African Virtual University

Education: Information Communication Technology ICT 01

# INTRODUCTION TO ICT

Dr. Gilford T Hapanyengwi

# Foreword

The African Virtual University (AVU) is proud to participate in increasing access to education in African countries through the production of quality learning materials. We are also proud to contribute to global knowledge as our Open Educational Resources (OERs) are mostly accessed from outside the African continent. This module was prepared in collaboration with twenty one (21) African partner institutions which participated in the AVU Multinational Project I and II.

From 2005 to 2011, an ICT-integrated Teacher Education Program, funded by the African Development Bank, was developed and offered by 12 universities drawn from 10 countries which worked collaboratively to design, develop, and deliver their own Open Distance and e-Learning (ODeL) programs for teachers in Biology, Chemistry, Physics, Math, ICTs for teachers, and Teacher Education Professional Development. Four Bachelors of Education in mathematics and sciences were developed and peer-reviewed by African Subject Matter Experts (SMEs) from the participating institutions. A total of 73 modules were developed and translated to ensure availability in English, French and Portuguese making it a total of 219 modules. These modules have also been made available as Open Educational Resources (OER) on oer.avu.org, and have since then been accessed over 2 million times.

In 2012 a second phase of this project was launched to build on the existing teacher education modules, learning from the lessons of the existing teacher education program, reviewing the existing modules and creating new ones. This exercise was completed in 2017.

On behalf of the African Virtual University and our patron, our partner institutions, the African Development Bank, I invite you to use this module in your institution, for your own education, to share it as widely as possible, and to participate actively in the AVU communities of practice of your interest. We are committed to be on the frontline of developing and sharing open educational resources.

The African Virtual University (AVU) is a Pan African Intergovernmental Organization established by charter with the mandate of significantly increasing access to quality higher education and training through the innovative use of information communication technologies. A Charter, establishing the AVU as an Intergovernmental Organization, has been signed so far by nineteen (19) African Governments - Kenya, Senegal, Mauritania, Mali, Cote d'Ivoire, Tanzania, Mozambique, Democratic Republic of Congo, Benin, Ghana, Republic of Guinea, Burkina Faso, Niger, South Sudan, Sudan, The Gambia, Guinea-Bissau, Ethiopia and Cape Verde.

The following institutions participated in the teacher education program of the Multinational Project I: University of Nairobi – Kenya, Kyambogo University – Uganda, Open University of Tanzania, University of Zambia, University of Zimbabwe – Zimbabwe, Jimma University – Ethiopia, Amoud University - Somalia; Université Cheikh Anta Diop (UCAD)-Senegal, Université d' Antananarivo – Madagascar, Universidade Pedagogica – Mozambique, East African University - Somalia, and University of Hargeisa - Somalia

The following institutions participated in the teacher education program of the Multinational Project II: University of Juba (UOJ) - South Sudan, University of The Gambia (UTG), University of Port Harcourt (UNIPORT) – Nigeria, Open University of Sudan (OUS) – Sudan, University of Education Winneba (UEW) – Ghana, University of Cape Verde (UniCV) – Cape Verde, Institut des Sciences (IDS) – Burkina Faso, Ecole Normale Supérieure (ENSUP) - Mali, Université Abdou Moumouni (UAM) - Niger, Institut Supérieur Pédagogique de la Gombe (ISPG) – Democratic Republic of Congo and Escola Normal Superieur Tchicote – Guinea Bissau

Bakary Diallo

The Rector

African Virtual University

# Production Credits

This second edition is the result of the revision of the first edition of this module. The informations provided below, at the exception of the name of the author of the first edition, refer to the second edition.

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AVU Multinational Project II funded by the African Development Bank.

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# WELCOME MESSAGE

You are welcome to the module ICT Basic Skills 1: Introduction to ICT. As the name implies, this module introduces you to computer appreciation and application and the basic concepts of the Internet. Computers and the Internet rule our world today. If you are not computer and internet literate, you would find it difficult coping in today's knowledge based economy. That is why this module is very important because it explains to you how computers and the Internet work. We invite you to go through this module and enjoy your new experience as you interact with this master piece that has changed the entire activities of humans.

## Prerequisites

There are no prerequisites to this module.  Enrolment into the programme is sufficient.

## TIME

You are expected to spend 120 hours to complete this module.  The hours are split in the following manner:

Reading/Study hours: 30

Research hours: 10

Laboratory hours: 0

Exercise hours: 80

## Materials

The following materials are necessary for the successful completion of this module:

| **Hardware (see fig 1 below)** | **Software** | **Other** |
|---|---|---|
| A complete computer set which includes a system unit, Monitor (Visual Display Unit), Mouse and a QWERTY keyboard CD Rom/DVD Drive<br>and a QWERTY keyboard<br>CD Rom/DVD Drive<br>Communication ports (e.g., serial, parallel, USB)<br>Disk drive<br>Printer<br>speakers | Any of the latest versions of Windows operating system not earlier than Windows 7<br>Web browser, such as Mozilla Fire Fox, Internet Explorer, Google Chrome, Safari and others | Internet Connection would be desirable |

Fig 1a: A complete computer set (Source: www.pixabay.com)

Fig 1b: Printer (source: www.pixabay.com)

## MODULE RATIONALE

Information and Communication Technologies (ICTs) have created a breakthrough in all human endeavours including education, medicine, agriculture, business and so on. To effectively function in the digital world we live in, you must have basic ICT skills. You need these skills in order to teach, learn, keep in touch with family and friends and also promote your business. Your ability to recognize and appreciate the components that make up the computer and its peripherals will equip you to effectively utilize it. You also need to have knowledge of computer network and System Software such as operating system. Armed with this knowledge, you will be better prepared to understand Application software such as word processors, spread sheets, and databases.

## CONTENT

### Overview

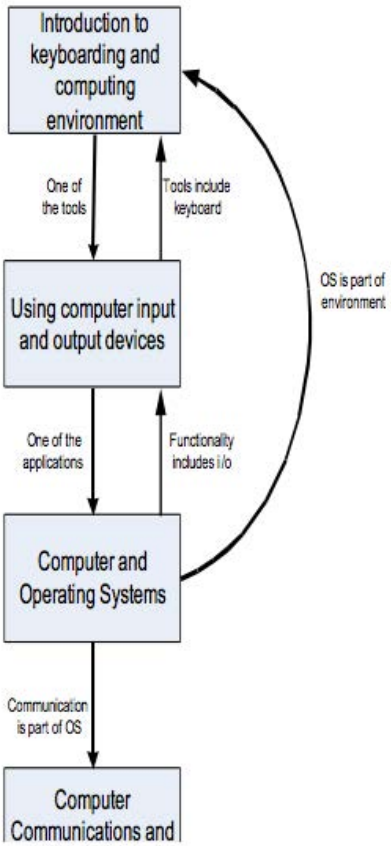
You will be introduced to the computer's internal components and its input, output and storage devices. You will then practice data entry into the computer through the use of the keyboard and the mouse. An introduction to the computer and its associated basic peripherals will be given. The significance of each component and peripheral device will be outlined. You will be exposed to concepts of the operating system thus you will appreciate the driving force of the computer. Lastly you will be exposed to how the computer communicates through networking and also to the basic use of the Internet.

## Outline

| Unit Number | Unit | Learning Hours |
|---|---|---|
| 1 | Introduction to Keyboarding and Computing Environment | 30 |
| 2 | Identifying the Computer's Input, Output, Storage Devices and Internal components. | 30 |
| 3 | Computer Software | 30 |
| 4 | Computer Networks and the Internet | 30 |

## Graphic Organizer

A graphic organizer is an instructional tool used to illustrate to a learner prior knowledge about a topic or section of text or set of concepts. The organiser given below shows you the sequence in which the material for this module should be covered and the general relationships among the sections.



## GENERAL OBJECTIVE(S)

The main objectives of the module are to have you:

- Identify computer input, output and storage devices
- Apply knowledge and skills in using the keyboard and mouse
- Describe the operating system as major system software
- Acclimatize to the computer interface and how the computer is related to its networked environment act

## SPECIFIC LEARNING OBJECTIVES (INSTRUCTIONAL OBJECTIVES)

### Unit Objectives

| Unit | Learning Objective |
|---|---|
| Unit 1: Introduction to keyboarding and computing environment | By the end of this unit you will be able to:<br>Identify the five parts that make up a QWERTY keyboard.<br>Apply basic keyboarding /typing skills<br>Describe the functions of certain major keys on the keyboard and practice using them.<br>Identify some computer keyboard short cuts and their functions<br>Correctly use general computer and ICT terminologies within the context |

| | |
|---|---|
| Unit 2: Identifying the Computer's Input, Output and Storage Devices and Internal components. | By the end of this unit you will be able to:<br>Identify various input devices and their functions<br>Identify various output devices and their functions<br>Identify various storage devices and their functions<br>Identify the internal components |
| Unit 3: Computer Software | By the end of this unit you will be able to:<br>Define system software<br>Differentiate between system and application software<br>Define an operating system and give examples<br>Navigate files and file systems<br>Use your mouse to find files |
| Unit 4: Computer Networks and the Internet | By the end of this unit you will be able to:<br>Identify a basic computer network<br>Identify the basic components of the Internet<br>Describe the basic functions of the Internet<br>Access the Internet using different web browsers |

# TEACHING AND LEARNING ACTIVITIES

## Pre-assessment

Title of Pre-assessment: Introduction to ICT

Rationale: To measure your level of appreciation of the computer and its related environment.

## QUESTIONS

1. Which of the following devices is used for input:

    A. Mouse

    B. Printer

    C. Plotters

    D. Speakers

    E. headphones

2. Which of the following devices is used for output:

    A. Mouse

    B. Printer

    C. Joystick

    D. Light pen

    E. Keyboard

3. A computer keyboard is different from the keyboard of a type-writer

    A. True

    B. False

4. What is the purpose of an operating system

    A. To manage the resources of a computer

    B. To guarantee the authenticity of a computer

    C. To give a computer an identity

    D. To enable registration of a computer on the Internet

5. Of the following identify the one(s) that are operating systems

    A.. PowerPoint

    B. Word

C. Excel

D. Windows

6. Arrange the following types of computers with respect to physical size starting with the largest: laptop, server, desktop.

A. Laptop, server, desktop

B. Server, desktop, laptop

C. Desktop, server, laptop

D. Server, laptop, desktop

E. Desktop, laptop, server

7. Which of the following are types of printers:

A. Dot-matrix

B. Laser

C. Bubble-jet

D. All of the above

8. What is the use of electronic mail (e-mail)

A. To communicate with another user

B. To announce your presence on the network

C. To generate files

9. Which one of the following statements are true

A. A directory is made up of files which are made up of characters

B. A file is made up of directories which are made up of characters

C. Files make up directories, and Files also make up characters

D. Directories are found in both files and characters

10. In the context of the World Wide Web, what does ISP mean:

A. Information Service Provider

B. Internet Service Provider

C. Information Secured Package

D. Independent Secure Provision

11. Which of the following are services on the Internet

    A. Email

    B. Chat

    C. User groups

    D. All of the above

    E. None of the above

12. A computer virus is responsible for

    A. Distribution of files in a directory

    B. Distribution of directories to a file

    C. Rendering a computer non functional

13. Identify the following image

    A. Memory stick

    B. Keyboard

    C. Power Cable

    D. Diskette

    E. Mouse

    F. Network cable

    G. Hub/Switch

Grading Scheme: One (I ) mark for each correct answer (13 marks)

**Answer Clue**

1. Which of the following devices is used for input:

    a. Mouse

    b. Printer

    c. plotters

    d. speakers

    e. headphones

2. Which of the following devices is used for output:

    a. Mouse

    b. Printer

    c. Joystick

    d. Light pen

    e. Keyboard

3. A computer keyboard is different from the keyboard of a type-writer

    a. True

    b. False

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5. Of the following identify operating systems

    a. PowerPoint

    b. Word

    c. Excel

    d. Windows

6. Arrange the following types of computers with respect to physical size starting with the largest: laptop, server, desktop.

    a. Laptop, server, desktop

    b. Server, desktop, laptop

    c. Desktop, server, laptop

    d. Server, laptop, desktop

    e. Desktop, laptop, server

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   c. User groups
   d. All of the above

12.A computer virus is responsible for:

   a. Distribution of files in a directory
   b. Distribution of directories to a file
   c. Rendering a computer non functional

13. Identify the following image

A. Memory stick

B. Keyboard

C. Power Cable

D. Diskette

E. Mouse

F. Network cable

## Pedagogical Comments

### COMMENTS FOR SELF ASSESSMENT

Title of Pre-assessment: Introduction to ICT

The Pre-assessment is meant to give you a feel of what this module is going to cover. The questions are multiple choices and cover most of what you will do in this module. The score from the pre-assessment is a guide as to your level of the grasp of the concepts. Please do not be discouraged by the resulting score.

Of importance is visual identification of the components of the computer. You should be able to associate the functions of each component with the corresponding pictures. Next there is the classification of the various components and peripherals. Note that the quality of the outcome of a given task is dependent on the proper selection of a peripheral.

You will also realize a high interdependence of the various devices and thus the various units. Some of the concepts will become clearer with continued use, which will be found in the next units.

## KEY CONCEPTS (GLOSSARY)

**Keyboard:** This is an input device for the computer. It comes in three main types the QWERTY, the AZERTY, and the DVORAK. The difference between the three types is in the layout of the keys. We are using the QWERTY keyboard. To identify the QWERTY keyboard look at your keyboard and observe that the third row of keys has the following keys: "tab", "Q", "W", "E", "R", "T", "Y", as the first seven keys.

**Computer Screen (Computer Monitor):** This is a communication device that is used for displaying information from the computer. Its main use is as an output device although it is at times used as an input device.

**E-mail:** Electronic Mail. One of the services of the Internet used for communication with other users.

**Input device:** This is one of a number of gadgets that are used to enter information into a computer. It could also be defined as an electronic device that is used to transmit data into a computer e.g Printer

**Output device:** This is one of a number of gadgets that are used to get information from a computer. It could also be seen as an electronic device used to view or print the results from a computer.

**Peripheral device:** This is a device that is attached to the main body of the computer for use by the computer. They are also called external components of a computer or computer hardware components.

**Storage device:** This is any device that is used for storing data. It could refer to both the internal memory of the computer and/ or the external memory. This memory could be either temporary (RAM) or permanent (ROM and other external storage devices). However, while the internal memory of the computer is also a storage device, most times the term is used to refer to secondary or external storage devices. A storage device may also be known as a storage medium.

**RAM:** An acronym for Random Access Memory. It is the primary or internal memory of the computer. It processes data very fast but is very volatile, and can thus only hold data when the computer is powered on.

**ROM:** An acronym for Read Only Memory (ROM). It is part of the computer's internal or primary memory and is non-volatile. It stores data permanently. Data on the ROM are embedded by the computer's manufacturers and cannot be altered.

**Cache memory:** This is a temporary computer memory, usually small in size and embedded on the RAM or the processor, that provides high-speed data access. It is the fastest computer memory, but similar to the RAM, it only stores and retains data when the computer is powered up.

**Typing:** This is the process of entering information into the computer by means of a computer keyboard.

**Typing Tutor**: Is a programme that assists with mastering the skill of using the keyboard.

**Operating system:** Abbreviated OS, the Operating System is the piece of software which organizes and controls the computer. It is system software which communicates with the computer's peripherals and allows other application programs to run on the computer. E.g., Windows 7, Windows 8, Windows 8.1, Mac OS X, Linux, UNIX, Ubuntu and so on.

**Drives:** Devices that are used to access and to store data

**Files:** A named place where information is stored

**Directory:** A Directory is the path given to a folder on a drive. For example, a text file called Phone Numbers is located in the My Documents directory on the C:\ drive. It would therefore read "C:\My Documents\ PhoneNumbers.txt"s

**Computer Network:** A computer network could be defined as a group of computers and other electronic devices connected together so as enable communication between them.

**World Wide Web (WWW):** It also known as the web and refers to Internet servers that support certain specialized documents formatted in a language called HTML ( Hypertext Markup Language). This language supports links to other documents. Thus when you want additional information on a particular document, you could click on the link to other resources.

**Internet:** a global network connecting millions of computers

# REQUIRED READINGS

## Reading #1

Complete reference: Basic Computing using Windows/Networks and the Internet http://en.wikibooks.org/wiki/Basic_Computing_Using_Windows/Networks_and_the_Internet

Abstract: Networking of computers has led to the possibility of sharing of resources. Through the advent of the Internet the sharing information has even become more apparent as more ways of sharing information have been developed. Through the Internet information can now be shared in different forms.

Rationale: This reference gives the sufficient and necessary reference to the Internet and networking. Of course this reference is only going to be relevant, at least for the Internet part, to those persons that have connectivity.

## Reading #2

Complete reference: Basic Computing using Windows (March 2006) From Wikibooks (1st Ed.) http://en.wikibooks.org/wiki/Basic_Computing_Using_Windows

**Abstract:** Microsoft Windows is one of the most (if not the most) widely used operating system on desktop computers. This reference gives you a very comprehensive overview of the use of Microsoft Windows. As a precursor to this coverage it also gives a wide coverage of the basic components of a computer.

**Rationale:** Though you are going to cover the operating system in depth in the second module this reference will give you a good feel of the things to come. It will also give a good perspective of how Windows has evolved.

## Reading #3

Complete reference: Computer Basics

http://www.gcflearnfree.org/computerbasics

**Abstract**: For a beginner, the computer may seem like a mystery and overwhelming. However, computers are really not mysterious. You can use a computer to type documents, send email, and browse the Web. You can also use it to handle spread sheets, accounting, database management, presentations, games, and more.

**Rationale:** This reference takes the learner on a step by step tutorial on how computers work. It covers the entire basic computer concepts that a learner needs to understand today's technology.

## Reading #4

Complete reference: Computer Fundamentals tutorial http://www.tutorialspoint.com/computer_fundamentals/

Abstract: This tutorial has been prepared for the beginners as well as advanced learners who want to deal with computers. This tutorial is also very useful for the undergraduate students of computer science, engineering, business administration, management, science, commerce and arts where an introductory course on computers is a part of curriculum. After completing this tutorial you will find yourself at a moderate level of expertise in knowledge of computer basics from where you can take yourself to next levels

**Rationale:** This tutorial covers a foundational understanding of computer hardware, software, operating systems, peripherals, and so on. Learners are also taught to appreciate the computer and get the best from this technology.

# REQUIRED RESOURCES

## Resource #1

Complete Reference: Typing Tutor

URL: http:www.typefaster.sourceforge.net (the download file)

**Abstract:** Type Faster is a typing tutor. It is meant for both novices and professionals. So no matter the level you find yourself, Type Faster will still be a very good resource. Its major strength is the keeping of traceable and easy to use statistics. It allows for a self-paced use by anyone who is willing to start or perfect their touch typing.

**Rationale:** It has been found that if one perfects their touch typing then they boost their confidence in learning of computers.

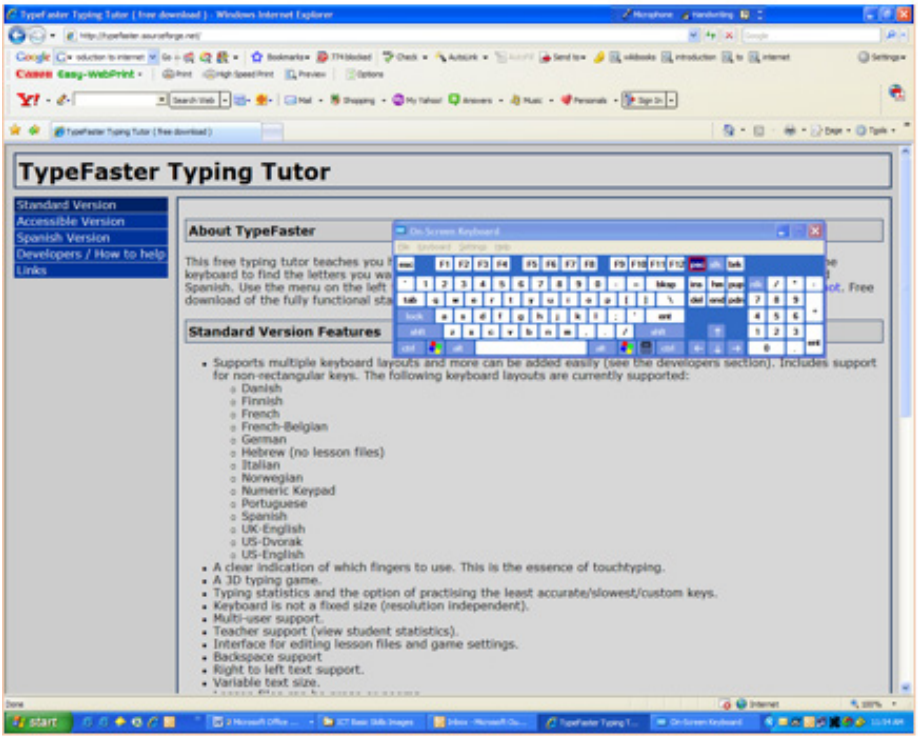
# USEFUL LINKS

## Useful Link #1

Title: Typing Tutor

URL: http://typefaster.sourceforge.net/ (December 2006)

Screen capture:




Description: Type Faster is a typing tutor. It is meant for both novices and professionals. So no matter the level at which you are Type Faster will still be a very good resource. Its major strength is the keeping of traceable and easy to use statistics. It allows for a self-paced use by anyone who is willing to start or perfect their touch typing. It has been found that

Rationale:

## Useful Link #2

Title: Computing using Windows (March 2006) From Wikibooks (1st Ed.)

URL: http://en.wikibooks.org/wiki/Basic_Computing_Using_Windows

Screen capture:


**Description**: A good coverage of the basic principles of Windows operating system. It gives useful information on how to operate a computer that has windows operating system installed on it.

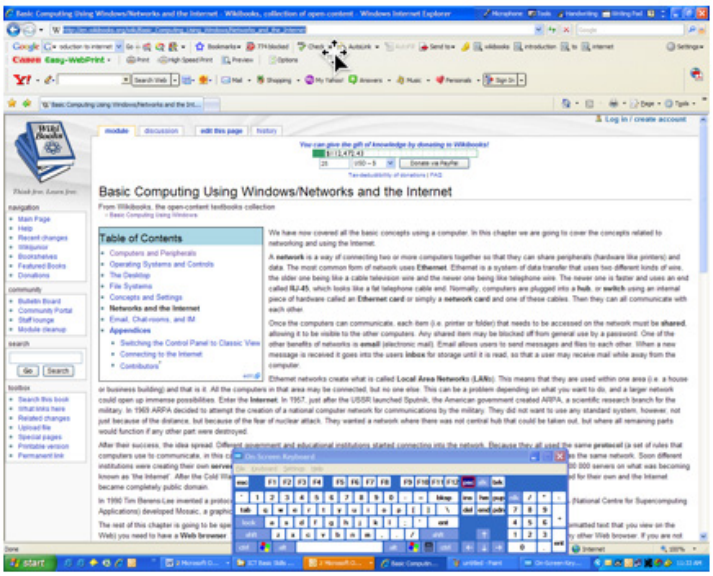
**Rationale:** Virtually all of the concepts that are covered in this module and in the other modules are covered in this reference.

## Useful Link #3

Title: Complete reference: Basic Computing using Windows/Networks and the Internet

http://en.wikibooks.org/wiki/Basic_Computing_Using_Windows/Networks_and_the_Internet

Screen capture:




Description: Networking of computers has led to the possibility of sharing of resources. Through the advent of the Internet the sharing information has even become more apparent as

more ways of sharing information have been developed. Through the Internet information can now be shared in different forms.

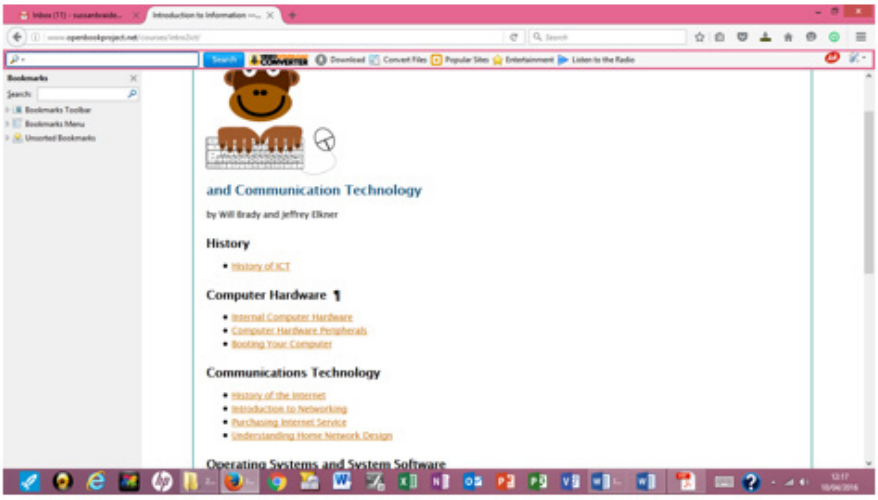
Rationale: This reference gives the sufficient and necessary reference to the Internet and networking. Of course this reference is only going to be relevant, at least for the Internet part, to those persons that have connectivity.

## Useful Link #4

Title: Introduction to information and communication technology

URL: http://www.openbookproject.net/courses/intro2ict/

Screen capture:




**Description:** In a knowledge based economy as ours, everyone needs to be computer literate. Having a basic knowledge of computer and its applications and appreciating its use is a key to ICT knowledge.

**Rationale:** This reference gives a detailed explanation of the basic computer/ICT terminology. It is a sufficient and necessary reference to basic computer applications starting from hardware to software. The Internal components of the computer and the basics of computer networking are explained here.

## Useful link 5

Title: WWW timeline

Screen capture:


**Description:** This site provides a timeline for the World Wide Web (WWW) starting from its inception 1989. It explains in different ways how the WWW has affected millions of people in terms of their access to information.

**Rationale:** it gives the reader an over of the WWW and a comprehensive history.

# LEARNING ACTIVITIES

## Learning activities for Unit 1

Title: Use of the Computer Keyboard

Specific teaching and learning objectives:

- Identify the five parts that make up a QWERTY keyboard.
- Apply basic keyboarding /typing skills
- Describe the functions of certain major keys on the keyboard and practice using them.
- Identify some computer keyboard short cuts and their functions
- Correctly use general computer and ICT terminologies within the context

## Summary of the Learning Activities:

In these activities, you will acquire skills to properly use a computer keyboard. The use of the computer keyboard is paramount to the proper use of the computer. It is the main input device. Proper keyboarding skills are easy to acquire if one follows a typing course. Typing tutors are meant to be good replacements for typing courses. In addition to acquiring good typing skills, you will also be able to identify the parts that make up the QWERTY keyboard and learn the functions of some basic keys on the keyboard.

### KEY CONCEPTS

**Keyboard:** This is an input device for the computer. It comes in three main types the QWERTY, the AZERTY, and the DVORAK. The difference between the three types is in the layout of the keys. We are using the QWERTY keyboard. To identify the QWERTY keyboard look at your keyboard and observe that the third row of keys has the following keys: "tab", "Q", "W", "E", "R", "T", "Y", as the first seven keys.

**Computer Screen (Computer Monitor):** This is a communication device that is used for displaying information from the computer. Its main use is as an output device although it is at times used as an input device.

**Peripheral device:** This is a device that is attached to the main body of the computer for use by the computer. They are also called external components of a computer or computer hardware components.

**Typing:** This is the process of entering information into the computer by means of a computer keyboard.

**Typing Tutor:** Is a programme that assists with mastering the skill of using the keyboard.

**Insertion Point/Cursor:** An insertion point is the location on the screen where the next character you will type will be displayed. The insertion point is often identified by a cursor also called an "I-beam pointer" that looks like the capital letter "I". It is a long vertical line.

## Activity 1a

Identifying the parts of the keyboard

This learning activity will acquaint you with the various parts of the QWERTY keyboard. This knowledge of the keyboard will serve as a foundation for learning other keyboarding skills such as typing.

Detailed description of activity 1a:

If you have a desktop computer with a QWERTY keyboard, you will notice that the keys on the keyboard seem to be grouped. Each group of keys could be seen as a part of the keyboard. There are five major parts/groups you will notice. Look at the keyboard below in fig 1 and see if you can identify these five parts. The first part or group of keys you will notice are labelled F1, F2, F3 ….F12. These group of keys are called the FUNCTION KEYS. They are usually used in conjunction with other keys to carry out special functions. The second group of keys are the ALPHA-NUMERIC KEYS. They are so called because they are a combination of alphabets and numbers as you can see on fig 1. These are the keys you will use most often. The home keys (ASDF and ;LKJ) which you will use in activity 1.2 are grouped under the alpha-numeric keys. The third group of keys are the ARROW/NAVIGATION KEYS. They are also called movement keys. They help you move or navigate across your document. They are usually in the form of four arrows pointing up and down, left and right. The direction of each arrow determines the direction of the insertion/cursor point on the screen. Thus the up arrow/navigation key moves the insertion/cursor point in a document to the line above and the down arrow/navigation key moves the insertion point in a document to the line below. The left arrow/navigation key moves one character to the left and the right arrow/navigation key moves the insertion point one character to the right. The next group of keys worth mentioning is the NUMERIC KEYPAD. The numeric keypad contains numbers and mathematical symbols that are exclusively used for entering numbers such as +, - , x, / and so on. They are usually found at the right hand corner of the QWERTY keyboard. You can activate this pad by pressing Num Lock. When you do that, the indicator light above the numeric keypad comes on. To deactivate this pad, press Num Lock again. The last group of keys are the SPECIAL KEYS. These keys are usually found above the arrow/navigation keys. They perform different functions in different applications. Activity 1c will introduce you to the functions of some of these keys.

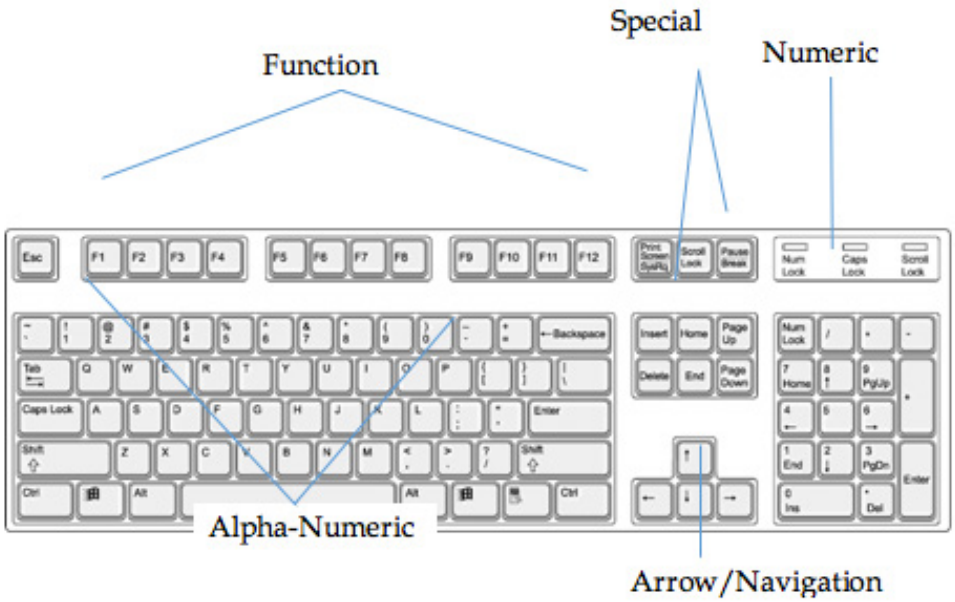



Fig 2: Picture of Windows keyboard

Source: www.gcclc.org/StudentFiles/Mouse-Keyboard/Keyboard.htm

Formative evaluation:

Draw and label the parts of a keyboard. Describe the functions of each of the five parts.

## Activity 1b:

### Typing skills

In this activity you will acquire skills to properly use a computer keyboard through a software that helps you to practice typing skills. This software is called Type Faster.

Detailed description of activity 1b:

The use of the computer keyboard is paramount to the proper use of the computer. It is the main input device. Proper keyboarding skills are easy to acquire if one follows a typing course. Typing tutors are meant to be good replacements for typing courses. There are several typing tutors such as Mavis Beacon Teaches Typing; However, In this case, we will be using the Type Faster typing tutor. But first, you need to download the software. If you are using Windows 8 operating system, follow the steps below to download the software:

Go to http://www.typefastertypingtutor.com/ (The page that will come up will look like the one below) Scroll down to the bottom of the page and click Download TypeFaster-install.exe (1.81 MB)

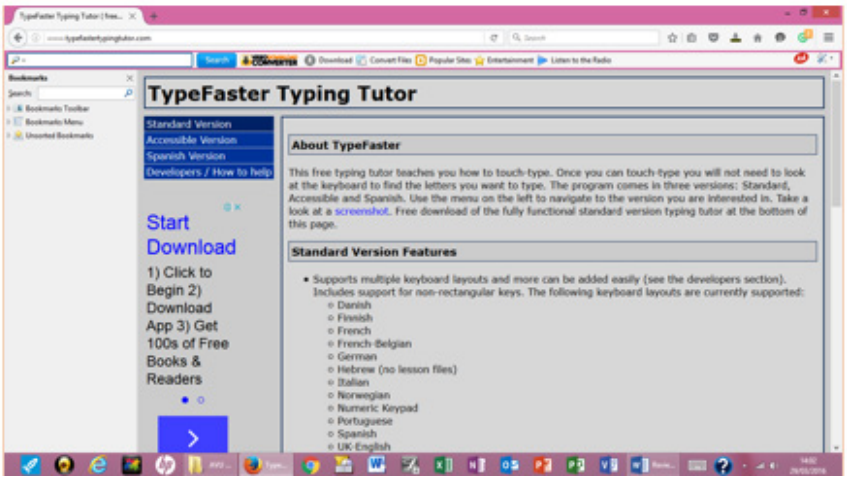



Fig 3: Screen capture Type Fast Typing Tutor

- After a successful download, go to your downloads folder and open the file named: TypeFaster-v0.4.2-install.exe
- The user account control box will come up asking if you want the program to make changes to your computer. Click yes
- On the License Agreement box, click I Agree
- On the Installation box, click Next (Another box comes up)
- Click next again in the box (An installation box comes up)
- Click install
- Click close

After a successful installation, open the programs menu and double click on the Type faster icon. It is usually designated by the Capital letter T. If you are using windows 8 operating software, go to the bottom left of your task bar to call up the start menu, then click on it. Scroll through all the programs until you find the Type Faster icon. Double click on it. See Image below:

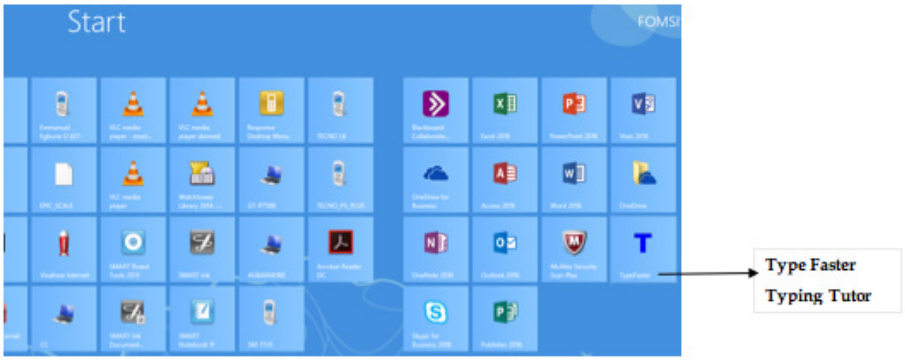



Fig 4: Screen Capture: Start Menu on Windows 8

- After double clicking, the type faster user box comes up.
- Click on New User (See Image below)

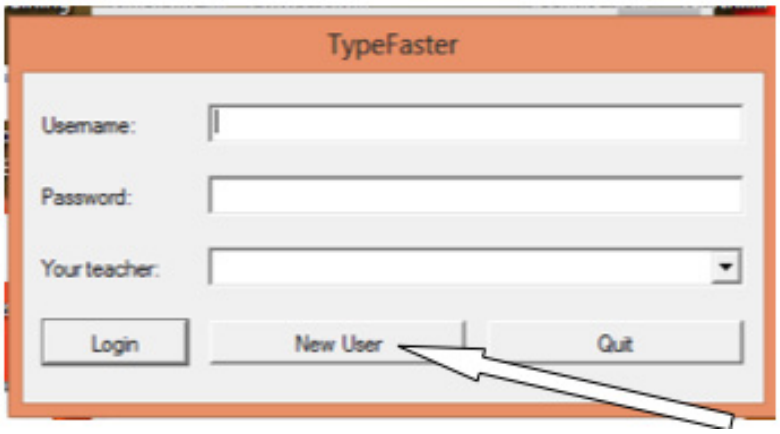



Fig 5: Screen Capture: Type Faster Installation process

Fill the required details in the appropriate boxes as shown below.

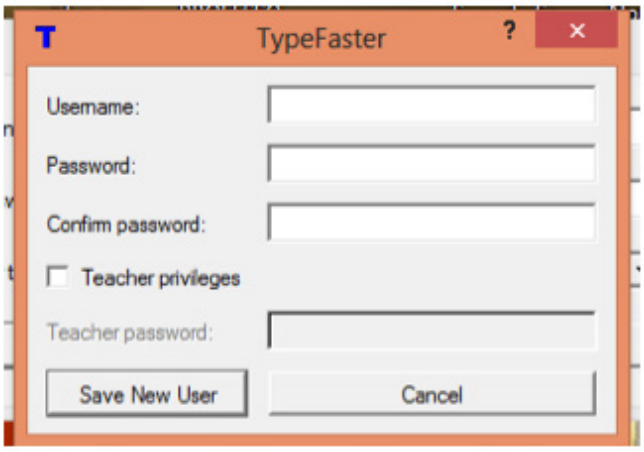



Fig 6: Screen Capture: Type Faster Installation process

Next step

Invoking the Type Faster typing tutor:

1. Switch on your computer.
2. Move your mouse pointer to the start button that is at the bottom left corner of your screen.
3. Go to All Programs
4. Look for Type Faster
5. Click on Type Faster.

The above procedure will leave you with the following screen displayed.

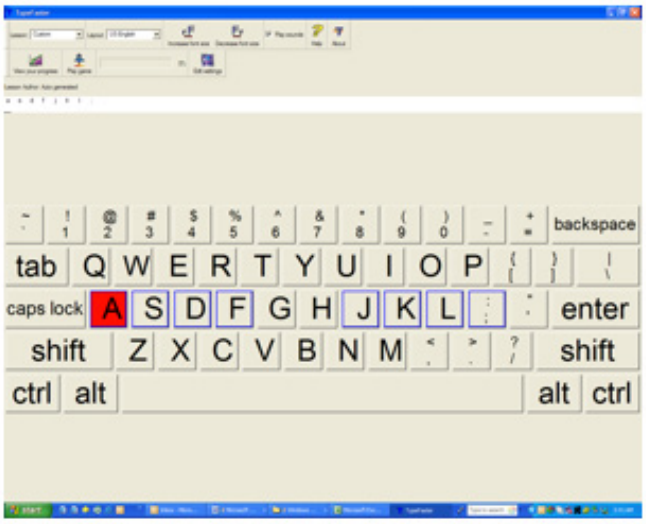



Fig 7: Screen Capture: Type Faster lesson page

Acquainting you with Type Faster typing tutor:

1. To understand how to use Type Faster, please go to the Help button and click on it.

2. Read through the whole Help. See figure below.

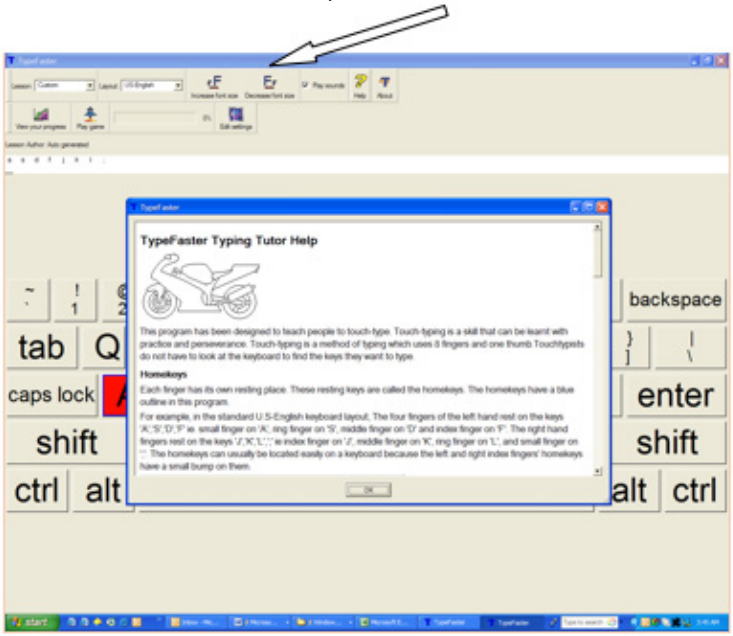



Fig 8: Screen Capture: The Help facility in Type Faster

## Invoking a lesson:

1. On the top left hand side of the screen select the relevant lesson. As a starter, it is advisable to start with lesson 1.
2. In the next tab (Layout) select US-English.

Your task is to go through lesson number 1 up to lesson number 15. After each lesson please check the statistics of what you have done. We want to achieve an acceptable level of proficiency of at least 90% accuracy and at least 30 words per minute.

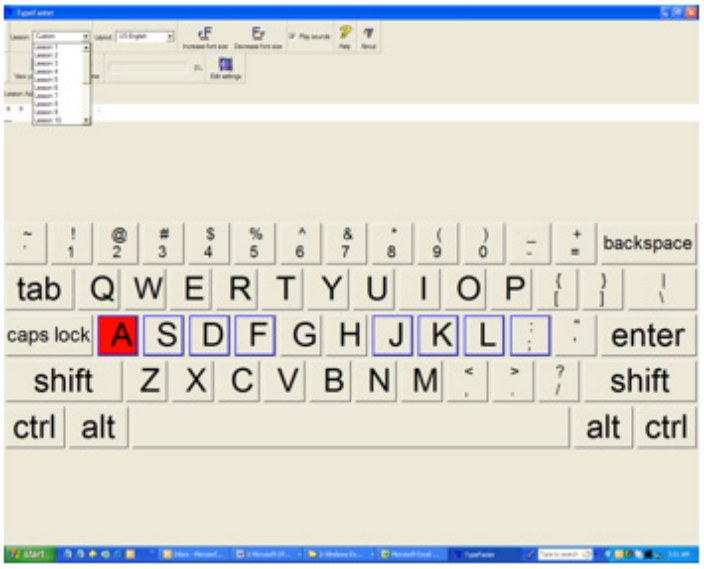



Fig 9: Lessons on offer in Type Faster

## Formative evaluation:

Repeat each lesson until you have reached at least 95% accuracy and at least 30 words per minute. Print the graph of your performance by doing a screen capture and submit it to your instructor. If your instructor has email please do submit it in that way.

### Optional formative evaluation:

It is desirable to have a computer when teaching keyboarding skills. However, access to computers though desirable is not always possible. Compare and contrast, in not more than 1000 words, how you would teach keyboarding skills using a computer or using a typewriter.

Learning Activity 1c

Using the keys on the keyboard

This learning activity will help you become conversant with keys you use very often on the keyboard. You will be able to describe the functions of these keys and practice using them.

## Detailed description of Activity 1c

From Activity 1b, while using the Type Faster tutor, you learnt how to use the home keys ASDF (space) ;LKJ. Mastering the use of these keys is very important for improving your keyboarding skills. But in addition to using the home keys, there are other keys on the keyboard that you will find yourself using very often. These are the keys we want to talk about.

### Enter key

It creates a new paragraph

### Shift key

The shift key is very useful when you want to select characters that are above the non-alphabet keys. Look at the keyboard in activity 1.1, you will notice that above the 1st row of the alphabet keys, there are numbers and on these numbers, there are characters such as @, %, $, and so on. When typing a text, you can select these characters by holding down the shift key and at the same time pressing the character you want to use. The shift key also allows the selection of capital letters when depressing the alphabet characters.

### Tab Key

The tab key can be used to move forward through different options in a dialog box. When used in a table, it enables you move to a new row/column. Sometimes it serves as a good way of creating indents for the first word in a paragraph instead of using the space bar. It could also be combined with other keys such as SHIFT and CTRL (CONTROL) to carry out other functions.

### Caps Lock

The caps lock key enables you type capital letters on the keyboard. When you touch the caps lock key, an indicator light comes up showing you that it has been activated. All letters (alphabet keys only) typed in thereafter are seen in capital letters. Pressing the key again deactivates the caps lock (You can tell when caps lock is deactivated because the indicator light is turned off).

### Backspace key

You can use this key while working with text using word processing software such as Microsoft Word. The backspace key is used to delete characters to the left of the insertion point (that is, the cursor).

### Delete key

Unlike the backspace key, the delete key, deletes characters to the right of the insertion point. This key can also be used in combination with other keys to delete selected files (SEE ACTIVITY 1.4).

### Home key

Pressing this key takes you to the beginning of a sentence. It can also be used in combination with the control key (CTRL) to go to the first line of a document, that is, the beginning of the document you are working on.

### End key

Pressing this key takes you to the end of a sentence. It can also be used in combination with the control key (CTRL) to go to the last line of a document, that is, the end of the document you are working on.

### Page Up

Use this key to move one page up

### Page Down

Use this key to move one page down

## Formative evaluation

Mention other keys on the keyboard that is useful for proper keyboarding skills. List the functions of these keys.

## Learning Activity 1d.

### Keyboard shortcut

This learning activity will help you become conversant with some computer keyboard short cuts and their functions.

Detailed description of learning activity 1d

As you progress in your use of computers you will need to use keyboard short cuts to speed up your work. Some are mentioned below:

CTRL + S save a file

CTRL + A Selects all items

CTRL + C (copy) duplicates a selected/highlighted word, paragraph, page or a file and places it on the clipboard.

CTRL + V (paste) places the copied word, paragraph, page or a file in a desired location

CTRL + Z undo

CTRL + Y redo

CTRL + B Add or remove bold formatting.

Shift + Delete permanently delete an item from your computer without going through the recycle bin (Note: all items permanently deleted, i.e. not sent to the recycle bin cannot be recovered).

Shift + F3 capitalize letters or change them to lower case or sentence case.

ALT+F4 closes the current window

**Formative evaluation:**

List at least 20 other keyboard shortcuts that could be used when working with the computer.

# Learning activities for unit 2

## Title: Identification of external and internal components of a computer

Specific Teaching and Learning Objective(s)

- Accurately identify and describe the characteristics and functions of a variety of currently used input and output devices
- Accurately identify and describe the characteristics and functions of a number of storage devices
- Correctly use general computer and ICT terminologies within the context
- Effectively identify and connect the different computer peripherals to the computer
- Accurately identify and describe the internal components of a computer found inside the system unit

## Summary of the learning activities:

A computer comprises of a number of identifiable components. The components can be split into three broad categories namely storage devices, input devices, and output devices. It is imperative to be able to identify these devices as it gives you a good understanding of how a computer operates. In the series of activities in this unit, you will identify different components of a computer system including the internal components. You will also learn how to set up a computer system.

### KEY CONCEPTS:

**Computer:** A computer is an electronic device that accepts data through an input device processes it and displays results in the form of output.

**Input device:** This is one of a number of gadgets that are used to enter information into a computer.

**Output device:** This is one of a number of gadgets that are used to get information from a computer.

**Peripheral device:** This is a device that is attached to the main body of the computer for use by the computer. It is also called external or hardware components of the computer.

**Ports:** This is a place usually on the back of the computer where cables, modems, and other computer peripherals such as keyboard and mouse are connected. Examples include: serial ports, USB ports and so on.

**Internal Components:** Components found inside the system unit

## List of relevant readings:

**Source:** Microsoft Office

**WWW:** bcschools.net/staff/MicrosoftOffice.htm

Date consulted: 29 August 2006

Source: Basic Computing using windows

WWW: http://en.wikibooks.org/wiki/Basic_Computing_Using_Windows

Date consulted: 29 August 2006

### List of relevant resources:

The pictures on the CD that was distributed for building the course on ICT basic skills.

### List of relevant useful links:

Source: Microsoft Office

WWW: bcschools.net/staff/MicrosoftOffice.htm

Date consulted: 29 August 2006

Source: Basic Computing using windows

WWW: http://en.wikibooks.org/wiki/Basic_Computing_Using_Windows

Date consulted: 29 August 2006

Source: About Tech

URL: compnetworking.about.com/od/basiccomputerarchitecture/g/computer-ports.htm

Date consulted: 12th September, 2014

Source: Techopedia

URL: www.techopedia.com/definition/3659/computer-port

Date consulted: 12th September, 2014

Source: Answers

URL: www.answers.com/Q/

Date consulted: 12th September, 2014

Source: Quizlet

URL: http://quizlet.com/13778187/inputoutput-devices-flash-cards/

Date consulted: 12th September, 2014

Source: open book project

URL: openbookproject.net/courses/intro2ict/hardware/internal.html

Date consulted: 12th September, 2014

Source: Learning Leicestershire

URL: www.leicestershirevillages.com/uploads/84b9e6a364e86f822882254.pdf

Date consulted: 12th September, 2014

## Detailed description of the activities:

A computer comprises of a number of identifiable components. The components can be split into three broad categories namely storage devices, input devices, and output devices. It is imperative to be able to identify these devices as it gives you a good understanding of how a computer operates. In this unit we are going to list a set of different hardware components of a computer. You will then be expected to visually identify the various components. This identification will be from a provided list of diagrams or illustrations. For each component you will give a set of properties and thus be able to make meaning of its use.

## Learning Activity 2a

Input devices

Detailed Description of Activity 2a

A computer accepts data through input devices. Without these devices, the computer would be just a box, because it can only process data that has been keyed in. In this activity, you will learn about several input devices and how they are used.

An input device is a hardware or peripheral device used to enter data into a computer for processing. To interact with your computer, you need these devices. The most common are a keyboard and a mouse, but there are other devices. Below is a list of different input devices and their uses. These include webcam, barcode reader, joystick, keyboard, mouse, scanner, stylus and others.

| S/N | Device Name | Picture | Description | Uses |
|---|---|---|---|---|
| 1. | Webcam |  | A webcam is a shortened from of the word web camera. It is a small camera attached to a computer. However, most laptops come with webcams | It can be used for: taking still pictures, sending the pictures over the internet to another location, sending a live video over conference calls. |
| 2 | Barcode reader |  | An electronic device either handheld or stationary that reads or scans a barcode by shining a laser beam on it. They operate at short distances and do not usually come in contact with the objects they scan. | It is used to read and log in the price of a product in supermarkets, used for tracking inventory of equipment, and for collecting data. |
| 3 | Joy Stick |  | A pointing device or cursor usually attached to a computer. | It is used in computer video games, and also used to assist individuals with disabilities. Thus it can serve as an assistive technology |
| 4 | mouse |  | The traditional mouse is an input device with a ball underneath and two mouse buttons. When moved on a pad or desk, the ball underneath rolls and the mouse pointer moves around the computer screen. The actions of the pointer can be controlled by using the right and left mouse buttons | used for:<br>pointing<br>clicking<br>right clicking<br>double clicking<br>dragging and scrolling on icons and commands on the computer |

| | | | | |
|---|---|---|---|---|
| 5 | scanner |  | Device that reads documents from a paper and converts them into digital data in a computer connected to it. | Used to convert printed pictures into digital files.<br>scans images, text documents on paper that is not on the computer, and makes a virtual or digital copy |

**Formative evaluation:**

Using a table similar to the one in this activity, List five more input devices and discuss their functions.

## Learning Activity2b

### Output Devices

When you use an input device to enter data into the computer, the data is processed. This data processing is not visible to humans. But the results of such data processing can be communicated using output devices. In this activity, you will learn about several output devices and how they are used.

### Detailed description of Activity 2b

An output device is any hardware that is used to communicate the results of data processing carried out in a computer system. Output can be in the form of text, graphics, audio or video. Below is a table showing some output devices and their functions.

| S/N | Device Name | Picture | Description | Uses |
|---|---|---|---|---|
| 1. | Monitor |  | It is sometimes called the visual Display unit (VDU). It is an electronic device that shows pictures. They look similar to televisions except for the fact that they don't have channels you can tune to. monitor can come in either LCD (flat screen) or CRT format, such as the one in the picture | It used to display open programs, allows you to interact with your computer and used to view information from the computer |
| 2 | Printers |  | It is a peripheral output device that accepts electronic data stored on the computer and generates a hardcopy. It communicates with the computer to print what is on the screen. It usually comes in two types: impact and non-impact | It is used to transform text and graphics into printed media. Some printers can also be used for copying, scanning and faxing |
| 3 | Speakers |  | A device that produces audio output that can be heard. Some are built into the system unit while others are connected to the computers with cables. | They are used to play sound.<br>They are also used to listen to music |
| 4 | Plotters |  | A plotter is a 2-dimensional printing device that uses a pen to draw line art on paper. A computer printer used for printing vector graphics such as in computer aided design (CAD) | Used for printing vector graphics.<br>It can also be used to print materials and images that are much sophisticated and bigger than what the regular printer can handle such as maps. |

| | | | | |
|---|---|---|---|---|
| 5 | Projectors |  | An output device that creates a video image and projects it on to any surface. They accept data from a computer, blow it up and display it onto a large screen to be viewed by large numbers of people. They are usually used with presentation software such as Microsoft PowerPoint. They are a replacement for old slide projectors | They are used for presentations in homes, and churches. They are also used in meetings to help ensure that all participants can view the information being presented |

**Formative Evaluation:**

Using a table similar to the one in this activity, List five more output devices and discuss their functions.

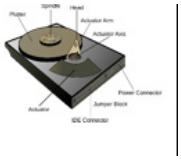
## Learning Activity2c

### Storage devices

While working with computers, it is important that you save the files you work with. Files can be saved either directly to the computer's memory or on an external memory. Activity 2c will help you become conversant with these storage devices

## Detailed description of Activity 2c

Storage devices, also known as memory devices, are used to keep data. We have primary storage devices and secondary storage devices. The primary storage devices are found inside the system unit. They store data for a temporary moment. While the secondary storage devices are external. They hold large amounts of data that are more permanent. The table below describes some of these secondary storage devices.

| S/N | Device Name | Picture | Description | Uses |
|---|---|---|---|---|
| 1. | Hard Disk |  | It is also known as hard drive or mass storage device. A hard drive is usually built inside your computer and holds a very large amount of data up to tetra bytes. It is connected to the motherboard using a hard drive controller. We also have external hard drives. Usually during the booting process, the computer the computer accesses the hard drive to load the operating system. | Used to store long term data on the computer such as the computer's operating system (OS), application software, photographs, videos, and documents. |
| 2 | Flash drives (memory sticks) |  | It is a small, portable stick that you can plug into a computer's USB port. They are small, removable and rewritable | They are used for storage, data back-up and transfer of computer files. |
| 3 | CD Rom |  | The full meaning of the acronym is Compact Disk Read Only Memory. It is an optical disk that has the capacity to store data, music files, video files | It is used to store computer data such as graphics, text and audio |

| | | | | |
|---|---|---|---|---|
| 4 | memory cards |  | A memory card is an electronic flash memory data storage device used for storing digital information. It is an additional storage device for most phones and hand held devices. | It is used to hold music, pictures, download, texts, and apps. They are commonly used in portable electronic devices, such as digital cameras, mobile phones, laptop computers, tablets, MP3 players and video game consoles. |
| 5 | Cloud |  | Cloud storage refers to storing data on the internet, that is, online in the cloud. When data is stored online in the cloud, it can be accessible anywhere. It enables a user access files from other devices. | Cloud Storage can be used to upload computer files (photos, music, documents etc.) It can also be used to back up files on the computer |

## Formative evaluation:

Storage devices have seen a phenomenal growth over the last few decades. Among other things the amount of data that the devices store has increased tremendously. Additionally, the size and technologies used in storing the data has also seen a significant change. You are required to trace the storage capacity of the hard disk since its inception. What has this change in space meant with respect to the use of the computer by a teacher for both teaching and administrative purposes? Also using a table similar to the one in this activity, List five more storage devices and discuss their functions.

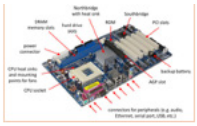
## Learning Activity 2d

### Internal components of a computer

Every desktop computer comes with a system case. The internal components of a computer are the components that are found inside the case of the system unit. They are also hardware components. The components in this case are very vital for the functioning of the computer system. They are very necessary because the computer cannot function without them.

### Detailed description of Activity 2d

There are several components found inside the system case. Some are listed in the table below.

| S/N | Device Name | Picture | Description | Uses |
|---|---|---|---|---|
| 1. | Motherboard |  | The motherboard is a platform that consists of a very firm sheet of non-conductive material. It is a circuit board that has all the basic circuitry and components that are required for the computer to function. | It is used as a base, a platform that holds other components of a computer.<br>It manages the traffic of information within the computer system.<br>It allows for the use of external components and devices of the computer |
| 2 | RAM |  | It is known as Random Access Memory. It is the primary memory of the computer. It is very volatile, that means, data stored on it can easily be erased. Thus it is a temporary memory and works in conjunction with the hard disk. | It is used to store information temporarily while the computer is on. |

| | | | | |
|---|---|---|---|---|
| 3 | Cooling fan |  | This can be either the CPU fan or the case fan. It is a fan inside, or attached to, a computer case used for active cooling. It draws cooler air into the case from the outside, expel warm air from inside, and move air across a heat sink to cool a particular component. | It is used to keep the CPU and other devices in the system case cool. It removes the heat that builds up due to continuous use of the CPU |
| 4 | Central Processing Unit (CPU) |  | The CPU also called the processor is the internal circuit of a computer system that is responsible for all the main execution and processing of data that are required for a computer to function properly. It is the brain of the computer and is made up of three parts: the Arithmetic Logic Unit (ALU), the control unit and the memory | It is used to process information entered into the computer through an input device |
| 5 | Hard disk | See storage devices above | See storage devices above | See storage devices above |

## Formative evaluation:

1. Open a system case and make a list of all internal components you find. Draw pictures of each component
2. Describe the central processing unit (CPU). What are the functions of the various parts that make up the CPU?

## Learning Activity 2e

Setting up the computer

We have learnt about the various parts that make up a computer. This activity would enable

you set up a computer. It involves connecting all the various computer peripherals together so that the entire system starts working.

### Detailed description of Activity 2e

You learnt in unit 1 that computer peripherals include the keyboard, mouse, monitor, system unit, speakers and printer. These hardware components can only work if they are connected properly. Refer to figure 1a and 1b to see the peripherals you must connect together to get the computer functioning. The keyboard and mouse are usually connected to ports at the back of the system unit. The monitor usually comes with two cables. Connect the serial cable of the monitor to the serial port at the back of the system unit then connect the second cable to the main power source. Connect the power cable from the system unit to the main power source. The printer usually comes with two cables. Connect one end of the printer's power cable to the main power source and then to the appropriate port at the back of the printer. Then, finally connect the second cable to an appropriate port at the back of the system unit and the back of the printer. Note that printers usually come with installation CDs which must be compatible with your computer's operating system. Make sure the printer is properly installed on your system before it is used. If you have speakers, connect them to the right port on the system unit.

### Formative evaluation

An Institution just bought a complete computer set and you were asked to set it up. Properly connect the computer peripherals so that the computer can start working.

### Optional formative evaluation

Building of Computer Systems for different functions in a school

You are employed at a rural school that has just been connected to the national electricity grid. The Governor of the Central Bank who happens to be a former head of the school has decided to donate ten computers to the school. The donation includes peripheral devices to be used by the school. As the head Science teacher at the school you have been asked by the headmaster to assist in the acquisition of the computers and their related peripherals.

A number of areas requiring computers have been identified:

A computer to be used by the headmaster

A computer to be used by the school bursar

The rest of the computers will be used by students and teachers in a laboratory.

To assist you with the task at hand you have gone ahead and asked the headmaster and the bursar to give you a summary of their daily duties. You have also seized this opportunity to set the lab in such a way that students can use it for learning.

The headmaster is the administrative head of the school. He is accountable to both the Government, who are the owners of the school, and the Parents Association, the major benefactors of the school. He is the main link of the school to the public.

All visitors, parents, and prospective benefactors pass through his office. It is thus imperative to give a good image through the furnishings in his office.

The headmaster corresponds with a number of important persons, including the ministry of education. These offices, where possible, expect well printed and good looking correspondence. It is the tradition of your school for all pupil records to be kept by the headmaster as there is no school registrar to do this function. There is an upcoming convention of headmasters. Your headmaster is expected to bring his presentation on an external storage device for onward use at the convention.

The Bursar writes you the following points specifying his daily duties:

- Recording of all monies paid for fees
- Recording of all fees to be paid by the students
- Recording of all levies to be paid by the students
- Payment of allowances to teachers and other workers
- Issuing of receipts of payment to the students

## Activities

1. Give a specification of the computer system you would recommend for your school headmaster. Give a reason for each choice you make for the configuration of the system.
2. Give a specification of the computer system you would recommend for the bursar. Clearly state where it differs with the one for the headmaster.
3. Give a specification of the computer system you would recommend for the student and teachers laboratory.

# Learning activities for Unit 3

## Title: Getting acquainted with computer software

Specific Teaching and Learning Objective(s):

- Define system software
- Differentiate between system and application software
- Define an operating system and give examples
- Navigate files and file systems
- Use your mouse to find files

## Summary of the learning activities:

In units 1 and 2, we learnt about computer peripherals also known as computer hardware. This unit will introduce us to computer software. In the series of activities that will follow, you will be able to explain the term system software, differentiate between system and application software, identify the operating system as a major system software and of course navigate a basic windows environment. An ability to click, drag, drop, copy, and, paste is fundamental in the understanding of the use of computer environments. You will also learn how to create and save a file.

### KEY CONCEPTS

**Operating system:** Abbreviated OS, the Operating System is the piece of software which organizes and controls the computer., E.g., Windows 7, windows 8, windows 8.1, Mac OS X, Linux, UNIX (source: Basic Computing Using Windows)

**Files:** A place where information is stored.

**Booting (Starting) a computer:** Action of turning on a computer so that it can be used.

**Mouse:** An input device.

**Drives:** Devices that are used to access and to store data. Most computers have at least two drives. The hard drive C:\ is the main means of storage. It is typically designated the C:\ If you have a CD ROM drive, it is typically designated the D:\ drive. You can also have an E:\ drive that is designated for a USB port through which a memory stick can be connected.

**Folders:** are used to organize the data stored on your drives. Think of your drives as filing cabinets. You want to sort your filing cabinets with folders that store different files. The files that make up a program are stored together in their own set of folders. You will want to organize the files you create in folders. You will probably want to store files of a like kind in a single folder.

**Directory:** A Directory is the path given to a folder on a drive. For example a text file called Phone Numbers is located in the My Documents directory on the C:\ drive. It would therefore read "C:\My Documents\ PhoneNumbers.txt"

**File Extensions:** are the ending letters associated with a file and an application that it can be manipulated in. This way Windows knows to tell which program to open the file you want to manipulate. For example a text file has an extension of .txt, so a text file created in Notepad called Phone Numbers would look like this PhoneNumbers.txt ... You do not have to assign a file extension to a file that you create. The program you use will automatically do this for you. All you need to do is give it a filename. Some other common extensions are as follows:

.doc = Microsoft Word Document

.xls = Microsoft Excel Document

.ppt = Microsoft PowerPoint Presentation

.mdb = Microsoft Access Database

.bmp = Windows Bitmap Picture

.wav = Sound File

.html or .htm = Internet Document

**Icon:** An Icon is a graphic image. Icons help you execute commands quickly. Commands tell the computer what you want the computer to do. To execute a command by using an icon, double-click on the icon.

## List of relevant readings:

Source: for Dummies

URL: http://www.dummies.com/how-to/content/the-different-types-of-computer-mice.html

Date: 15th September, 2014

Source: Tech explainers

URL: http://techexplainer.wordpress.com/2012/03/23/different-types-of-computer-mice/

Date: 15th September, 2014

List of relevant resources:

A complete computer set, empty CD plates, memory stick

List of relevant useful links:

Source: Word press

URL: https://applicationsft.wordpress.com

Date consulted: 1st April, 2016

Source: Engineers Garage

URL: http://www.engineersgarage.com/tutorials/how-computer-pc-boots-up

Date consulted: 1st April, 2016

Source: Business Dictionary

URL: http://www.businessdictionary.com/definition/booting.html#ixzz44hwADouH

Date consulted: 1st April, 2016

Source: English 4it

URL: http://www.english4it.com/reading/33

Date: 15th September, 2014

## Learning Activity 3a

### System Software

This activity is meant to build your appreciation for the different types of software, with particular reference to the system software.

Detailed description of the activity

Computer software is the life wire of every computer. Without the computer software, the

computer cannot function. This activity will expose you to the different types of system software and how they function. Software is a set of programs that are designed to perform a well-defined function. A program on the other hand, is a set of instructions written to solve a particular program. In other words, we could define software as a set of instructions designed to perform a well-defined function. There are basically two types of software: system software and application software. The system software is the major type of software used by the computer. Actually there can be no computer without the system software while the application software is specifically designed for the user. In other words a user decides if he wants specific application software or not. For example, you may decide to have word processing software installed on your computer but do not have data base management software since you have no need for it.

Basic functions of system software include:

- To operate the computer hardware
- To provide basic functionality
- It provides the platform for running application software

System software could be divided into three categories:

- System control programs. They control the execution of programs. Examples include operating system and device driver.
- System support programs. They provide routine service functions to other computer programs. Examples include Utilities such as Antivirus, Text editors such as Notepad and Data Recovery software such as Recycle bin.
- System development programs. They assist in the creation of computer programs. Examples include programming language, and language translators.

Let us now talk about one of the very crucial system control programs: The Operating System (OS). Usually, most equipment come with a set of operational manuals. The purpose of these manuals is to give the user an ability to effectively use the equipment. The same is true for a computer. Resident on each computer is a program called an operating system otherwise known as OS. It is the major type of system software that comes preloaded on your computer. There are several types of OS. But the three major ones are Windows designed by Microsoft which happens to be the most popular, Mac OS X designed by Apple Inc. and Linux which is usually free. OS is responsible for managing the resources on the computer. Most operating systems use a Graphical User Interface (GUI). A GUI enables you use your mouse to click on icons, buttons, and menus. The operating system of your computer is usually loaded during the booting process. Booting is the process of starting the computer. Note that mobile devices also use operating systems. The purpose of this activity is to give you an ability to effectively navigate a windows based operating system. We are going to use the Microsoft Windows Operating System as our example. The OS is the most important system program that runs on a computer. It supports the computer's basic functions, communicates with the hardware and allows other programs to run on the computer. Functions of the OS include:

a) To provide Graphical user interface (GUI) that includes a desktop and the ability to manage files and folders. We will see how important the GUI is when we engage in activities 3c and 3d

b) They recognize input from the keyboard, and send out output to the VDU.

c) They keep track of files and directories.

d) They control peripheral devices such as printers.

e) They provide security

## Formative evaluation

1. Boot your computer and find out the OS used by your computer.
2. List at least 10 operating systems.
3. Why do you think the OS is important for a computer.

## Learning Activity 3b

Application Software

While the system software is very important, the application software addresses the specific needs of the user. This activity will introduce us to the various types of Application software.

Detailed description of the activity

Application software is a set of programs or instructions designed to meet the specific needs of a user. It allows the computer to perform a specific data processing job for the user. It is specific to the task it is designed for. They are also called end-user programs. Application software are different from system software because while the system software manages a computer's capabilities, they do not help users perform specific tasks such as design graphics, prepare budgets, type documents and other such functions. These tasks are very beneficial to the user. The system software rather serves the application software, which serves the user. Application software could be General purpose – designed to satisfy the common needs of various businesses or Specific purpose – created to satisfy specific needs of an organization. There are several categories of application software. They include:

| | |
|---|---|
| Spreadsheets – | Ms - Excel, Lotus 1-2-3 and Apple Numbers |
| Database programs – | Oracle, MS Access |
| Word Processors – | MS-Word, WordPad and Notepad |
| Web Browsers – | Mozilla Firefox, Google chrome |
| Presentation Software – | Microsoft PowerPoint |
| Desktop Publishing software – | Microsoft Publisher, Corel Draw |

## Formative evaluation

Explain in your own words why you think you need to have application software installed in your computer system.

## Learning Activity 3c:

Navigating files and file systems on windows operating system

In this activity, you will navigate a basic windows environment. A windows environment is usually dependent of the software that is in use. An ability to click, drag, drop, copy, and, paste is fundamental in the understanding of the use of computer environments. You will also learn how to create a file and how to save a file.

Detailed description of the activity:

Virtually every piece of equipment comes with a set of operational manuals. The purpose of these manuals is to give the user an ability to effectively use the equipment. The same is true for a computer. Resident on each computer is the operating system (OS). As we have seen from Activity 3a, the OS is responsible for managing the resources on the computer. It creates a Graphical User Interface (GUI) that allows a user to navigate the windows environment. The purpose of this activity is to give you an ability to effectively navigate a windows based operating system. We are going to use the Microsoft Windows Operating System as our example. To start, we have to boot the computer system. To do this, follow the steps below to turn on your computer.

Turning On Your Computer

1. On the front of your computer, or laptop, you should see a button that looks like the figure below. This button or one that looks like it is the power button.
2. If your computer is off, please press the button to turn it on

Fig 12: An example of a power button

Turning on the computer starts a process called booting. In simple terms, during the booting process, the computer checks all its internal and external devices to make sure they are functioning properly. During the process, the OS is loaded onto the computer. A successful booting of the system brings up the desktop. Booting can be of two types: Cold booting and warm booting. Cold booting takes place when the computer is started after having been switched off, while warm booting is carried out when the computer is restarted or hibernating.

Shutting Down Your Computer

1. Click on the Start at bottom left corner of screen
2. Click on Shutdown (A Shut Down Windows dialog box will appear)
3. Click on Shut Down
4. Click on OK

**Restarting Your Computer**

(To shut down and immediately restart your computer)

1. Click on the Start at bottom left corner of screen
2. Click on Shutdown (A Shut Down Windows dialog box will appear)
3. Click on Restart
4. Click on OK

## Activity 3d

Using Your Mouse to find files

This activity is aimed at helping you sharpen your skills on the use of the mouse and to enable you access files store on your computer

**Detailed description of the activity**

A mouse is an input device which allows a user to control a pointer and manipulate objects on the screen. There are several types. Some include: the mechanical mouse (the traditional mouse) which has a hard rubber ball that rolls as the mouse is moved. It typically comes with two buttons but sometimes may have three buttons. The extra button can be programmed to do many things. We also have the optical mouse, the infrared mouse, trackball mouse, stylus mouse and so on.

Trackball mouse



Stylus mouse

Optical mouse

Traditional

Infrared

Traditional Mouse

Fig 13: Types of mice.

Sources:

Trackball mouse: trgovina.dnevnik.si

Infrared Mouse: imagescdn.tweaktown.com

Stylus Mouse: www.hotref.com

Optical Mouse: www.pixababy.com

A traditional mouse has one, two, or three buttons. A "typical" mouse has two buttons on it.

- There are two buttons on each mouse.
- The left mouse button is used to open programs and to select items

- The right mouse button is used to open a sub menu to get other options

### Accessing Your Files

Your files will be stored on one of the drives. If they are stored on the C:/ drive then it is typically in the folder directory C:\mydocuments.

### Finding Files on Your Computer

If, for some reason, you cannot locate a file on your computer or home drive, you still might be able to locate it by using the Find Files Program. Follow the steps below if you are using Windows 8 operating system:

1. At the top right (directly underneath the Share icon) click on the drop down arrow next to Find. ( you will notice several options)

2. Click on Find. (A navigation box comes upon the left hand pane of your document window
3. In the Search document box, type the word, text or picture name you want to find. (You will notice that before you complete the typing, the computer highlights all words and text that are similar to what you are looking for.
4. Scroll through the results of your search criteria to locate the text or comments you were looking for.

**Locating Your Most Recent Files**

Windows provides shortcuts to your most recent files, so you may get access to them very quickly. If you are using windows 8 operating system, follow the steps below to locate a file:

1. Click on the Folder icon at the bottom of the Task Bar.
2. Click on Documents, Desktop or Downloads e.t.c. (or whichever folder you saved the file)
3. When the document window comes up, go to the top right corner and type the name of the file you are looking for (note that if you cannot remember the entire file name, you can type a phrase that is contained in the file).
4. A list of files with that name comes up.
5. Select the file that you want

Renaming A File or Folder

1. Locate the file or folder you want to rename
2. Select the File or Folder you want to rename
3. Right Click on it ( a box comes up with several options in it)
4. Select Rename
5. Type a new name for your file or folder
6. Click Enter

Teaching tip:

It is important for the students to have lots of practice, especially at this early stage of exposure to computers. You should therefore prepare a lot of time for the students to access the computers. Do not worry too if the students tend to hazard on the procedure at this stage.

Copying and saving files:

a) Select one file that is on your hard drive
b) Copy that file, with the same name to another drive, such as D:/

c) Rename the file that you have just copied

d If you have another drive, E:/ say, please do copy the renamed file to it

**Formative evaluation:**

A big challenge with teaching introduction to windows operating system is that the computers in a laboratory could have different versions of the operating system. Discuss the issues to consider when you are faced with a situation where you have such a situation. Remember that your aim is to maximize the delivery of knowledge to the students. Please do limit your response to 1000 words or less.

# Learning activities for unit 4

## Title: Computer Networks and the Internet

Specific teaching and learning objectives

- Identify a basic computer network
- Identify the basic components of the Internet
- Describe the basic functions of the Internet
- Access the Internet using different web browsers

## Summary of the Learning Activities:

Since the invention of the Internet, there has been a knowledge explosion. In these activities, you will be able to make a list of hardware resources required to set up a computer network, explain the difference between an Internet and an Intranet, and between an Internet and the World Wide Web (WWW). You will also be able to log onto the Internet using any web browser.

### KEY CONCEPTS:

**Computer Network:** a group of computer systems and other computing hardware devices that are linked together. Types include Local Area Network (LAN), Wireless Area Network (WAN), Metropolitan Area Network (MAN), and so on. Computers and devices on a network are sometimes called nodes.

**Internet:** a global system of interconnected computer networks that allows computer users to communicate around the world.

**Intranet:** A computer network done within an organization such as a school or a bank. It is a Local Area Network (LAN)

**World Wide Web (WWW):** It is a subset of the Internet. It is one of the ways that information is shared on the Internet. It generally refers to all public web sites that are connected to the Internet and communicate using a web browser. All documents residing in the WWW use Hypertext Transfer Protocol (HTTP). The documents are connected by hyperlinks.

**Web Browser:** It is a software application or program used for accessing sites or information on the World Wide Web. It is used to locate, retrieve and display content on the World Wide Web. Content in this case could include web pages, images, video, and texts and so on.

**Web site:** group of pages found on the WWW that could be accessed using hyperlinks. Web sites could be owned by individuals, companies, educational institutions, government, or other organizations.

## List of Relevant Readings:

Source: wikiHow

URL: http://www.wikihow.com/Create-a-Local-Area-Network-%28LAN%29

Date: 27th September. 2014

Source: about technology

URL: http://compnetworking.about.com/cs/worldwideweb/g/bldef_www.htm

Date: 27th September. 2014

Source: Electronic and communication study aids

URL: http://ecestudyaid.blogspot.com/2012/07/different-kids-of-network-topology-in.html

Date: 27th September. 2014

Source: about technology

URL: http://compnetworking.about.com/od/basicnetworkingconcepts/

Date: 27th September. 2014

Source: Webopedia

URL: http://www.webopedia.com/DidYouKnow/Internet/Web_vs_Internet.asp

Date: 27th September. 2014

Source: TechTerms

URL: http://www.techterms.com/definition/www

Date: 27th September. 2014

Source: Florida Centre for Instructional Technology

URL: http://fcit.usf.edu/internet/chap1/chap1.htm

Date: 28th September. 2014

List of relevant resources:

- A complete computer set with windows operating system 7, 8 or any other newer versions such as 8.1 with a compatible web browser installed on it.
- Internet connection

## List of Relevant Useful Links:

Source: Webopedia

URL: http://www.webopedia.com/TERM/N/network.html

Date: 27th September, 2014

Source: PC Encyclopedia

URL: http://www.pcmag.com/encyclopedia/term/54867/world-wide-web

Date: 27th September, 2014

Source: Tutorials point

URL:http://www.tutorialspoint.com/data_communication_computer_network/computer_network_topologies.htm

Date: 27th September, 2014

Source: tutor2u

URL: http://www.tutor2u.net/business/ict/intro_what_is_ict.htm

Date: 2nd October, 2014

Source: About.com

URL: http://netforbeginners.about.com/od/internet101/f/the_difference_between_internet_and_web.htm

Date: 27th September, 2014

Source: About.com

URL: http://netforbeginners.about.com/od/understandyourbrowser/a/urls.htm

Date: 27th September, 2014

Source: Buzzle

URL: http://www.buzzle.com/articles/home-computer-networking-tips.html

Date: 2nd October, 2014

Source: Symantec

URL: http://www.symantec.com/connect/articles/beginners-guide-internet

Date: 2nd October, 2014

Source: HTML tutorials

URL: http://www.yourhtmlsource.com/starthere/whatishtml.html

Date: 2nd October, 2014

## Activity 4a

## Setting up a computer network

This activity will enable you identify the hardware resources needed to set up a small computer network.

Detailed description of activity4a:

A computer network could be defined as a group of computers and other electronic devices connected together so as enable communication between them. In order to set up a computer network, you will need some computer hardware resources. These include computer sets, cables, hubs, switches, routers, servers, cell phone towers, smart phones, satellites, printers and so on. There are several types of networks such as Local Area Network (LAN), Wide Area Network (WAN), and Metropolitan Area Network (MAN). A LAN connects computers which are close together perhaps computers within your home, your school, your office, your bank and so on. LANs are limited to a single location. If you connect the computers and other electronic devices within your home to communicate, you have created a Home Area Network (HAN), which is a small LAN. When computers within a school are connected together, they form a Campus Area Network (CAN). Wide Area Network (WAN) is a collection of computers and other resources connected through a network over a geographic area. Usually such connections are done through the Internet or other Internet service providers (ISPs) or telecommunication companies. The computers in a WAN are usually very far away from one another, sometimes in a different country or anywhere else across the globe. WANs are not limited to a single location. A Metropolitan Area Network (MAN) on the other hand is a network that interconnects users with computer resources in a geographic area or region. The region or geographic area covered by a MAN is usually larger than that covered by a LAN but smaller than that covered by a WAN. In other words, the difference between a WAN and a MAN is the distance between each of the networks.

## Formative evaluation

In your home, you have a desktop, a laptop, a smart phone and a printer. What steps would you take to set up a Home Area Network? Make a list of the resources you would need to do this.

## Activity 4b

Characteristics of Computer networks

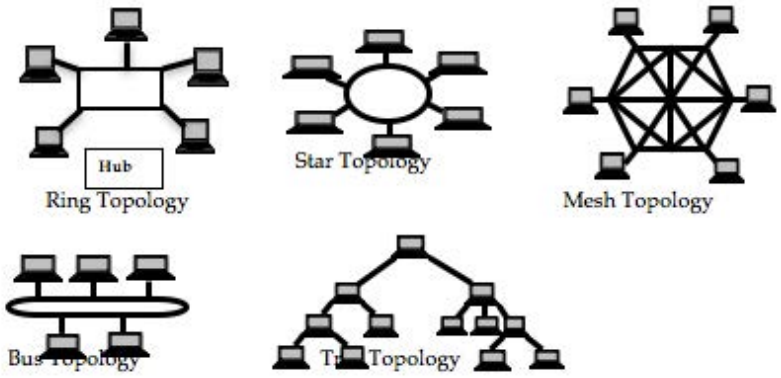
This activity will enable you identify the different computer network topology and their characteristics

Detailed description of activity4b:

There are several things that characterize a network.

These include:

**Topology:** this has to do with the geometric arrangement of the computer system. It simply refers to the physical connections of the computers and devices within a network. There are several types of network topologies and they include Bus, ring, star, tree and mesh. Below are images of these network topologies.




**Protocol**: this refers to the set of rules and signals that computers on a network use to communicate. It could be seen as the 'language' that all the computers on a network use for communicating with one another.

**Architecture:** Computer architecture refers to the roles/functions computers play in a network. There are usually three major types of architecture. They are server-based (client/server), Peer (peer-to-peer), and Hybrid. Client computers are those which use network resources but do not provide such network resources, server computers provide network resources. They provide network services across a series of connected computers to perform specific tasks on behalf of the user; and Peers usually use and provide network resources. A hybrid network is a client/server network that also has peer sharing resources. There are several advantages and disadvantages of computer networks. They include:

Advantages

I. Easy file sharing and remote file access

II. No storage problems

III. Reduced hardware costs

Disadvantages

I. They are likely to get hacked

II. They are susceptible to viruses

III. They lack stability

## Formative evaluation

1. Discuss the advantages and disadvantages of each computer network topology.

## Activity 4c

Components of the Internet

This activity will acquaint you with the basic features of the Internet.

Detailed description of the activity

The Internet, also known as interconnection of computer networks, has so many components or features. These include the World Wide Web (WWW), E-mail, Usenet, File Transfer Protocol (FTP), Bulletin Board Service (BBS) and instant messaging, just to mention few. Because the internet is an information highway, there are rules and procedures which allow information to reach their various destinations. These rules are called protocols. Protocols are simply rules that are used for encoding and decoding messages on the Internet so that the various computers that are interconnected can understand one another. It is the language that the computers use to communicate. The most popular of these protocols are the (Transmission Control Protocol (TCP) and Internet protocol (IP). To connect to the Internet, you need an Internet Service Provider (ISP). ISPs are usually companies within a geographical location or region which allow individuals or smaller companies to connect to the Internet. An Internet is different from an Intranet. An Intranet is usually built within an organization and controlled by one server. It enables members of that organization to share resources and communicate effectively. Usually others outside the organization are not allowed access to the Intranet thus it is protected by a password/passwords which could be given to individual members.

## Formative evaluation

1. Describe in details the roles played by TCP/IP in transferring data on the Internet.

2. Discuss the various features of the Internet mentioned above.

## Activity 4d

Navigating the World Wide Web (WWW)

This activity would take you through the necessary steps needed to browse for information on the Web.

### Detailed description of the Activity

WWW also known as the Web is one of the components of the Internet. It is a software application used to locate and display Web pages. All resources on the Web use Hypertext Transfer Protocol (HTTP). It is the protocol used to serve web pages. Hypertext Markup Language (HTML) is the language used to create web pages. It is a set of symbols or codes that are inserted into a file to be displayed by a web page. To access the web, you will need a web browser. A browser is the application that allows your computer to read and display web documents. What usually happens is that your browser takes the HTML and translates it into the content you can easily read. That is the content you see on the screen. Popular examples of web browsers are Internet Explorer, Mozilla Firefox, Safari, Google Chrome, Netscape Navigator and so on. To access information from the web, you need to start your computer. Then from the desktop or the task bar, you double click on your web browser. On the address bar, type the web address. Web addresses are also called Uniform Resource Locators (URLs). An example of a URL is http://www.factual.com. If you type this web address in the address bar, your browser tries to fetch this web page. Every URL contains a domain name. Domain names are used to identify particular websites or web pages. Let us take a look at the web address below:

http://www.factual.com

**http://** this is the access protocol

**www** this is the host (the information you are requesting for is hosted in the world wide web www)

factual.com This is the domain name. the .com is called top level domain. It describes the type of site you are looking for, whether it is a commercial site (.com) or an educational site (.edu) or a Government site (.gov) or a non-governmental organization (.org) and so on.

The WWW has metamorphosed over the years. While it started out with a static web known as web 1.0, we now have a very interactive web known as web 2.0. below are the features of the first two generations of the WWW:

1st generation (Web 1.0) features

- Static web
- Readers are passive
- Readers can only read, receive and research
- Mainly used by companies to advertise and run their businesses

2nd Generation (Web 2.0)

- Collaborative web
- Readers are active
- It allows for readers to contribute, collaborate, and create information.
- It is used by both companies and individuals
- It has given birth to social media

Presently evolving is web 3.0 which is called the semantic web. It is believed that this third generation would predict human minds and act on perceived choices based on previous searches.

## Formative Evaluation

1. List at least 10 top level domain names and their full meanings

2. Explain why you think you need a web browser before you can access the web. Boot your computer system and find out which web browser is used by your system.

3. Identify the ISP you are currently using

# SUMMARY OF THE MODULE

By now you should have solid working knowledge of the basics of the use of computers. More specifically you should be familiar with the following:

- The ability to touch type using a computer keyboard should be apparent. This will enable to significantly improve the volume and quality of work you can produce from the computer.
- Ability to identify the various components that make out the core of a personal computer
- Ability to distinguish computer peripherals and know what they are used for. You should be able to match a peripheral with the correct user and environment where it can be used.
- Performance of basic navigation of a windows operating system. This basic ability to navigate should enable you to access, store, and retrieve information from the computer.
- The internet and how it works

All of the above skills should be known in both a student context and a teacher context. There are a number of challenges associated with the computing environment being used by a given user. Since the environments can even vary within a given laboratory the versatile knowledge is even more important.

## SUMMATIVE EVALUATION

1. Draw and label the parts of a keyboard. Describe the functions of each of the five parts.
2. Using the Type Faster Typing Tutor, go through lessons number 1 to 15. Your target is to achieve an acceptable level of proficiency of at least 95% accuracy and at least 50 words per minute.
3. Using a table and with the aid of appropriate pictures, list and describe the functions of five (5) input devices, output devices, storage devices and internal components of a computer.
4. 4a. Differentiate between a system software and an application software

   4b. Why do you think an Operating System (OS) is important for a computer?
5. Explain the various parts that make up this URL: http://www.uniport.edu.ng
6. If you were asked to make a choice between Web 1.0 and 2.0, which would you choose? Justify the reasons for your choice.
7. In your home, you have a desktop, a laptop, a smart phone and a printer. What steps would you take to set up a Home Area Network? Make a list of the resources you would need to do this.

## REFERENCES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