron. They are used by big organizations for bulk data processing such as statistics, census data processing and transaction processing e.g. IBM series system 29 etc.
- **Minicomputers:** They came into the market in the mid-1960s and were sold for a cheaper price than the mainframe. They were designed for control, instrumentation, human interaction e.g. laptops, PCs etc.
- **Microcomputers:** It is small, relatively inexpensive with a microprocessor as its CPU. It includes a microprocessor, memory and minimal input and output circuitry mounted on a single printed circuit board.

Classification on basis of functionality

- **Servers:** Dedicated computers set up to offer some services to the client
- **Workstations:** Computers designed to primarily be used by a single user at a time.
- **Information appliances:** Portable devices designed to perform a limited set of tasks like basic circulations, playing multimedia, etc.
- **Embedded computers:** Computing devices which are used in other machines to serve limited set of operations

Classification on basis of data handling

- **Analogue computer:** Form of computer that uses the continuously changeable aspect of physical facts such as electrical, mechanical quantities to model the problem being solved.
- **Digital computers:** They perform circulations and logic operations with quantities represented as digits usually the binary number system i.e. 0s & 1s.
- **Hybrid:** A computer that processes both analogue and digital information.

1.3 Components of a Computer System

Computer system

A computer software is simply a collection of data or computer instructions that tell the computer how to work. They include computer programs, libraries and non-executable data such as online documentation or digital media.

Types of software

- **Application software:** Uses the computer system to perform special functions or provide entertainment functions beyond the basic operation of the computer itself.
- **System software:** Software for managing computer hardware behavior so as to provide basic functionalities that are required by users or other software to run properly. Examples are operating system, device drivers and utility software.
- **Malicious software:** Software developed to harm and disrupt computer e.g. malware, viruses.

1.4 Computer Hardware

These are the physical, tangible parts of a computer such as cabins, CPU, monitor, keyboard, speakers, etc.

Examples

- Input devices and output devices: Input devices enter information into the system e.g. keyboard, mouse. Output devices display information in human readable mode.
- Storage devices e.g. CDs, flash disk and hard disk

1.5 Operating System Function and Commands

The operating system is a system software that manages computer hardware, software resources and provides common service for computer programs.

Types of operating systems

- Single and multi-tasking
- Single and multiuser
- Distributed: Manages a group of distinct computers and make them to appear to a single computer
- Template
- Embedded: Designed to be used in embedded computer systems
- Real time: An OS that guarantees to process events or data by a specific moment and time
- Library

Functions of an operating system

- Security: It uses password protection to protect user data and similar techniques.
- Job accounting: It keeps track of time and resources used by various tasks and users.
- Memory management: It manages the primary and main memory.
- Processor management: It decides which processes have access to the processor.
- Device management: It manages device communication via their respective drivers and keeps track to all devices connected to the system.

Commands of an operating system

- APPEND: Sets the path to be searched for data files or displays the current search path.
- ASSIGN: Command direct request for disk operations from one drive to a different drive.
- ATTRIBE: This command changes or views the attributes of one or more drives.
- CALL: Starts a batch file from which another batch file and returns when that one ends
- CHCP: Command either displays or changes the active code page used to display character glyphs in a console window.

Conclusion

This unit covered determining concepts of computers, classification of computers, identification of appropriate computer software and hardware as well as determining functions and commands of operating systems, history of computers, functions and concepts of ICT.

Further Reading



Computer basics by Rajaraman
People.bu.edu/briefcomputerhistory.html

4.3.2.3 Self-Assessment questions



Written Assessment

1. WAN stands for?
 - a) Wide area network
 - b) Wide access network
 - c) Wide arithmetic network
2. Program used to control system performance is classified as.
 - a) Experimental program
 - b) System program
 - c) Specialized program
 - d) Organized program
3. Examples of system programs include
 - a) Operating system
 - b) Trace program
 - c) Compiler
 - d) All of the above
4. Which of the following is not a computer hardware?
 - a) Malware
 - b) Monitor
 - c) Compact disk
 - d) Hard disk
5. Which one of the following is an odd one out when looking at the functions of ICT?
 - a) Generation of information
 - b) Storage of information
 - c) Data capture
 - d) None of the above
6. Which one of the following is not a classification of computers on the basis of size?
 - a) Analogue computers
 - b) Minicomputers
 - c) Mainframe computers
 - d) Supercomputers
7. Types of computer software are
 - a) System software
 - b) Logic software
 - c) Both A and B
8. Which network covers a relatively small geographical area?
9. WLAN stands for.
10. What is a computer software?
11. What are embedded computers?
12. What is an operating system?

Oral assessment questions

1. What are some functions of an operating system that you understand?
2. Briefly explain the history of computers.

Practical Assessment

Which one of the following is used to store programs installed on a computer?

- a) DVD drive
- b) Video card
- c) CD drive
- d) Hard drive

Project

1. Type the following in a word document

Students

Peter

James

John

Teachers

Lewis

Caleb

Melisa

2. I want to create a second copy of an open document under a different name. What should I do?
 - i. copy and paste the text in a new document
 - ii. use 'save as'
 - iii. press ctrl s
 - iv. open the file again
 - v. Which of the following methods can you not use to zoom in?
 - vi. holding ctrl key and scrolling the mouse wheel
 - vii. using the zoom button
 - viii. ctrl+ shift +z
 - ix. Using the zoom slider at the bottom right corner.

4.3.2.4 Tools, Equipment, Supplies and Materials

- Desktop computers
- Laptop computers
- Other digital devices
- Printers
- Storage devices
- Internet access

- Computer software

4.3.2.5 References




Mall, R. (2018). *Fundamentals of software engineering*. PHI Learning Pvt. Ltd.
People.bu.edu/briefcomputerhistory.html

Rajaraman, A. (1995). Introduction to computers. In *Academic Library Automation* (pp. 6-16). New Delhi, Ess Ess Publications.

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4.3.3 Learning Outcome No 2: Apply security measures to data, hardware, software in automated environment

4.3.3.1 Learning Activities

Learning Outcome No 2: Apply security measures to data, hardware, software in automated environment		
 Learning Activities	Special Instructions	
2.1. Classify data security and privacy (confidentiality of data, cloud computing) in accordance with the prevailing technology. 2.2. Apply security threats (cyber terrorism, hacking) and control measures (counter measures against cyber terrorism, risk reduction, risk management, pass wording) in accordance with laws governing protection of ICT. 2.3. Detect computer threats and crimes. 2.4. Undertake protection against computer crimes in accordance with laws governing protection of ICT.	Computer software and hardware to be provided. Activities may be carried out in groups or individually.	

4.3.3.2 Information Sheet No4/LO2: Apply security measures to data, hardware, software in automated environment



Introduction

Data security is certainly a hot topic these days. Controlling access to data helps ensure privacy and is required according to federal agency policies and regulations. Data security is a process of making sure data are available only to those who need to use it for a legitimate purpose. We have found that data security is not very different from other forms of security. The same concepts used to design castles apply to the construction of servers that offer access to a corporate database. The details are different, and the technical pieces are quite different, but the same approaches, rules and lessons apply. Below are some important maxims to keep in mind. Most of them have stood the test of time for thousands of years:

- i. There is no such thing as absolute security: We can raise the attacker's cost of breaching our data security to a very high level, but absolute guarantees are not possible.
- ii. Data security is always a question of economics: What is the value of what you are protecting? How much time, effort, and money are your opponent's willing to spend to get through your defenses?
- iii. An attacker doesn't go through security, but around it: Their goal is to find and exploit the weakest link.
- iv. Don't underestimate the value of your asset: Often common everyday data is underestimated. Mundane data can be very important.

Definition of key terms

Data security: This is the process of making sure data is available only to those who need it for legitimate purpose.

Data: This is the information that has been translated into a form that is efficient for movement or processing.

Data privacy /Information privacy: It is the aspect of information technology that deals with the ability of an organization or individual to determine what data in a computer system can be shared with third parties.

Security threats: This is the process of an illegal entity gaining access to a company's data or information.

Control measures: This is any measure taken to eliminate or reduce the risk of security threats.

Cyber criminals: These are illegal users who use many different methods to lure you into parting with your confidential personal or business information.

Content/Procedures/Methods/Illustrations

2.1 Data Security and Privacy Are Classified in Accordance with the Prevailing Technology

As discussed earlier, data security is the process of making sure data is available only to those who need to use it for legitimate use. Data security privacy on the other hand is the aspect of information technology that deals with the ability of an organization or individual to determine what data in a computer system can be shared with third parties. As more of our daily lives go online and the data we share is used in new and innovative ways, privacy and security have become important trust and reputation issues. The growing volume and sensitivity of information being shared, stored and used is driving demand for greater transparency about how such information is being protected (security) and managed (privacy). As a result, data security and privacy have moved from the backroom to the boardroom. Data breaches and privacy missteps now regularly make headlines and are a focal point for discussions and legislation worldwide. Failure to communicate on these important issues can damage business by eroding trust, tarnishing brand and reputation as well as undermining competitiveness.

Data security ensures that the data is accurate and reliable, and it is available when those with authorized access need it. A data security plan includes facets such as collecting only the required information, keeping it safe, and destroying any information that is no longer needed.

These steps will help any business meet the legal obligations of possessing sensitive data. Companies need to enact data security policy for the sole purpose of ensuring data privacy, or the privacy of their customers' information. More so, companies must ensure data

privacy because the information is an asset to the company. A data security policy is simply the means to the desired end which is data privacy. However, no data security policy can overcome the willing sale or soliciting of the consumer data that was entrusted to an organization.

Challenges to big data security and privacy

- Securing and protecting data in real time: Due to large amounts of data generation, most organizations are unable to maintain regular checks. However, it is most beneficial to perform security checks and observation in real time or almost in real time.
- Data provenance: To classify data, it is necessary to be aware of its origin in order to determine the data origin accurately, so that authentication, validation and access control can be gained.
- Protecting access control method communication and encryption: A secured data storage device is an intelligent step in protecting the data. Yet, because most often data storage devices are vulnerable, it is important to encrypt the access control methods as well.

2.2 Security Threats Are Identified and Control Measures Used

A threat is a possible danger that might exploit a vulnerability to breach security and therefore cause possible harm. A threat can either be intentional (e.g. hacking by an individual or criminal organization) or accidental (the possibility of a computer malfunctioning OR the possibility of natural disasters such as fires or otherwise a circumstance, capability, action or event).

Classification of security threats

- Classification according to type
- Physical damage: For example, fire, floods
- Natural events: For example, climate, volcanic
- Compromise of information: Via eavesdropping, theft of media
- Technical failures: For example, equipment, software
- Compromise of functions and errors in use, abuse of rights
- Classification according to origin
- Deliberate: Aiming at information asset e.g. spying, illegal processing of data
- Accidental: For example, equipment failure, software failure
- Environmental: For example, natural event, loss of power supply
- Negligence: Known but neglected factors compromising the network safety and sustainability.

Categories of the risk of security threats

- Damage: How bad would an attack be?
- Reproducibility: How easy it is to reproduce the attack?
- Exploitability: How much work is it to launch the attack?

- Affected users: How many users will be impacted?
- Discoverability: How easy it is to discover the threat?

Counter measures to security threat

A counter measure is an action, device, procedure or technique that reduces a threat, a vulnerability or an attack by eliminating or preventing it, by minimizing the harm it can cause or by discovering and reporting it so that corrective action can be taken.

Counter measures against physical attacks

If a potential malicious actor has physical access to a computer system, they have a greater chance of inflicting harm upon it. We can use the following counter measures:

- Electronic destruction devices:** Devices such as USB killer may be used to damage or render completely unusable anything with a connection to the motherboard of a computer. Without paper destruction, these devices may result in the destruction of ports and anything physically connected to the device attacked e.g. monitors.
- Hard drives and storage:** If the data of a storage device is in use and must be secured, one can use encryption to encrypt the content of a storage device or even encrypt the whole storage device. The device can be unlocked by a password, biometric authentication, a network interchange or any combination thereof. The process of adding physical barriers to the storage device is not to be neglected. Locked cases or physically hidden drives with a limited number of personnel with knowledge and access to the keys or locations may prove to be a good first line against physical theft.

2.3 Computer Threats and Crimes Are Detected

Cyber criminals may use many different ethos to lure you into parting with your confidential information. Malware (malicious software may be described as a variety of forms of hostile, intrusive or annoying software or program code. Malware could be computer viruses, worms, Trojan horses, dishonest spyware and malicious rootkits. Here is a quick explanation on some of the common computer threats you may come across:

- Computer viruses:** This is a small piece of software that can spread from one infected computer to another. The virus could corrupt, steal or delete data in your computer, or even erase everything on your hard drive.
- Trojan horse:** Users can infect their computers with this software simply by downloading an application they thought was legitimate but was infect or malicious. Once in your computer, it can do anything from recording your passwords by logging keystrokes to hijacking your webcam so as to watch and record you're every move.
- Malicious spyware:** It is used to describe a Trojan application that was created by cyber criminals to spy on their victims. An example would be a key logger software that records a victim's every stroke on his/her keyboard. The recorded information is periodically sent back to the originating cybercriminal over the internet.

- iv. **Computer worm:** This is a software program that can copy itself from one computer to another without human interaction. A worm can send copies of itself to every contact in your email address book and then send itself to all the contacts in your contact address book.
- v. **Spam:** In the security context, it is primarily used to describe unwanted messages in your email box. Spam is a nuisance as it can clutter your mailbox as well as taking up space on your mail server. However, spam messages can contain links that when clicked could go to a website that installs malicious software on to your computer.
- vi. **Pursing:** Pursing scams are fraudulent attempts by cybercriminals to obtain private information. Pursing scams often appear in the guise of email messages designed to appear as though they are from legitimate sources.
- vii. **Rootkit:** This is a collection of tools that are used to obtain administrator-level access to a computer or a network of computers. A rootkit could be installed on a computer by a cyber-criminal exploiting a vulnerability or security hole in a legitimate application on your PC and may contain spyware that monitors and records keystrokes.

These are perhaps the most common computer threats and crimes you will encounter that describe methods cyber-criminals use to access data, computer hardware and software.

2.4 Methods to Protect Yourself from Computer Crimes

- i. **Using strong passwords:** Don't repeat your passwords on different data and software. Change your passwords regularly. Make them complex. That means using a combination of at least 10 letters, numbers and symbols.
- ii. **Keep your software updated:** This is especially important with your operating systems and internet security systems. Cyber criminals often use known exploits in your software to gain access to your system. Patching those exploits and flaws can make it less likely that you will become a cyber-criminal target.
- iii. **Strengthen your network:** It is a good idea to start with a strong encryption as well as a virtual private network. A VPN will encrypt all traffic leaving your devices until it arrives to its destination.
- iv. **Keep up to date on major security breaches:** If your data has been impacted by a security threat, find out what information the hackers accessed and change your passwords immediately.
- v. **Know that identity theft can happen anywhere:** It is important to protect your data for example, by using a VPN when accessing the internet over a public Wi-Fi network.

Conclusion

This unit dealt with application of security measures to data, hardware, and understanding and listing the computer threats and crimes, classifications of security threats and the counter measures and methods of protecting data, software and hardware from security threats.

Further Reading



Cheswick, W. R., Bellovin, S. M., & Rubin, A. D. (2003). *Firewalls and Internet security: repelling the wily hacker*. Addison-Wesley Longman Publishing Co., Inc.

4.3.3.3 Self-Assessment



Written Assessment

1. A computer network consists of two or more computing or other devices connected by a?
 - a) Wireless signal
 - b) Cable
 - c) Communication media
 - d) Wire
2. Which is not a method of protecting data from computer threats?
 - a) Pursuing
 - b) Rootkit
 - c) Spam
 - d) All the above
3. The process of an illegal entity to gain access to a company's data or information is?
 - a) Security threat
 - b) Data privacy
 - c) Data security
 - d) Data integrity.
4. Which one of the following is not a computer threat or crime?
 - a) Computer virus
 - b) Malware
 - c) Rootkit
 - d) None of the above
5. Which one of the following are categories of the risk of security threats?
 - a) Damage
 - b) Negligence
 - c) Affected user
 - d) Both a and c
6. Security threats can be classified as.
 - a) Physical damage
 - b) Technical failures
 - c) Compromise of functions
 - d) All the above
7. What does download from the internet mean?
 - a) Retrieving files from the internet

- b) Lowering your game level on the internet
 - c) Viewing web pages on the internet.
8. What is data?
 9. What is a computer virus?
 10. What is data privacy?
 11. What is data security?
 12. What is a security threat?

Oral Assessment

1. What is a security threat and what are the types of a computer threats you know?
2. Briefly explain the concept of data security and privacy?

4.3.2.4 Tools, Equipment, Supplies and Materials

- Desktop computers
- Laptop computers
- Hard drive
- Flash disks
- Computer antivirus
- Internet access

4.3.3.5 References




- Cheswick, W. R., Bellovin, S. M., & Rubin, A. D. (2003). *Firewalls and Internet security: repelling the wily hacker*. Addison-Wesley Longman Publishing Co., Inc.
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4.3.4 Learning Outcome No 3: Apply computer software in solving tasks

4.3.4.1 Learning Activities

Learning Outcome No 3: Apply computer software in solving tasks	
 Learning Activities	Special Instructions
<ol style="list-style-type: none">3.1. Apply Word processing concepts (using a special program to create, edit and print documents) in resolving workplace tasks, report writing and documentation.3.2. Apply Word processing utilities in accordance with workplace procedures.3.3. Prepare Worksheet layout in accordance with work procedures3.4. Build Worksheet and manipulate data in the worksheet in accordance with workplace procedures.3.5. Undertake continuous data manipulation on worksheet in accordance with work requirements.3.6. Undertake database design and manipulation in accordance with office procedures.3.7. Provide data sorting, indexing, storage, retrieval and security in accordance with workplace procedures.	<p>Computer software and hardware to be provided.</p> <p>Activities may be carried out in groups or individually.</p>

4.3.4.2 Information Sheet No4/LO3: Apply Computer Software in Solving Tasks



Introduction

The term software refers to the set of electronic program instructions or data that a computer processor reads in order to perform a task or operation. Software can be categorized according to what it is designed to accomplish. The main two types are: System software and application software. Under this unit, we will talk about application software. Application software (or simply applications) are often called productivity programs or end users programs because they enable the users to complete tasks such as: Creating documents, spreadsheets, databases, publications, doing online research, sending email, designing graphics etc. Application software is specific to the task it is designed for and can be simple as a calculator application or as complex as word processing application. When you begin creating a document, the word processing software has already set the margins, font and line spacing for you. Microsoft Word is a popular word processing application that is included in the software suite of applications called Microsoft Office.

A software suite is a group of software applications with related functionality. For example

- Office software suites might include word processing, spreadsheets, and database, presentation and email applications.
- Graphics suites such as Adobe Creative Suite might include applications for creating and editing images.
- Audio suits such as Sony Audio Master Suite is used for audio productions.

In designing databases, there are a few rules to stick to. It is important to know what these rules are, but more importantly to know why these rules exist, otherwise you will tend to make mistakes. On the other hand, worksheets help you with your financial calculations.

Definition of key terms

Word processor: This is a computer program or device that provides for inputs, editing, formatting and output of text often with additional features.

Word documents: All items created using a word processing software.

Word Processing: A computerized method of writing, editing, saving, formatting and printing texts.

Text: Consists solely of letters.

Characters: Anything typed from your keyboard.

Text wrap: In word processing programs, this occurs when you get to the end of the line and the text wraps without you pressing the enter key.

Font: Size and style of writing.

Edit: To make changes to a document.

Table: Refers to data arranged in a series of rows and columns.

Word Processing Utilities: These are the software used to manipulate text and apply a basic design to your pages.

Database: An organized collection of data, generally stored and accessed electronically for a computer system.

Update: Insertion, modification and deleting of the actual data.

Spreadsheet: A user interface that resembles one or more paper accounting worksheets.

Content/Procedures/Methods/Illustrations

3.1 Word Processing Concepts Are Applied in Resolving Workplace Tasks, Report Writing and Documentation

As we have seen, word processing is the production of typed documents (such as business letters) with automated and usually computerized typing and text editing equipment. A word processing program allows you to create, edit, format and print many types of documents such as letters, Memos, CVs, etc. You can create World Wide Web pages with some word processing programs.

Word Processing Concepts and Descriptions

- a) **Opening word processing package:** Word processing package is mostly used in offices on microcomputers. To open a new document, click on the “start” button and go to “all programs” and click on “Microsoft word”
- b) **Opening and closing of documents:** Word automatically starts with a blank page. To open a new file, click on “new”.
- c) **Page set up:** Page set up options are usually available on the “page layout menu”. Parameters defined by the user help in determining how a printed page will appear.
- d) **Print preview:** This option is used to view the page or adjust before any document gets printed.
- e) **Cut, copy, paste.**
- f) **Table manipulation:** Manipulation of table includes drawing a table, changing cell width and height, alignment of text in the cell, deletion/insertion of rows and columns and borders and shading.

In summary, this topic provides us with a clear idea about components of word processing basics, opening and closing the documents, text creation and manipulation, formatting the text, table manipulation.

3.2 Word Processing Utilities are applied in Accordance with Workplace Procedures

Under this topic, we look at some of the word processing utilities in Microsoft word. They include:

- a) **Checking spelling.** To check spelling in an entire document:
 - i. Under the review menu, choose spelling and grammar under the proofing submenu.
 - ii. A popup box will appear where you will get to specify exactly what you want to check. It will also give you suggestions to the current sentence.
 - iii. Then you will click change command and it will automatically save the changes and take you to the next sentence. Once finished, you will close the spelling and grammar popup box by clicking the close command.
- b) **Finding Synonyms.** To find synonyms for a word in a document:
 - i. Select the word in your document.
 - ii. Click the review menu then choose the thesaurus from the submenu.
 - iii. To replace the word with a synonym, select the synonym and click replace.

c) Hyphenating words.

Hyphenation allows words to break between the syllables of words. Books and magazines hyphenate their texts in order to have more uniform spacing between words.

Under the page layout menu, select hyphenation from the page set up submenu and the word processor will automatically hyphenate the text.

d) Getting word count and other document statistics.

Word count is finding out the numbers of words, characters, paragraphs and lines in the document.

Under the review menu, click the word 'count' from the porting submenu. A popup box will appear showing the document's statistics which includes pages, words, characters (with and without spacing), paragraphs and lines.

3.3 Worksheet Layout Is Prepared in Accordance with Work Procedures

Preparing worksheet layout

A worksheet is a collection of cells where you keep and manipulate the data. Each excel workbook can contain worksheets.

- a) Select a worksheet: When you open an Excel workbook, Excel automatically selects sheet 1 for you. The name of the sheet appears on the sheets tab at the bottom of the document window.
- b) Insert a worksheet: You can insert as many worksheets as you want. To quickly insert a worksheet, click the plus sign at the bottom of the document window.
- c) Rename a worksheet: To give a more specific name, execute the following steps:
 - Right click on the sheet tab of sheet 1
 - Choose to rename
 - Type a new name
- d) Delete a worksheet: To delete a worksheet, right click on the sheet tab and choose to delete.

3.4 Building A Worksheet and Applying Data Manipulation on Worksheet

- a) Develop a spreadsheet to analyze your expenditures for a month or for whatever period you like and learn the basics of organizing budgets with key features of spreadsheets.
- b) Choose a file and save it as Financials.
- c) Begin to enter information by simply clicking on a cell and typing your entry.
- d) Plan your needed data. Before creating any kind of spreadsheet. You need to plan what it will include so that you can structure and format it accordingly. While it is possible to change the spreadsheet structure later on, the more data you have added, the more inconvenient it becomes.
- e) Create headings. You create headings depending on the topic being covered. To create diagonal names, navigate the 'home' tab and 'find' and click the formatting option with a diagonal rising appearance. This means the headings stand out without changing the column width.

Basic Terms in Excel

Formulas: It is an expression that operates on values in a range of cells or a cell. Example =A1+A2+A3 which finds the sum of the range of value from cell A1 to cell A3.

Functions: These are predetermined formulas in excel. They eliminate laborious manual entry of formulas while giving them human friendly names. For example, = SUM [A1:A3]. This function sums all the values from A1 to A3.

3.5 Ways to Insert Data in A Worksheet

- **Simple insertion:** Typing a formula inside a cell. This is the most straightforward method of inserting basic excel formulas. The process starts with typing an equal sign, followed by the name of the function.
- **Using insert function option from formulas tab:** To achieve this, go to the formulas and select the first menu labeled 'insert' function. The dialog box will contain all the functions you need.
- **Using Auto sum option:** Navigate to the home tab in the far-right corner, click the 'auto sum' option. Then click the caret to show other hidden formulas.

Basic Excel Formulas for your Workflow

i. SUM

Aggregates values from a selection of columns or rows from your selected range.

=SUM {number 1, [number 2],}

ii. AVERAGE

= AVERAGE {number 1, [number 2],}

iii. COUNT

This function counts all cells in a given range that contain only numeric values.

=COUNT {value 1, [value 2],}

iv. COUNTA

This function counts all cells in a given range regardless of the type i.e. it counts dates, times, strings.

= COUNTA. {Value 1, [value2],}

v. IF

It is used when you want to sort your data accordingly to a given logic.

=IF {logical –test, [value –if-true], [value-if-false]}

vi. TRIM.

This function makes sure your functions do not return errors due to unruly spaces.

=TRIM [text]

vii. MAX and MIN.

Functions help in finding the maximum number and the minimum number in a range of values.

=MIN {number1, [number2],}

=MAX {number1, [number2],}

3.6 Preparing A Database and Manipulating the Data

Designing a database is in fact easy, but there are a few rules to stick to. It is important to know what these rules are, but more importantly, know why these rules exist, otherwise you will tend to make mistakes. Standardization makes your data model flexible and that makes working with your data much easier. A good database design starts with a list of the data that you want to include in your database and what you want to be able to do with the database later.

- i. **Identifying Entities:** Types of information that are stored in a database are called entities. These entities exist in four kinds: people, things, events and locations. If the information you want to include doesn't fit in these categories, then it is probably not an entity but a property of an entity, an attribute.
- ii. **Identifying Relationships:** Identify the relationship between entities and determine the cardinality of each relationships. The relationship is the connection between entities. Types of relationships include:
 - One to one
 - One to many
 - Many to one
 - Many too many
- iii. **Identifying attributes:** The data elements that you want to save for each entity are called attributes. For example, about the product that you sell, you may want to know the price, name of the manufacturer, etc.
- iv. **Assigning keys**
 - **Primary keys:** One or more data attributes that uniquely identify an entity. A key that consists of two or more attributes is called a composite key. All attributes part of a primary key must have a value in every record (which cannot be left empty) and the combination of these attributes must be unique in the table.
 - **Foreign keys:** This is an entity in reference to the primary key of another entity. It can also be part of a primary key, in that the attribute will be indicated primary key behind its name.

Defining the attributes data type

The standard data types that every database knows and are most likely to be used are:

- i. CHAR: Includes characters, numbers, and punctuations and has a characteristic that is always saved as a fixed amount of positions e.g. CHAR 10.
- ii. VARCHAR: same as CHAR but the difference is that VARCHAR only takes as much space as necessary.
- iii. TEXT: Contains large amounts of texts.
- iv. INT: Contains a positive or negative whole number e.g. INT 10
- v. FLOAT, DOUBLE: It can store floating point numbers.

3.7 Provides Data Sorting, Indexing, Storage, Retrieval and Security in Databases

Data storing in database is done by a process called Normalization.

Normalization

Normalization makes your data model flexible and reliable. It does generate some overhead because you usually get more tables, but it enables you to do many things without having to adjust it.

- Normalization the first form: States that there may be no repeating groups of columns in an entity.
- Normalization the second form: States that all attributes of an entity should be fully dependent overall primary key.
- Normalization the third form: States that all attributes need to be directly dependent on the primary key and not on other attributes.

Types of database objects

- Tables: They store information.
- Queries: Lets you perform an action on a table.
- Forms: Attractive windows that you create, arrange and colorize.
- Reports: Help you print some or all of the information in a table.
- Macros: Mini programs that automate custom tasks.
- Modules: Files that contain visual basic code.

Saving Databases

Access doesn't require that you save your data. It automatically saves any edits you make to the records in a table.

When you add or edit a database object, Access waits until you finish and close the object at which it prompts you to save or discard your changes.

Conclusion

The unit covered the application of computer software in solving tasks in accordance with workplace procedures. We looked at word processing using Microsoft word, preparing worksheets using Microsoft excel and designing databases using Microsoft Access.

Further Reading



Schneider, G. M., & Gersting, J. (2018). Invitation to computer science. Cengage Learning.

4.3.4.3 Self-Assessment



Written Assessment

1. What stores information in databases?
 - a) Query
 - b) Report
 - c) Table
 - d) All the above
2. In a computer, a tool which is used to find a similar or alternative word in a document is called?
 - a) Finder
 - b) Thesaurus
 - c) Dictionary
 - d) Style Cluster
3. Computer word processing includes process of?
 - a) Entering text
 - b) Editing text
 - c) Formatting document
 - d) All of the above
4. When starting word, default document window name is
 - a) Document 1
 - b) File 1
 - c) Word 1
 - d) Wpd 1
5. DBMS is a software
 - a) True
 - b) False

6. Database is generally
 - a) System centered
 - b) User centered
 - c) Company centered
 - d) Data centered
7. The restrictions placed on the data
 - a) Relation
 - b) Attribute
 - c) Parameter
 - d) Constant
8. What is a word processor?
9. What is a database?
10. What is a spreadsheet?
11. What is a function in MS Excel?
12. What do you understand by normalization?

Oral Assessment

1. What are some of the word processing concepts you understand?
2. What are some of the ways that one can insert data in Microsoft excel?

Practical Assessment

1. Type a word document using a word processing utility of your choice and explain the importance of growing technology in the modern world.
2. Using Microsoft excel, come up with a spreadsheet that inputs all the marks in your academic year and come up with the total marks. Generate a report.
3. Briefly explain the features of Microsoft word and excel.

Project

Using the knowledge on database design, come up with a database called class of year 2019. Create tables with your names, ID number, unit and date of admission as the fields. Create another table called course, with course ID, course name and year as the fields. Use the appropriate relationships to link these table then fill each with a maximum of 6 entries.

4.3.4.4 Tools, Equipment, Supplies and Materials

- Desktop computers
- Laptop computers
- Computer software
- Printers
- Storage devices
- Internet access

4.3.4.5 References



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Wempen, F. (2014). *Computing fundamentals: IC3 edition*. John Wiley & Sons.

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4.3.5 Learning Outcome No 4: Apply internet and email in communication at workplace

4.3.5.1 Learning Activities

Learning Outcome No 4: Apply internet and email in communication at workplace	
 Learning Activities	Special Instructions
<p>4.1. Open and apply electronic mail addresses in workplace communication in accordance with office policy.</p> <p>4.2. Define and execute office internet functions in accordance with office procedures.</p> <p>4.3. Determine Network configuration (organizing and maintaining information on the components of a computer network) in accordance with office operations procedures.</p> <p>4.4. Install and manage official World Wide Web according to workplace procedures.</p>	<p>Computer software and hardware to be provided.</p> <p>Activities may be carried out in groups or as individual.</p>

4.3.5.2 Information Sheet No4/LO4: Apply Internet and Email in Communication



Introduction

This unit covers applying internet and email in communication by opening email address, executing office internet functions and determining network configuration. We will have to understand what the internet and email is. The internet is many connected computers (large set of computer networks) linked together they can communicate with each other, over the telephone lines. Internet refers to a global interconnection of computer and computer networks to facilitate global information transfer. It is an interconnection of computers throughout the world, using ordinary communication lines and modems. The internet uses (Very Small Aperture Telecommunication Systems) VSATS such as telephone lines, satellites. The electronic mail (email) is one of the common services provided by the internet. Email is a worldwide system for sending and receiving electronic messages from one computer to another. Email refers to electronic messages sent over the internet or a network. Email can contain both text and files.

In summary we will be looking at how we will apply the internet and email in communication by opening electronic mail addresses, executing the internet functions and determining network configuration.

Definition of key terms

Internet: Refers to the global interconnection of computers and computer networks to facilitate global information transfer. It is an interconnection of computers throughout the world.

Email: This is a worldwide system for sending and receiving electronic messages from one computer to another.

HTTP (Hyper Text Transfer Protocol): This is a standard protocol for communications between a web browser and a web server.

Web browser: This is a program that lets the user browse through information in the web. Intranet - Is an internal corporate network used in an organization to enable the sharing of documents among coworkers.

Extranet: It works in the same manners as intranet but provides information to selected users outside the organization.

Web pages: Documents published by organizations and individuals who are interested in putting themselves on the web.

Network configuration: This is the process of setting network controls, flow, and operation to support the network communication of an organization and or network owner. It is also known as network set up.

World Wide Web (WWW): This is a global (international) system of connected web pages containing information such as text, pictures, sound and video.

Content/Procedures/Methods/Illustrations

1.1 Opening and Applying Email Addresses in Workplace Communication

Electronic mail (email)

Email is a worldwide system for sending and receiving electronic messages from one computer to another. Email refers to electronic messages sent over the internet or a network. Email can contain both text and files. With email, users can create send messages to one user, several users or all the users on a distribution list. Most email software enables users to send text messages. Users can also attach files from word processors, spreadsheets, reports, production data etc. and then send them via email.

Components Required

For one to be able to communicate using email, the following components are required:

- A computer: Where you will send and receive email.
- An email program: Programs that let you send, receive and manage email messages. They include Microsoft outlook, outlook express, lotus notes and Eudora.
- Email addresses of the sender and the receiver.
- An internet service provider (ISP): Company who will deliver your messages to the receiver.

Opening or setting up an email or news account

To set up an email account, use an email program such as outlook express. Outlook express is a web browsing software that can help you exchange email messages on the internet. You will need the following information from your internet service provider or Local Area Network (LAN). For email accounts you need to know:

- i. The type of mail server you use (POP3, IMAP or HTTP).
- ii. Your account name and password.
- iii. Name of incoming mail server,
- iv. If you are using POP3 or IMAP, the name of an outgoing mail server.

To add a mail or news account

- a) On the startup menu, point on the programs then click outlook express.
- b) On the tool's menu click accounts.
- c) In the internet account dialog box, click add button.
- d) Select either mail or news to open the internet connection wizard and then follow the instructions to establish a connection with a mail or news server.

Email addresses

Each user has his/her own email address in form of computer storage space to receive messages. The email address is accessed via a computer terminal within the system. In addition, each user has a password to protect access.

Components of an email address

It consists of two parts separated by the symbol @ e.g. mnf@tropicalheat.com.

- i. The first part of the address to the left side of @ refers to the person's identity or login name. e.g. mnf
- ii. The second part following @ is the computers address. It is usually made up of 2 subparts to further identify the individual, organization(s) or country. In this case "tropical heat" identifies the business, ".com" is the extension which identifies the type of the organization.

Some activities done on the email

- Reading email messages.
- Reply email messages
- Creating and sending email messages.

Advantages of email

- It is cheap and economical.
- It is secure i.e. access can be restricted by a password.
- It is faster i.e. emails can be sent instantly.
- It is efficient i.e. messages prepared only once can be sent to several users.

Disadvantages of email

- Initial installation cost is high.
- Messages may be lost before they are read due to virus infection.
- High cost of storage.

1.2 Define and Execute Internet Functions

We study the internet to understand the services it offers, what is required in order to get connected as well as to establish a connection and log out of the internet. Internet refers to the global interconnection of computers and computer networks to facilitate information transfer. It is an interconnection of computers throughout the world using ordinary telecommunication lines and modems. Other names of the internet include: The net, Information superhighway, cyber space.

Features of the internet

- The internet is a collection of networks.
- Networks are connected by gateways that effectively remove barriers so that one type of network can “talk” to a different type of network.

Functions of the internet

- Communication: Internet communication capabilities include sending and receiving emails. You can send emails to your friends anywhere in the world, chat and send instant messages.
- Information retrieval: The internet is a library. Thousands of books, magazines can be read on the internet.
- Offering of information and products. You can find information, buy books online, check what the weather is like anywhere in the world and so much more.

Internet services

- Electronic mail [email]
- Online chatting
- Downloading of programs
- File transfer
- Video conferencing

Uses of the internet

- Buyers can do shopping online.
- Salespeople can use the internet to keep in touch with their home offices.
- Students can communicate and gather information.
- Researchers can get information.

1.3 Network Configuration

Network configuration /network set up is the process of setting a network control, flow and operation to support the network communication of an organization and or network owner. Network configuration allows a system administrator to set up a network to meet communication objectives. The process involves the following tasks:

- a) Router configuration: Specifies the correct IP addresses and route setting.
- b) Host configuration: Sets up a network connection on a host computer/laptop by logging the default network settings such as IP addressing, proxy, network name.
- c) Software configuration: Any network-based software is allowed access and provided with the appropriate credential to monitor network traffic.

Broadly speaking, there are two types of network configuration:

- i. **Peer-to-peer networks:** They are commonly implemented where less than 10 computers are involved and where strict security is not necessary. All computers have the same status hence the term “peer” and they communicate to each other on equal footing.
- ii. **Client/server networks:** There are more suitable for larger networks. A central computer or server acts as the storage location for files and applications shared on the network. Usually, the server is a higher than average performance computer. The server also controls the network access of the other computer which are referred to as client computers.

Components of a computer network

- Minimum of at least 2 computers
- Cables that connect the computers to each other although wireless communication is becoming common.
- A network interface device on each computer. (NIC)
- A switch used to switch the data from one point to another. Hubs are outdated and are little used for new installations
- Network operating system software

Advantages of computer networking

- Speed
- Cost
- Resource sharing
- Flexible access
- Security.

4.4 World Wide Web (WWW or WEB)

The web is an internet application [software] that uses the internet as its network. The web is a collection of hyperlinked web pages published on the internet. The web is a global (international) system of connected web pages containing information such as text, pictures, sound, and video.

Web pages: Documents published by an organization and individuals who are interested in putting themselves on the web. eg text, pictures, sound, video,

Website: Collection of web pages belonging to an organization or individual

Web browser: Program that lets the user surf on the web. Some of the common types of web browsers are Internet Explorer, Firefox, Chrome, Microsoft Edge, Torch, etc.

Web hosting: A WWW server is a computer with programs that answers requests for documents from clients [browsers] over the internet.

Web address: (Uniform Resource Locator URL) An address is a location of a file. Each web page in the world has a unique internet address or location. The internet addresses are called URLs. e.g. URL of Microsoft is <http://www.microsoft.com>

Advantages of the internet

- One can download (copy) information from a website.
- Provides up to date information.
- Can be used for research. it is a fast way of communicating
- It doesn't require a lot of training to browse.

Disadvantages of the internet

- It leads to spread of viruses.
- No copyrights rules is meant to protect the property of an organization.
- The cost of the internet service provider is high.

Conclusion

The unit dealt with applying internet and email in communication. We looked at how to open emails and applying them in workplace communication. We also looked at the components of the email, its advantages and disadvantages. We looked at the internet, its features and functions and we also looked at some of the network configurations

Further Reading



Panko, R. R. (2010). *Corporate computer and network security, 2/e*. Pearson Education India.

4.3.5.3 Self-Assessment



Written Assessment

1. The program that lets the user browse through information on the web is called.
 - a) Intranet
 - b) Extranet
 - c) Web browser
 - d) Web pages
2. In internet technology IP means?
 - a) Internet provider
 - b) Internet protocol
 - c) Internet procedures
 - d) Internet processor.
3. A website's front page/main page is called?
 - a) Browser page
 - b) Search page
 - c) Home page
 - d) Bookmark
4. Verification of a log in name and password is known as?
 - a) Configuration
 - b) Accessibility
 - c) Authentication
 - d) Logging in
5. The process of transferring files from a computer on the internet to your computer is called?
 - a) Uploading
 - b) Forwarding
 - c) FTP
 - d) Downloading.
6. Internet explorer falls under.
 - a) Operating system
 - b) Compiler
 - c) Browser
 - d) IP address.
7. What is the full form of WWW in web address?
 - a) World Wide Web
 - b) Worldwide word
 - c) Worldwide wood
 - d) None of these.
8. What is an email?
9. What is an attachment?
10. What is Microsoft outlook?

11. What is the internet?
12. What is the World Wide Web?

Oral Assessment

1. What are some of the functions of the internet?
2. What are some of the advantages of the internet?

Practical Assessment

Open a web browsing application and go to address <http://www.ecdl.org/mysampletestvs/>

- i. Name the second of the 2 logos displayed in the top of the screen that loads (not the ECDL logo).
- ii. Click on the social networking link. What is this person's marital status?
- iii. Copy and paste this person's education information into the answer box.

4.3.5.4 Tools, Equipment, Supplies and Materials

- Internet
- A computer/laptop
- An email program
- An ISP

4.3.5.5 References




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4.3.6 Learning Outcome No 5: Apply Desktop publishing in official assignments

4.3.6.1 Learning Activities

Learning Outcome No 5: Apply Desktop publishing in official assignments	
 Learning Activities	Special Instructions
<p>5.1. Identify desktop publishing functions and tools in accordance with manufactures specifications.</p> <p>5.2. Develop desktop publishing tools in accordance with work requirements.</p> <p>5.3. Apply desktop publishing tools in accordance with workplace requirements.</p> <p>5.4. Enhance typeset work in accordance with workplace standards.</p>	<p>Computer software and hardware to be provided.</p> <p>Activities may be carried out in groups or as individual.</p>

4.3.6.2 Information Sheet No4/LO5: Apply Desktop Publishing in Official Assignment



Introduction

In this unit we will cover the application of desktop publishing by identifying, developing and applying functions and tools. We will look at the definitions of desktop publishing, the desktop publishing software, designing a publication, using a DTP system and orienting terminologies. We can describe publishing as the process of producing publications such as newspapers, pictures, cards, pamphlets, books calendars, etc. that has a special text and graphical designs and layouts. Desktop publishing refers to the process of producing publications by designing their text and graphics layout using special desktop publishing software installed on the personal computers. We shall later be discussing the DTP later on this unit.

Definition of Key Terms

Desktop publishing: Refers to the process of producing publications by designing their text and graphics layout using special desktop publishing software installed on the personal computers. The text and graphical objects can turn be inserted, edited, formatted and printed.

Publishing: This is the process of producing publications such as newspapers, cards pamphlets pictures, calendars, books, etc. that has special text and graphical designs.

Type setter: This is the person designing publications.

Electronic pages: Commonly refers to the website, manuals, e-books, etc. which are normally not printed but shared digitally.

Virtual pages: On the other hand, are electronic pages created in a DTP software which are eventually published as printed pages.

5.1 Desktop Publishing Functions and Tools

Publishing is the process of producing publications such as newspapers, cards, pamphlets, books etc. that has special text layout and designs. Traditionally publishing involved drawing and writing manually on wooden or metallic boards. The artwork would then be painted with ink and pressed on papers to produce a printout. Today the art of publishing makes use of personal computers and small printers that are able to print high-quality text and graphics. All the publishing process can be done on a desk in the office or at home. Desktop publishing refers to the process of producing publications by designing their text and graphics layout using special desktop publishing software installed on personal computers.

Examples of desktop publishing

- Adobe page maker
- Adobe Photoshop: Used for editing and formatting photographs
- Adobe illustrations
- Microsoft publisher

Differences between a desktop publisher and a word processor

A DTP software gives the user more tools and control of the page layout, text manipulation and graphic design than a word processor.

However, word processor has been incorporated with text and graphic formatting and editing tools e.g. you can design a full publication in a Microsoft word by using the available drawing and picture tools, create columns.

Functions of the desktop publishing tools and software

- a) **Graphic design:** This is the number one use for desktop publishing and can be held accountable for why the term has changed so much over the years. Professional graphics designers use the DTP programs such as QuarkXPress, Adobe page maker and Adobe Photoshop to create web Pages of newspapers and a variety of other visual documents.
- b) **Career assistance:** Word processing also has played its part in the DTP world. Microsoft word and open office are used faithfully by numerous jobseekers everyday as the means to put together the perfect resume, cover letter or portfolio. Many create documents from scratch, while others take the advantage of the very convenient templates.
- c) **Education:** In the education field, teachers and students use a variety of DTP programs to complete assignments and projects. Whether it is an introduction to desktop publishing course in QuarkXPress or a teaching writing course that takes in-depth look at Microsoft word, the use of a DTP in educational institutions is very prevalent.

- d) **Business:** Today desktop publishing is pretty much used to handle all the “paperwork” of a business although it is possible to run a business without it the help of DTP, it the smartest business decision. Examples of DTP use in business are business cards, postcards and invitations.
- e) **Crafts and personal project:** DTP is the crafters dream come true. Examples of desktop publishing project for personal use are greeting cards, postcards and invitations.

These five uses of desktop publishing software are only a few and after taking advantage of desktop publishing you will soon realize there are many other uses of DTP software that you didn’t realize before. Desktop publishing has proven beneficial to corporations, the work at home and the starring artists. Some of the desktop publishing tools we will discuss them below:

- i. Adobe page maker
- ii. Adobe Photoshop-mainly used for editing and formatting photographs
- iii. Adobe illustrator-used for creating complex freehand artwork such as drawing and logos
- iv. Microsoft publisher
- v. Harvard graphics

5.2 Desktop Publishing Tools

There are two types of DTP software:

- a) **Graphic-based:** They are specifically developed for editing and formatting graphic object like pictures. Examples:
 - **Adobe Photoshop:** A raster graphic editor developed and published by adobe for windows and Mac OS. This software has become the industry standard, not only in raster graphics but also in digital art as a whole.
 - **Corel draw:** Is a vector editor developed and marketed by Corel corporations. It is also the name of the Corel graphics suite which includes the bitmap image of the editor Corel photo paint as well as the other graphics-related programs.

Graphic-based desktop publishers have superior capabilities for handling images such as setting resolutions, brightness contrast, cropping and filling images with color.

- b) **Layout-based:** They are specifically developed to create different page layout designs and pictures. Examples:
 - **Adobe page maker:** This is a discontinued desktop publishing computer program introduced in 1985 by Aldus. The combination of PageMaker using the Macs graphical user interface for document creation and the apple laser writer for output represented the starting point of what became the desktop publishing revolution in the late 1980.

- **Microsoft publisher:** This is a desktop publishing application from Microsoft word in that emphasis is placed on page layout and design rather than text composition proofing.

Other types of desktop publishing tools are:

- Adobe framework
- Microsoft power point
- Microsoft word
- Open office organization / Libre Office
- Luks cape

5.3 Applications or Where Desktop Tools are Applied

a) Desktop publishing in the workplace:

The ability to work with page layout or word processing software in the workplace is a skill that many employees find attractive. The HR employee who can set up and generate forms to onboard new employees, the manager who can design and print out an employee handbook and the sales manager who can format and print sales reports or direct mail pieces that someone without desktop publishing skill can't bring. Any workplace that has a desktop computer has the potential for handling some of its own design and print work. Including skills in this area or indicating comfort level with computers on a resume may make that resume stand out from the competition. Examples of typical items that business set up internally and either print or send out to a potential printer includes:

- Brochures
- Booklets
- Newsletters
- Forms

b) Desktop publishing in a home environment

Desktop publishing in a home is usually limited to small-run print projects for the family. A family with a desktop computer, software and a printer can produce many projects. Examples include:

- Greeting cards
- Post cards
- Family calendars

c) Other places desktop publishing thrives

In addition to business and home use, desktop publishing also exists in:

- Churches
- Schools
- Copy centers
- Sports teams

Designing a publication

Different publication has different design layout and formatting.

Types of publication

There are several types of publication that can be produced using DTP software. They include:

- Cards: They may be for special occasions such as weddings graduations, etc.
- Certificates: These are types of publications used to show completion of courses and special events
- Newspapers, magazines and newsletters: They contain news targeting a group of people.
- Books: Are bulky publications with many pages bound together.

5.4 Typesetting

Type setting is the composition of the text by means of arranging physical types or digital equivalent. Stored letters and other symbols (called sorts in mechanical systems and graphics in digital system) are retrieved and ordered according to a language orthography for visual display. Typesetting is the process of arranging letters numbers and characters on a printed or digital space. Typesetting is done to maximize print space, for graphic design purposes and generally to facilitate a given result for the orientation of text on a page. Typesetting began with the original printing presses, where this process was profoundly a manual task. Workers had to struggle with bulky machines and manually integrate letters and character, eventually sets of printed dies to set up typesetting for print production. The typesetting processes of today are radically different. Early digital typesetting information was stored on disk drives. Eventually tools like text markup languages as well as solid taste media and modern networking, evolved typesetting to the point where today processes rely on advanced algorithms that knows just to put and how to position on each letter and character.

Conclusion

This unit covered applying desktop publishing functions, tools, application of desktop in workplaces.

Further Reading



Toor, M. L. (1996). *The Desktop Designer's Illustration Handbook*. John Wiley & Sons.

4.3.6.3 Self-Assessment



Written Assessment

1. You have finished your travel brochures for social studies. How can you see what your document will look like before printing?
 - a) View brochure
 - b) Print review
 - c) Open the brochure
 - d) You can't you must print it first
2. Typing in ALL CAPS and small CAPS is the same thing?
 - a) True
 - b) False
3. Which photography file format is common printed documents?
 - a) TYEG
 - b) GIF
 - c) TIFF
 - d) AVL
4. All the following are design principles for desktop publishing EXCEPT
 - a) Alignment and write space
 - b) Random graphics and text
 - c) Proximity and unity
 - d) Consistency and contrast
5. Type of publication used to give out contract information usually printed on card stock is.
 - a) Business card
 - b) Letter head
 - c) Brochure
 - d) Newsletter
6. Type of publication that includes the name and logo of the company or individual, the address, phone number, email address and tax number is.
 - a) Business cards
 - b) Letter head
 - c) Brochure
 - d) None of these
7. What is using a computer and a software program to produce high quality, printed documents that combine text and graphics?
 - a) Word processing software
 - b) Desktop publishing
 - c) Painting software
8. What is desktop pursing?
9. List two areas of DTP application
10. What is layering?

11. What is publishing?
12. List two examples of desktop publishing software.

Oral Assessment

1. Why is layering a very useful feature in a desktop publisher?
2. Why is a desktop publisher preferred in designing documents than a word processor?

Practical Assessment

1. Contribute a desktop published article to a publication. The production will include colour and graphics. It will be based on interview and other methods of research.
2. Produce a desktop published color advertisement for web or magazine publication. This will be based on a creative brief negotiated with a client and two other methods of research.

Project

Write and desktop published a formal report or discursive paper on an issue of concern. This production will use color and include graphics it will be based on an interview and two other methods of research.

4.3.6.4 Tools, Equipment, Supplies and Materials

- Desktop computers
- Laptop computers
- Desktops
- Printers
- Storage device e.g. hard drives, flash disks
- Internet
- Desktop publishing soft wares

4.3.6.5 References




Blakey, S. *Logging on for Desktop Publishing*.

Covington, M. M. (1995). *Barron's Dictionary of Desktop Publishing*. Barron's Educational Series Inc.

Toor, M. L. (1996). *The Desktop Designer's Illustration Handbook*. John Wiley & Sons.

4.3.7 Learning Outcome No 6: Prepare presentation packages

4.3.7.1 Learning Activities

Learning Outcome No 6: Prepare presentation packages	
 Learning Activities	Special Instructions
6.1 Identify types of presentation packages in accordance with office requirements 6.2 Create and formulate slides in accordance with workplace procedures 6.3 Edited and run slides in accordance with work procedures. 6.4 Print slides and handouts according to work requirements.	Computer software and hardware to be provided. Activities may be carried out in groups or as individual.

4.3.7.2 Information Sheet No4/LO6: Prepare Presentation Packages



Introduction

This unit covers preparation of presentation packages through identification of types of presentation, creation, editing and printing slides in accordance with office requirement and workplace procedures. In this unit we will cover presentation of presentation packages through identification of types of presentation, creation, editing and printing slides in accordance with office requirements. A presentation package is a software package suite that contains programs designed to accompany the speaker when he makes a presentation. It is always in form of a slide show. We will also discuss presentation software like PowerPoint and Impress. A presentation software is one of the application software that is used to display information in the form of a slide show. They have three major functions: an editor, a method and a slide show system to display content.

Definition of key terms

Presentation software: This is one of the application software that is used to display information in the form of a slide show.

Presentation package: This is a software package suite that contains programs designed to accompany the speaker when he makes a presentation. It is always in form of a slide.

Microsoft PowerPoint: This is a popular presentation software developed by Microsoft. It is available in Microsoft office packages. It is used to prepare presentation slides.

6.1 Types of Presentation Packages are identified in Accordance with Office Requirements

A presentation package is a software package that contains programs designed to accompany the speaker when he/she makes a presentation. It is always in form of a slide. Presentation soft wares have three major functions; an editor, a method and a slide show system.

- Editor: Allows text to be inserted
- Method: Used to insert and manipulate graphic language
- Slide show system: Displays content

The types of presentation packages (software) that we will discuss under the topic are:

- Microsoft PowerPoint
- Impress
- Windows moviemaker
- Slide shark

a) Microsoft PowerPoint

This is one of the popular presentation software developed by Microsoft. It is available in Microsoft office packages. You can prepare a slide by using PowerPoint. PowerPoint is available in different versions such as Microsoft office PowerPoint 2000, 2003 2004, 2007, 2010, etc. All PowerPoint files have.pptx extensions

Advantages of Microsoft PowerPoint

- The program is very easy to use.
- We can prepare presentation slides within a short period of time.
- We can insert images, videos etc.
- Various themes are available in this program.
- Many viewings options.
- Opportunity of animation.
- Slides can be printed.
- You can make fancy transitions between your slides.

b) Impress

Created by Sun Microsystems Inc. Impress is part of a suite of programs offered as a free download. It contains a word processor, a spreadsheet program and a drawing program.

c) Windows Moviemaker

This desktop video program was created by Microsoft and is pre-installed on every windows computer. Windows Moviemaker allows you to create and edit movies to use to accompany your presentation, although you can also add graphics, create a slideshow just as in PowerPoint and Impress.

NOTE: In the following sub-topics, we will discuss Microsoft PowerPoint

6.2 Slides Are Created and Formulated in Accordance with Workplace Procedures

When using PowerPoint, start by:

- i. Clicking the start button located on the task bar
- ii. Clicking all programs
- iii. Clicking Microsoft office
- iv. Then clicking Microsoft PowerPoint

You will be prompted to use options such as open an existing presentation or create a new presentation.

PowerPoint screen

The PowerPoint screen consists of:

- The title bar: Contains the current presentation, name and also minimize, restore and close button.
- Menu bar: Contains the menu used to design presentation.
- Standard toolbar: Commands icons to open, save, print, and spell check.
- Formulating toolbar: Contains fonts, font size, bold, italic, underline, alignment, font color etc.
- Task pane: Has all common functions that you might need when designing your presentation such as creating new project, new side etc.

Creating a new presentation

- a) Launch power button from the window menu or select file to display the new presentation tasks pane.
- b) Choose how to create a new presentation under the new area.
 - Autocorrect wizard: Offers the highest degree of help. It walks you through each step of creating a new presentation.
 - Design template: Provides a professionally designed color, background and font scheme that applies to the slides you created.
 - You can choose to start from scratch and create a totally blank presentation that is, building the presentation from the ground.
- c) Click on one of the options to choose the PowerPoint new presentation pane and start creating your presentation.

6.3 Slides Are Edited and Run in Accordance with Work Procedures

i. Use of themes

A PowerPoint template is a pattern or blueprint of a slide or a group of slides that you can save as a .pptx file. Templates contain layouts, theme colors, theme fonts, theme effects, background styles and even new contents. We follow the following steps:

- Click on design tab
- Choose available themes or click on more button to search for other different themes.
- If the color of theme needs to be changed, then click on the drop-down arrow.

- If you like to choose or make different colors, then create new theme colors. Choose the color and click on save button.
- If the background needs to be changed, then click on background styles.
- Choose available backgrounds or click on format background to change the style of pictures and colors. Finally click on the close button.

ii. Changing layouts

You can change the layout according to the information added in your slide. Follow the following steps to change the layout of content.

- Click on the slide panel of home tab.
- Choose the layout according to content.

iii. Adding video

Video clips can be added to presentation in the following ways.

- Click the insert tab.
- Click the movie button from the media clips of the insert tab

iv. Slide transitions

Transitions are effects that are seen when you switch from one slide to another. To add a transition:

- Select the slide; that you want transistors
- Click the animation tab
- Click the appropriate animation or click the transition dialog box

v. Slide animation

Slide animation effects are predefined special effects that you can add to objects on a slide to apply an animation effect.

- Select the object.
- Click the custom animations from the animation tab. animation pane will appear on the right side of the screen.
- Click the add effect and choose the appropriate effect from the pane.

vi. Adding photo albums

To create a photo album, follow the following steps:

- Click the photo album button on the insert tab.
- Click on new photo album.
- Click on file/disk to add pictures to the photo album, then the photo album dialogue box will appear.
- Browse your photo to create an album.
- Select the required photos to keep in album.
- Click on the create button from the dialogue box. Now your photo album will be created.

vii. Adjusting slide transitions

- Add sound by clicking the arrow next to the transition sound.
- Modify the transition speed.

6.4 Slides and Handouts Are Printed According to Work Requirements

Printing a presentation

There are many options for printing a presentation. Steps to print a presentation are as follows:

- a) Click on Microsoft office button.
- b) Place the cursor over print.
- c) Click on print preview.
- d) Click the arrow next to print to change the print options.
- e) To click from print preview, click print, then click the print preview button.

Package a presentation

There are times when you want to package a presentation with all of the additional files attached as well. To package a presentation for CD:

- a) Click the Microsoft office button and click on publish.
- b) Click package for CD and type the CD name.
- c) Click copy to CD or copy to folder.

Conclusion

The unit covered preparation of presentation packages. This unit covered the presentation of packages. Creating, editing and printing presentations. The types of presentation packages especially Microsoft PowerPoint.

Further Reading



Lambert, J. (2016). *MOS 2016 Study Guide for Microsoft PowerPoint: MOS Study Guide Micro Power*. Microsoft Press.

4.3.7.3 Self-Assessment



Multiple Choice Questions

1. Material consisting of text and numbers is best presented as
 - a) A table slides
 - b) A bullet slides
 - c) A title slides
 - d) None of the above
2. To start slide show of a presentation
 - a) Press f5 key
 - b) From slide show tab choose to start from beginning option
 - c) From slide show menu chose rehearse timing
 - d) Both(A) and (B)
3. The effect applied to display when slide changes in slide show view is
 - a) Slide transition
 - b) Slide animation
 - c) Custom transition
 - d) None of the above
4. When you delete a text box object from a slide in PowerPoint presentation
 - a) The text box and text both are deleted
 - b) The text box is deleted, and the text is posted on the slide
 - c) The object is deleted but text box and the text inside is left on the side
 - d) None of the above
5. In a PowerPoint presentation
 - a) Movie clips can be inserted but not sound clips
 - b) Sound clips can be inserted but not movie clips
 - c) Both can be inserted
 - d) Only movie clips can be inserted
6. From which tab can you access picture, textbox and chart etc.
 - a) Home
 - b) Insert
 - c) Transitions
 - d) None of the above
7. Which one of the following is not part of a slide design?
 - a) Design template
 - b) Color scheme
 - c) Slide layout
 - d) None of the above
8. What is publishing?
9. What is presentation package?
10. What is Microsoft PowerPoint?
11. What is the purpose of presentation?

12. What is type setting?

Oral Assessment Questions

1. How many software packages do you know?
2. Explain the procedure of creating a new PowerPoint.

Practical Assessments

1. How do you know if you followed best practices for creating effective PowerPoint presentations?
2. How do you show your presentation online in PowerPoint?
3. How do you record a slide show in PowerPoint 2013?

Project

Create a video using PowerPoint 2013

4.3.7.4 Tools equipment supplies and materials.

- Desktop computers
- Laptops
- Printers
- Storage devices e.g. hard drives, CDs, flash disks
- Internet
- Presentation/packaging software e.g. Microsoft PowerPoint

4.3.7.5 References



Barbara, B. (2016). *Teach Yourself Visually PowerPoint 2016*.

Lambert, J. (2016). *MOS 2016 Study Guide for Microsoft PowerPoint: MOS Study Guide Micro Power*. Microsoft Press.

Lowe, D. (2018). *PowerPoint 2019 for Dummies*. John Wiley & Sons.