

ADVANCED

# DIGITAL LITERACY

## SKILLS



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## **ACKNOWLEDGEMENTS**

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## Letter to the Facilitator

This *Digital Literacy Facilitator's Guide* and the accompanying *Digital Literacy Learner's Handout Book* have been written to assist you to shape the digital skills learning experiences of all learners. The aim is to create inquisitive learners who are confident in their exploration and embracing of digital technology.

The major objective is to make the teaching of digital literacy skills more inclusive; that is, to satisfy the needs of learners of all abilities. For this reason, the learning process is learner centred.

This program aims to produce digitally literate learners who have a range of skills that meet the demands of our economy and the job market, and who also have the motivation and competence for further learning and skill acquisition.

This program is expected to produce learners who will be competent and can communicate effectively, think critically, and solve problems in the digital space. These learners will be employable and able to contribute towards the economic development of our country.

For competence-based teaching and learning to become a reality, certain ways of the teaching and learning process must change. For example:

- the role of the teacher must change from being the source of information to that of a facilitator
- the content must be applicable to daily life experiences and the local labour market
- monitoring and evaluation must be continuous and progressive and should include knowledge as well as skills.

Learner-centred teaching places focus on the learner *learning* rather than focusing on what the facilitator is doing. Research has shown that this has many advantages, including increased learner engagement with content, learning, and long-term retention. Furthermore, because of its flexibility, this type of teaching is effective in both small and large classes.

The authors

## Introduction

This course follows the curriculum set out in the *Uganda Digital Literacy Framework*.

The curriculum caters for three levels of digital learner:

- Basic User
- Intermediate User
- Advanced User.

For learners to begin the Basic User Level, they should be able to follow digital prompts of the device that they are using in English. The facilitator may choose to teach using both English and a mother-tongue to facilitate understanding.

Each level ends with a formal skills assessment, learners should be able to demonstrate the required skills before advancing to the next level. Learners should be allowed multiple attempts until they pass the assessment.

## How to use the Facilitators' Guide

The Facilitators' Guide is divided into modules that follow the curriculum set out in the *Uganda Digital Literacy Framework*,

- Foundation Digital Skills
- Information Processing
- Communication and Collaboration
- Content
- Safety and Security
- Problem Solving.

Each module of the *Digital Literacy Facilitators' Guide* consists of several units. Each module ends with a formal skills assessment. Learners should be able to demonstrate the required skills before advancing to the next module. Learners should be allowed multiple attempts until they pass the assessment.

## Module and unit structure

For ease of use, the modules and units follow the same structure.

**Module introduction:** This gives a general overview of the intent of the module and lists the units in the module. The content is generic across levels.

**Module learning outcomes:** The outcomes cover the general competencies that learners should demonstrate on completion of the module and are generic to all levels.

**Resources:** A list of basic resources needed to facilitate the module is provided. The list is not exhaustive, and facilitators are encouraged to add and adapt to their own locality and needs.

**Suggested teaching methods:** The intention of this list is to stimulate creativity in the facilitator who is free to use teaching methods best suited to their locality and needs. Whatever approach adopted, we stress that each learner should be afforded enough time for individual practice so that they can master each skill or process without being prompted by a peer or the facilitator.

**New terminology to explain:** This is not an inclusive list, any terminology that is unfamiliar to the learners should be explained in plain English. Note that the list remains the same for Basic Users, Intermediate Users, and Advanced Users. This has been intentional, as some Intermediate or Advanced Users may need revision. The facilitator is free to delete or add to this list to meet the needs of their learners.

### Unit structure:

- Each unit begins with a suggested time allocation. Facilitators are free to adjust this to meet the needs of their learners.
- Although the module outcomes do not differ, the unit objectives differentiate per level. Note that when reading the curriculum document, it is very evident how the skill complexity develops between levels.
- The content to be covered is listed. Note that much of the content is repeated between levels as the content of the previous level provides context for the learning of the next level.
- A suggested lesson plan guide is included to show the order that the content should follow. One lesson does not necessarily equate to one teaching session/period. Facilitators should plan their time according to the needs of their learners.
- Links to additional online resources build on or reinforce the content provided. These are tiny steps aimed at introducing the facilitator to the vast wealth of knowledge available on the internet, especially step-by-step videos on YouTube that provide guides to anything imaginable.
- The teaching notes are a detailed version of the theory that the facilitator will need to convey, together with the practical skills to be learned. The facilitator is free to adapt

the amount of theory to the needs of their learners. However, bear in mind that practical skills without theoretical context lose meaning.

- The practical activities are dispersed between the theory. However, due to the nature of the content, this is not always at regular intervals.
- Each unit ends with a Knowledge and Skill Checklist. This is intended as a self-assessment – learners need to be able to honestly assess their skill level and may need more practice.

The *Digital Literacy Facilitator's Guide* and the *Digital Literacy Learner's Handout Book* should be used together. The skills that learners need to practise per unit together with examples are provided.



## Module 1

# Foundation digital skills

The first module introduces learners to the basics of a computer, the basics of an internet-enabled mobile device and the internet.

Please note that practical activities described in each unit might require the support of a facilitator. Although the information presented is written in a way that is easy to understand, some actions, adjacent to the information presented, may also necessitate supervision and support from a facilitator.

Additional practice activities have been provided for learners (these are called **Skills to practise**). These activities provide learners with opportunities to further explore and consolidate what they have learnt in class. Set aside a few minutes at the start of each lesson to discuss the learners' own independent practice of these skills and their findings.

This module includes the following units:

<b>Unit 1</b>	Basics of a computer
<b>Unit 2</b>	Basics of an internet-enabled mobile device
<b>Unit 3</b>	Introduction to the internet

## Learning outcomes



Learners should be able to:

- Understand the basics of using a computer.
- Understand the basics of using an internet-enabled mobile device.
- Understand the basics of the internet.

## Resources



- Training manual
- Computer with internet access
- Flipchart papers
- Markers

## Suggested teaching methods



The following teaching methods are suggested:

- Presentation by facilitator
- Group exercise / Discussion / Debate
- Working in pairs / Small groups
- Presentation by learners



## New terminology to explain

These are terms that learners may not be familiar with. They should be explained within the context that they may be used.

### accessory

an optional part or object

<b>Bluetooth</b>	short-range wireless technology that connects devices
<b>borders</b>	a line around a cell or block of cells
<b>bullet</b>	symbol to introduce item in a list
<b>cell</b>	block on a spreadsheet where data can be entered
<b>cell reference</b>	the combination of the row number and the column letter
<b>column</b>	vertical group of cells in spreadsheet
<b>component</b>	necessary part or object
<b>currency</b>	money used to buy and sell goods in a country
<b>data</b>	information
<b>default</b>	pre-determined setting
<b>developer</b>	creator of software
<b>device</b>	computing machines, e.g., smart phone, laptop, tablet, PC
<b>ethernet</b>	cable to connect devices to internet
<b>font</b>	specific way text is designed to look
<b>format</b>	the way something looks

<b>hardware</b>	devices or machines
<b>icon</b>	image on the screen that represents the app or software
<b>input</b>	data that is entered by the user
<b>install</b>	making the software or app ready to use on the device
<b>landing page</b>	page a user goes to first on a website
<b>link</b>	text or button that sends the user to another web address
<b>list</b>	connected items written one below the other
<b>manufacturer</b>	creator or builder
<b>margin</b>	outside limit of the page
<b>mobile</b>	moves easily and freely
<b>network</b>	linked computers
<b>output</b>	data that is received by the user
<b>personalize</b>	to make the way the individual wants it
<b>platform</b>	specific place where the software works
<b>podcast</b>	audio content

<b>port</b>	connection point for cables to a device
<b>process</b>	use
<b>program</b>	instructions that tell a device what to do
<b>range</b>	group of cells
<b>retrieve</b>	to find and bring back
<b>row</b>	horizontal group of cells in spreadsheet
<b>sim card</b>	smart card with identification information for a phone or tablet
<b>software</b>	computer programs
<b>source</b>	where something comes from
<b>stock</b>	generic pictures that are stored on a database where it can be bought
<b>store</b>	putting data on a device
<b>subscription</b>	product or service paid for regularly by customer
<b>suite</b>	collection of software
<b>value</b>	data in the cell of a spreadsheet
<b>wrap</b>	text is forced to run underneath each other

# 1

## Basics of a computer



	<b>Duration</b>	5.5 hours																
	<b>Objectives</b>	<ul style="list-style-type: none"><li>Start up a computer safely.</li><li>Shut down a computer safely.</li><li>Understand the different components and accessories of a computer.</li><li>Understand the basics of an operating system.</li><li>Use the basic features of word processing software to create and edit documents.</li><li>Use the basic features of spreadsheet software to create and edit spreadsheets.</li><li>Use the basic features of presentation software to create and edit presentations.</li></ul>																
	<b>Content</b>	<ul style="list-style-type: none"><li>Introduction to computers</li><li>Hardware</li><li>Operating system software of a computer</li><li>Word processing software</li><li>Spreadsheet software</li><li>Presentation software</li></ul>																
	<b>PowerPoint slides</b>	Use <a href="#">this link</a> to access the PowerPoint slides deck for this unit.																
	<b>Lesson Plan Guide</b>	<table><tr><td>1</td><td>Introduction to computers (30 minutes)</td></tr><tr><td>2</td><td>Hardware (15 minutes)</td></tr><tr><td>3</td><td>Operating systems of a computer (20 minutes)</td></tr><tr><td>4</td><td>Word processing software (70 minutes)</td></tr><tr><td>5</td><td>Spreadsheet software (90 minutes)</td></tr><tr><td>6</td><td>Presentation software (90 minutes)</td></tr><tr><td>7</td><td>Consolidation (15 minutes)</td></tr><tr><td>8</td><td>Knowledge and Skills checklist</td></tr></table>	1	Introduction to computers (30 minutes)	2	Hardware (15 minutes)	3	Operating systems of a computer (20 minutes)	4	Word processing software (70 minutes)	5	Spreadsheet software (90 minutes)	6	Presentation software (90 minutes)	7	Consolidation (15 minutes)	8	Knowledge and Skills checklist
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7	Consolidation (15 minutes)																	
8	Knowledge and Skills checklist																	

## Additional online resources

- What is a computer?  
<https://edu.gcfglobal.org/en/computerbasics/what-is-a-computer/1/>
- The CPU of a computer  
<https://www.khanacademy.org/computing/computers-and-internet/xcae6f4a7ff015e7d:computers/xcae6f4a7ff015e7d:computer-components/a/central-processing-unit-cpu>
- Computer hard disk drive  
<https://www.crucial.com/articles/pc-builders/what-is-a-hard-drive>
- How operating systems work  
<https://computer.howstuffworks.com/operating-system.htm>
- Operating system basics  
<https://edu.gcfglobal.org/en/computerbasics/understanding-operating-systems/1/>
- Word processing software  
<https://www.geeksforgeeks.org/word-processing-software/>
- Spreadsheet software  
<https://www.techtarget.com/whatis/definition/spreadsheet#:~:text=A%20spreadsheet%20is%20a%20computer,data%20and%20short%20text%20strings.>
- Simple formulas  
<https://www.goskills.com/Excel/Resources/Basic-Excel-formulas>



## Teaching notes

### Introduction to computers

Introduce this lesson by explaining to learners what a computer is. Remind learners that they have encountered many different types of computers in their daily lives. Explain that computers are all around us. A computer can be a laptop, a desktop computer, a tablet, a smartphone or even a smart watch. A computer is any electronic **device** that works with **data**.



Figure 1.1.1 – Different types of computers

## Activity 1.1.1: What is a computer?

1. To elicit prior knowledge and allow learners to make connections to their daily lives, start this unit with a brainstorming session.
2. Make sure you have a whiteboard ready to register everyone's inputs.
3. Inform the learners that there are no right / wrong answers because the idea is to share with the group what they already know, and to realize what they may not know. Possible questions:
  - a) What is a computer?
  - b) How do you use computers in your daily lives?

Explain the primary tasks of a computer to learners. A computer can **store**, **retrieve** and **process** data.

- **Storing data:** A computer can keep data that might be needed so that it can be used at suitable times.
- **Retrieving data:** A computer can find the stored data when the user needs or requests it.
- **Processing data:** A computer can use and interpret the data to give the data to the user in a different form, for example, graphs, pictures, documents and more.

### Starting up a computer safely

Explain to learners that when working with any computer, they must be able to start it up and shut it down safely. If they do not do it safely, the data on the computer could be damaged. This will make the computer work incorrectly, or not at all.

To start up a computer, learners will need to find the right button. On-buttons can be in different places, depending on the device. They are usually found on the top or the sides of tablets and smartphones. On laptops, they are often on the top row of the keyboard. A desktop computer will have a large button on the tower itself. Many power buttons have a symbol on them. To start up the computer, press the power button and wait patiently for it to start up.



Figure 1.1.2 – Symbol on power buttons



Figure 1.1.3 – Desktop tower

### Activity 1.1.2: Turn on a computer

1. Show learners where to find on-buttons on various devices.
2. Ask learners to find the on-button on their computer.
3. Ask learners to push the button. Remind learners that they will need to be patient as the computer starts up.

### Shutting down a computer safely

Just like starting up, shutting down is important to keep the data stored on the computer safe. Explain to learners that they do not follow the same process to start up and shut down a computer. To shut down a computer safely, first close any open **programs** and save whatever is being worked on. Then navigate to the power settings of the computer. Select the option that says *Power off* or *Shutdown*. Wait for the device to shut down completely and the screen is black.

### Activity 1.1.3: Shutdown a computer

1. Show learners where to find power settings on various devices.
2. Ask learners to make sure all open programs are closed.
3. Ask learners to make sure all work has been saved.

4. Find the power settings on their computer.
5. Now, ask learners to shut down the computer. Remind the learners that they will need to be patient as the computer shuts down.

## Hardware

Introduce this lesson by explaining to learners that computers are made up of **hardware** and **software**. A computer needs both to work properly.

- **Hardware:** The physical parts of the computer that run when they receive instructions from the software.
- **Software:** The sets of instructions that can be stored on the computer and that hardware uses to run.

Emphasize that in this lesson the focus will be on hardware. Computers have various **components** (parts) and **accessories** (extras). These are parts that can be seen. They are either inside the computer and only be seen if the computer is opened or they are visible without opening the computer.

### Activity 1.1.4: Name parts of the computer

1. Start this lesson with a pair/ small group activity.
2. First, let learners think of the answers by themselves.  
Possible questions:
  - a) What are the parts of the computer that you can see and what do you think they do?
  - b) What do you think the word input means? Draw their attention to the word divided up (in+put).
  - c) What do you think the word output means? Draw their attention to the word divided up (out+put).
  - d) Which parts of the computer can you not see and what do you think they do?
3. Inform learners that there are no right/wrong answers because the idea is to share with their group what they already know/may not know.

4. Then let learners break up into pairs or small groups of no more than 5.
5. Learners share their answers with each other.
6. Pairs or groups now share their answer with the class or with other pairs or groups.

## Components

Remind learners of the definition of a computer: An electronic device that stores, retrieves, and processes data. For a computer to be able to complete those tasks, it uses four main types of components for **input**, processing, **output**, and storage.

- **Input components:** These are tools that the user uses to put data into the computer for storage and processing. The computer requires input from the user to tell it what to do. They can be seen. This includes virtual and physical keyboards, touch screens, and mice.



*Figure 1.1.4 – Examples of input components*

- **Processing components:** The Central Processing Unit (CPU) is the “brains” and controls all the operations of the computer. It processes the data received through input devices or stored in storage devices. Processing components are found inside the computer and cannot be seen unless the computer is opened.
- **Output components:** These are tools that are used to send processed or stored data out back to the user in a way that makes sense. This is the result of processed data that has been received through input components. They can be seen. The primary output component of a computer is the **monitor** (screen).



*Figure 1.1.5 – Central Processing Unit*



*Figure 1.1.6 – Computer monitor*

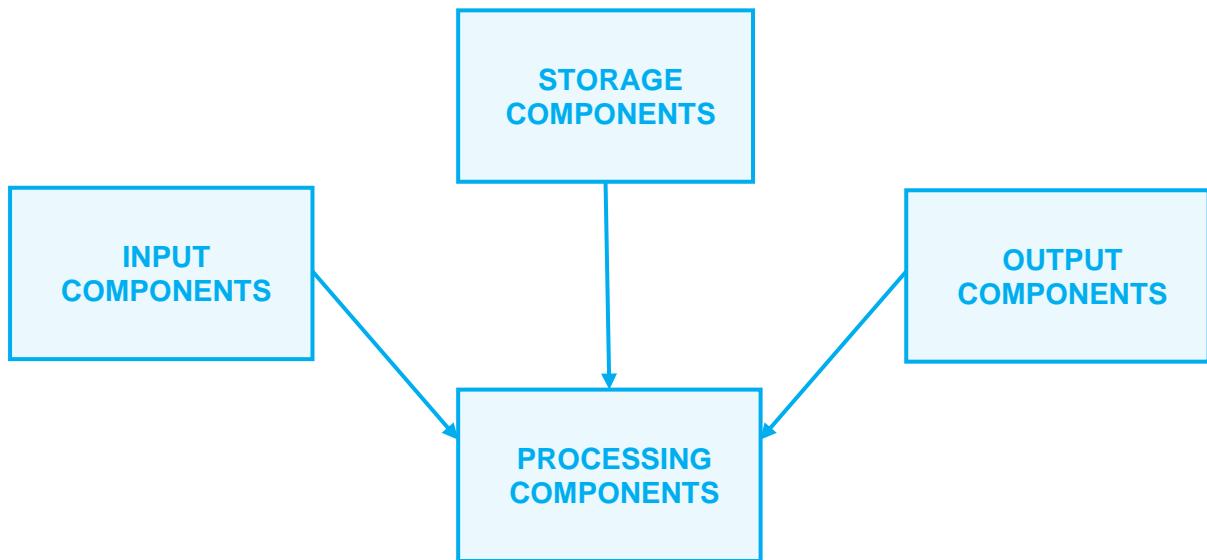
- **Storage components:** These are the tools that keep the data safe until it is needed by the processing devices or given to the user through output devices. Some types of storage components can be seen, but others cannot be seen without opening the computer. The main storage component of a computer is the hard drive. The hard drive can be a hard disk drive or a solid-state drive. It stores the most important data the computer needs.



*Figure 1.1.7 – Solid-state hard drive*

*Figure 1.1.8 – Hard disk drive*

All the input, output, processing, and storage components work together to make the computer function properly.



## Accessories

Components are necessary for a computer to work; accessories are the optional extras. There are basic accessories like mousepads, cleaning kits, covers and screen protectors that make using your computer easier or safer. Other accessories can add functionality to a computer. It is nice to have but will not stop the computer from being able to function or complete tasks.

- **Input accessories:** These are accessories that allow the user to put different types of data into the computer. For example, joysticks, webcams, remotes, scanners, and microphones.



*Figure 1.1.9 – Examples of input accessories*

- **Output accessories:** These are accessories that can allow the user to get data from the computer in different ways. Some examples are speakers, headphones, and printers.



*Figure 1.1.10 – Examples of output accessories*

- **Storage accessories:** These are accessories that add different types of storage to the computer. It includes compact discs (CDs), USB drives, external hard drives, and SD cards.



*Figure 1.1.11 – Examples of storage accessories*

## Operating system of a computer

Begin this lesson by reminding learners about what they already know about the difference between hardware and software. Hardware refers to the physical components and accessories of the computer, outlined in the previous lesson. Hardware runs when it receives instructions from software. Software refers to the sets of instructions that are stored on a computer and used by hardware to know what to do. Emphasise to learners that the next four lessons will be about specific types of software.

The most important software on a computer is the operating system (OS) software. It performs the tasks that must happen for the computer to work. It is the primary channel of

communication between the user and the computer. It contains the instructions to make all the input, output, processing, and storage tasks happen.

The OS performs the following tasks:

- Recognises and **installs** (adds) components or accessories, where necessary.
- Translates the data provided by the user through input components and accessories.
- Puts the data into a language the processing components can understand.
- Tells the processing components what to do with the data and what output to create.
- Manages the storage components to make sure data is stored safely and can be retrieved when needed.
- Loads and runs other types of software and allows it to communicate with the hardware.
- Manages system errors and lets the user know if there is an issue.

Not all computers use the same OS software. The OS software that is used depends on the type of computer and the manufacturer of the computer. The OS software on the computer will determine what you see on the screen, and what other types of software are available by **default** (automatically included) on the device.

The two most common types of OS software for smartphones and tablets are iOS and Android. iOS is the specific OS software used by Apple for iPhones and iPads. Android is the OS software used by most other smartphones and tablets.



Figure 1.1.12 – iOS logo



Figure 1.1.13 – Android logo

The two most common types of software for laptops and desktop computers are MacOS and Microsoft. MacOS is the specific OS software used by Apple for MacBooks and iMacs. Microsoft Windows is the OS software used by most other laptops and desktop computers.



Figure 1.1.14 – macOS logo



Figure 1.1.15 – Microsoft logo

## Activity 1.1.5: Discuss operating systems

1. First, let learners break up into groups of no more than 10.
2. Inform learners that there are no right/ wrong answers because the idea is to share with their group what they already know/ may not know.
3. Let them look at their computers and discuss what they see. Encourage them to experiment with their computer to find the answers. Possible questions:
  - a) What OS software do you think your computer is using?
  - b) Why do you think this is the OS software your computer is using?
  - c) If there are computers with different types of OS software, how do they look?
  - d) If you have a computer at home, what type of OS software do you think it uses?
  - e) What apps are loaded by default onto the computer you are working on?
4. Let the learners complete this table (they can add more columns if they need to):

	<b>OS software type 1</b>	<b>OS software type 2</b>
Computers that use the OS		
Features of the OS software		
Default software of the OS		

5. Groups now share their answers with the class or another group.

## Word processing software

Start this lesson by tapping into the prior knowledge of the learners. By now, they should know the following concepts:

- **Computer:** any electronic device that stores, processes, and retrieves data.
- **Hardware:** the physical parts of the computer that run when they receive instructions from the software.
- **Components and accessories of a computer:** the input, output, storage, and processing components (necessary) and accessories (optional) that a computer uses.
- **Operating system software of a computer:** the software that forms the primary communication between the user and the computer and performs all tasks needed for the computer to function.
- **Software:** the sets of instructions that can be stored on the computer and that hardware uses to run.

Emphasise that the next three lessons will be about specific software types. In this lesson, the focus will be word processing software. Remind learners that processing means to take data received through an input by the user and rework it into an output that the user wants. Word processing means to take the text typed on a keyboard into software that can create and edit documents containing the text on the computer. Word processing happens in two main steps: creating and editing.

### Creating a document

Start off by explaining that the very first step in the word processing cycle is creating a document. Most computers provide default word processing software, but if it is not already installed, it will need to be installed before continuing. Some common types of word processing software include Apple Pages and Microsoft Word. There are many others not listed here.

Guide the learners to start up the software. There will be an option to create a document. There are two options when creating documents:

- **Blank document:** a plain white document with no text on it and everything will be set to the default. The user will start with nothing and must add everything on the page.
- **Template:** A template is a document that has been created for the user with text, colours, styles and more that the user can use to create something similar. Some popular templates include calendars, resumés, newsletters, lists, adverts, menus, and more.

For the purposes of this module, learners will only work with blank documents. Once a blank document has been created, the editing can begin.

## Editing a document

Once learners understand how to create a document, move onto editing. The first step in editing the document is saving it. If a document is not saved, it will be lost along with any work done to it. Always save documents with a name that makes it easy to find again. Provide the learners with these hints for naming documents and files.

**Take note:**



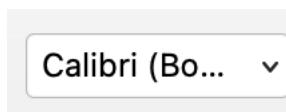
- Ensure names are unique.
- Avoid using spaces, rather use underscores.
- Add the date where possible and use YYYYMMDD as a format.
- Keep your file names to under 25 characters.

My word document	
Module1_Foundations_Unit1_202305	

Explain to learners that it is important to make sure that documents are saved in a place that can easily be remembered and accessed later. The user will regularly need to save while working to make sure the saved file is the most up to date.

Once the document has been saved, the user can begin to add text to it. Once the text is typed up in the document, the user can begin to do some basic tasks.

Work through this table with learners to help them understand the basic tasks most word processors can do. Make sure learners understand the concept of typing then selecting (or highlighting) text that they want to edit. Explain where to find each menu and button on the specific word processing software they are using. Ensure enough time is given for learners to understand the purpose of each task and navigate to the relevant button or menu.

Task	Explanation	Example
<b>Change type of font</b>	When a blank document opens, the text will be in the default font. It can be changed to any available font by opening the font type menu and selecting a different font. 	Century Gothic Comic Sans Bradley Hand Times New Roman

<b>Change font size</b>	The size of the text will also be set to default on a blank document. It can be changed to any size by opening the font size menu and changing the size. It is measured in points (pt).	14 pt 18 pt <b>22 pt</b> 24 pt
		
<b>Change text colour</b>	The colour of the text will be set to black by default on a blank document. This can be changed as well by opening the font colour menu and choosing a colour.	Purple Blue Green Orange
		
<b>Format text</b>	The text will have no formatting when a blank document is opened. Formatting can be added by selecting the specific type of formatting that is needed.	<b>Bold</b> <i>Italics</i> <u>Underline</u> <del>Strikethrough</del>
		
<b>Add lists</b>	Since the text is not formatted, it will run on in lines. Text can be broken up into lists that either have numbers or bullets (symbols). Lists can be added by selecting the specific type of lists that are needed.	1. Number list 2. Number list  • Bullet list • Bullet list
		

## Align text

By default, the text is aligned to the left. This means the text all runs down in a straight line against the left margin. Text can be aligned to the centre, the right or justified. Justified means the text is aligned against the left and right margin so it looks like a box.



The text in this line is left-aligned.

*The text in this line is centre-aligned.*

The text in this line is right-aligned.

The text in this line is justified.

## Take note:

- Users can quickly and easily duplicate text by using the **copy** function.
  1. Select the text to be copied.
  2. Press **ctrl + C**.
  3. Navigate to where the copied text must be placed.
  4. Press **ctrl + V**.
- Users can quickly and easily duplicate and delete text by using the **cut** function.
  1. Select the text to be copied.
  2. Press **ctrl + X** (note that text will disappear from here).
  3. Navigate to where the cut text must be placed.
  4. Press **ctrl + V**.
- Users can quickly and easily save their files by using the **save** function.
  1. Press **ctrl + S**.



## Activity 1.1.6: Create, edit and save a document

1. Firstly, explain to learners that they will be creating and editing a document on their computer.
2. These are the guidelines for the document that learners must produce:
  - a) The blank document must be saved with an appropriate name.
  - b) The document must contain the heading Practical activity 6 that is:
    - in a font of the learner's choice
    - 18 pt size
    - in any shade of blue
    - formatted in bold
    - centre aligned.
  - c) Learners must type five sentences that explain their experience of Module 1 thus far. The sentences must be:
    - in a different font to the heading
    - in 14 pt size
    - in any shade of grey
    - justified.
  - d) The document must contain a list of three things that the learner is still hoping to learn in this module. The list must be:
    - in a different font to the heading or sentences
    - in 12 pt size
    - in any shade of red
    - formatted in italics
    - left-aligned.
3. Ensure learners who are struggling are receiving adequate support to navigate their computers through the task.
4. Once learners have completed their documents, remind them to save again.
5. Learners pair up and swap documents with each other for feedback.
6. Each learner evaluates their partner's document against the guidelines given.
7. If there were omissions or errors, learners can be given an opportunity to correct it.

## Spreadsheet software

Start this lesson by reminding learners of what they learnt in the previous lesson. Explain to them that this lesson will also cover software, but this time the software will be specifically for creating and editing spreadsheets.

Provide learners with this definition of a spreadsheet: A sheet made up of **rows** and **columns** that form a **grid** used to store and analyze data. It contains individual **cells** that can each hold their own **value**.

Go through these definitions with the learners before continuing with the lesson. It is very important that learners understand each of these terms as they will be used throughout the lesson.

- **Row**: run horizontally across the sheet and numbered from 1.
- **Column**: run vertically down the sheet and numbered from A.
- **Cell**: the specific block created by row and column lines.
- **Cell reference**: the unique name that is given to each cell based on where the columns and rows intersect. For example, E4 is the fourth row in column E.
- **Range**: a collection of selected cells separated by a colon (:) sign.
- **Value**: the data in the cell which can be text, dates, numbers, or other data.

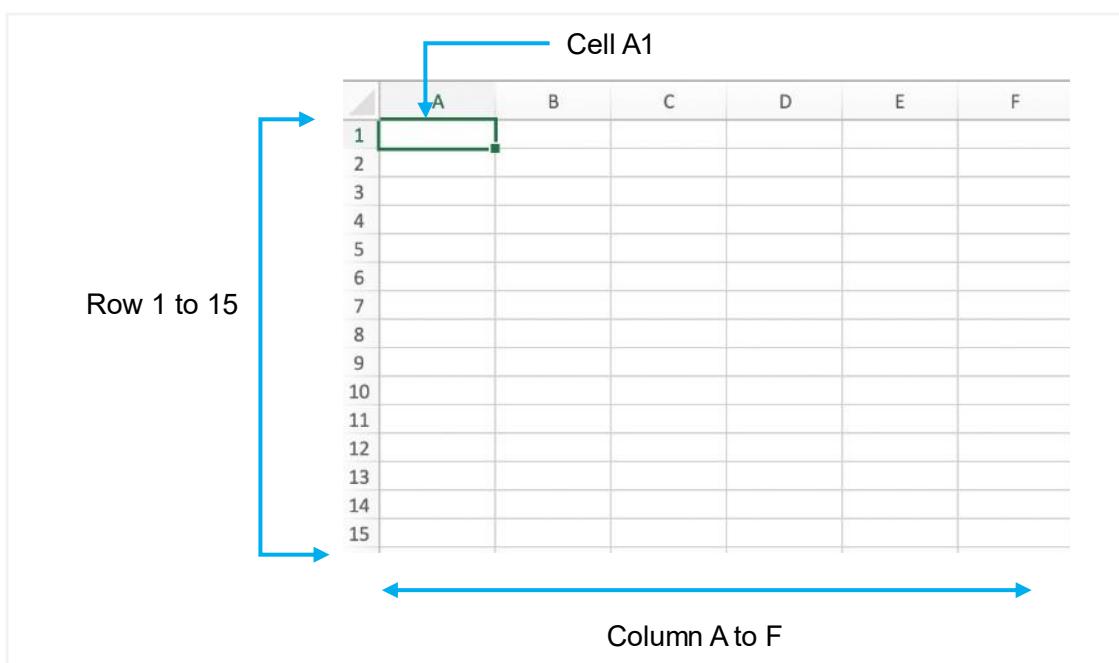


Figure 1.1.16 – Labelled screenshot of spreadsheet software

Explain to learners that often the same software **developer** will have word processing software and spreadsheet software, so they may look and function similarly. In this lesson, learners will learn how to create and edit a spreadsheet.

## Creating a spreadsheet

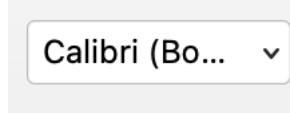
Start off by explaining that learners will begin by learning to create a spreadsheet. Most computers provide default spreadsheet software from the same **suite** as the word processing software. If it is not already installed, it will need to be installed before continuing. Two common types of spreadsheet software are Apple Numbers and Microsoft Excel. Remind learners that these are not the only two types.

Guide the learners to start up the software. There will be an option to create a spreadsheet. Again, there will be the option to choose a blank spreadsheet or a template.

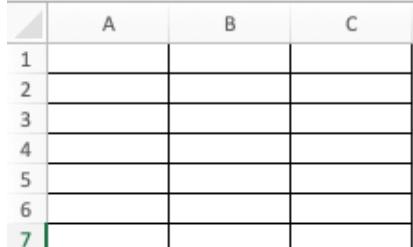
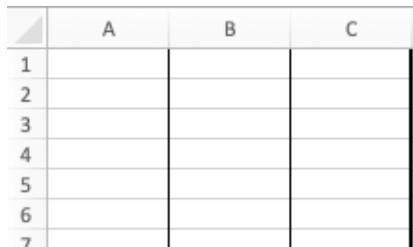
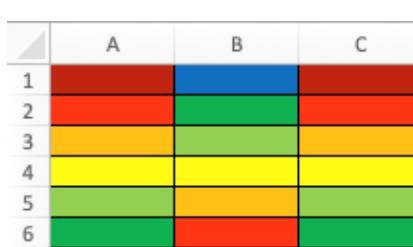
For the purposes of this module, learners will only work with blank spreadsheets. Remind learners of the importance of saving and naming spreadsheets.

## Edit a spreadsheet

Once a blank spreadsheet has been created, briefly go through the tasks that learners were introduced to in the previous lesson. Explain to learners that in the same way they needed to select text on their document to be able to edit it, they would need to select a cell on their spreadsheet. Help learners feel confident by explaining that software in the same suite will look the same and they are already familiar with it. Point out where to find these buttons and menus on their spreadsheet software.

Task	Button/ menu
Change type of font	
Change text size	
Change text colour	
Format text	
Align text	

A document is mainly made to work with text, whereas a spreadsheet is made to analyze data. So, it has many additional tasks that can be performed. Work through this table with learners to help them understand the basic tasks most types of spreadsheet software can do. Explain where to find each menu and button on the specific spreadsheet software they are using. It can be quite difficult for learners to come to grips with spreadsheets so ensure plenty of time is given for learners to understand the software.

Task	Explanation	Example
<b>Change type of borders</b>	<p>When a blank spreadsheet opens, the grid will have no borders. This can be changed by opening the borders menu and selecting another option.</p>  <p>Remind learners to select the relevant cells they want to change.</p>	 
<b>Change fill colour</b>	<p>The cells will have no colour in them on a blank spreadsheet. Colour can be added by selecting the cell and then opening the fill colour menu and choosing another colour.</p> 	 

### Merge cells

In spreadsheet software, cells can be merged to make wider or higher cells. This is done by selecting the cells that must be merged and then selecting the right option from the merge menu. Cells can be merged horizontally or vertically.



	A	B	C
1	Yellow	Green	
2	Orange		
3	Red	Blue	Cyan
4	Yellow		Green
5	Red		
6	Blue	Green	
7	Red		

### Change row height

The height of the row will be set by default. The row height can be increased in two steps.

1. Select the row.
2. Use the cursor to drag the row higher.

	A	B	C
1	Yellow	Green	
2	Orange		
3	Red	Blue	Cyan
4	Yellow		Green
5	Red	Yellow	
6	Blue	Green	
7	Red		

### Change column width

The width of the column will be set by default. The column width can be increased in two steps.

1. Select the column.
2. Use the cursor to drag the column wider.

	A	B	C
1	Yellow	Green	
2	Orange		
3	Red	Blue	Cyan
4	Yellow		Green
5	Red	Yellow	
6	Blue	Green	
7	Red		

### Align text vertically

In most spreadsheet software, text can also be aligned vertically in a cell. By default, text will be aligned to the bottom of the cell. It can be changed to the top or the middle of the cell by clicking on the button of choice.



	A	B	C
1	Yellow	Top aligned	
2	Middle aligned		
3	Red	Blue	Cyan
4	Yellow		Green
5	Red	Yellow	
6	Blue	Green	
7	Red		

## Wrap text

The text typed into the cell will run across and “disappear” if it is longer than the cell length. Text can either be made smaller to fit or it can be wrapped and run underneath each other. Select the wrap text menu and choose the right option to make the text fit in the cell.



	A	B	C
1		This text has been wrapped to fit.	
2			
3		This text has not been shrunk or wrapped	
4			
5			
6		This text has been shrunk to fit.	
7			

## Take note:



- Copy = **ctrl + C**
- Paste = **ctrl + V**
- Cut = **ctrl + X**
- Save = **ctrl + S**

As mentioned before, spreadsheet software is excellent for data analysis. To make data analysis simpler and more effective, spreadsheets allow the user to select different number formats for the cells and use formulas to complete calculations using the data in the spreadsheet.

- **Number format:** By default, all cells are set to general which means the data could be numerical or text. The number format can be changed by selecting the desired format from the number format menu. Guide learners to find this menu on their computers. Explain to them the many types of number formats provided by spreadsheet software. Show learners how to specify the number formats even further, for example:

- Number: specify decimal places
- **Currency:** specify type of currency
- Date: specify date format

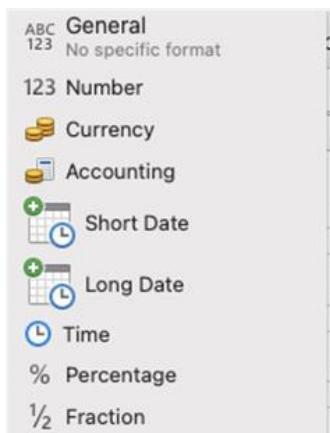


Figure 1.1.17 – Number format menu

- **Formulas and functions:** Formulas and functions are instructions given to the computer to do calculations. Carefully explain these two note boxes to learners.

### Take note:

- **Formulas** are calculations that are manually entered.
- All formulas must begin with an equal (=) sign.
- The formula can be seen in the bar at the top of the spreadsheet that has an *fx* symbol at the beginning of it.



- For formulas, specific signs are used to do calculations:
  - Addition – plus (+) sign
  - Subtraction – dash (-) sign
  - Multiplication – asterisk (\*) sign
  - Division – forward slash (/) sign.
- Formulas can be made up of either numbers or cell references.

SUM	⋮	⋮	X	✓	fx	=100+200
B1	⋮	⋮	X	✓	fx	=A1+B1

### Take note:

- **Functions** are pre-defined calculations that have an easy to remember name.
- All functions must begin with an equal (=) sign.
- The function name follows directly after the equal sign.
- Once the function name is entered, open brackets and type the in the cells that will form part of the calculation.
- The brackets must be closed to ensure the calculation works.
- Formulas can be made up of numbers, cell references or ranges.



B1	⋮	X	✓	fx	=SUM(105+259+85)
	A	B	C	D	E
1	105	449			
2	259				
3	85				

*SUM function with numbers*

B1	A	B	C	D	E
1	105	449			
2	259				
3	85				

SUM function with cell references

B1	A	B	C	D	E
1	105	449			
2	259				
3	85				

SUM function with ranges

Work through this table of basic functions with learners. Help them to understand what the aim of each calculation is. Make sure to remind them that functions can be done using numbers, cell references or ranges. The examples will not show all three for each function.

Function	Explanation	Example																				
<b>SUM</b>	This function adds values.  =SUM	B1    ▲   X ✓ f <sub>x</sub>   =SUM(A1:A3) <table border="1"> <thead> <tr> <th>A</th><th>B</th><th>C</th><th>D</th></tr> </thead> <tbody> <tr> <td>1</td><td>1500</td><td>3000</td><td></td></tr> <tr> <td>2</td><td>1000</td><td></td><td></td></tr> <tr> <td>3</td><td>500</td><td></td><td></td></tr> </tbody> </table>	A	B	C	D	1	1500	3000		2	1000			3	500						
A	B	C	D																			
1	1500	3000																				
2	1000																					
3	500																					
<b>AVERAGE</b>	This function works out the average of a set of values.  =AVERAGE	B1    ▲   X ✓ f <sub>x</sub>   =AVERAGE(A1:A3) <table border="1"> <thead> <tr> <th>A</th><th>B</th><th>C</th><th>D</th></tr> </thead> <tbody> <tr> <td>1</td><td>1500</td><td>1000</td><td></td></tr> <tr> <td>2</td><td>1000</td><td></td><td></td></tr> <tr> <td>3</td><td>500</td><td></td><td></td></tr> </tbody> </table>	A	B	C	D	1	1500	1000		2	1000			3	500						
A	B	C	D																			
1	1500	1000																				
2	1000																					
3	500																					
<b>COUNT</b>	This function works out how many cells contain numbers.  =COUNT	B1    ▲   X ✓ f <sub>x</sub>   =COUNT(A1:A3) <table border="1"> <thead> <tr> <th>A</th><th>B</th><th>C</th><th>D</th><th>E</th></tr> </thead> <tbody> <tr> <td>1</td><td>1500</td><td>2</td><td></td><td></td></tr> <tr> <td>2</td><td>A thousand</td><td></td><td></td><td></td></tr> <tr> <td>3</td><td>500</td><td></td><td></td><td></td></tr> </tbody> </table>	A	B	C	D	E	1	1500	2			2	A thousand				3	500			
A	B	C	D	E																		
1	1500	2																				
2	A thousand																					
3	500																					
<b>MAX</b>	This function tells the user which value is the highest.  =MAX	B1    ▲   X ✓ f <sub>x</sub>   =MAX(A1:A3) <table border="1"> <thead> <tr> <th>A</th><th>B</th><th>C</th><th>D</th></tr> </thead> <tbody> <tr> <td>1</td><td>1500</td><td>1500</td><td></td></tr> <tr> <td>2</td><td>1000</td><td></td><td></td></tr> <tr> <td>3</td><td>500</td><td></td><td></td></tr> </tbody> </table>	A	B	C	D	1	1500	1500		2	1000			3	500						
A	B	C	D																			
1	1500	1500																				
2	1000																					
3	500																					

**MIN**

This function tells the user which value is the lowest.  
 $=\text{MIN}$

B1	A	B	C	D
1	1500	500		
2	1000			
3	500			

## Activity 1.1.7: Create, edit and save a spreadsheet

1. Firstly, explain to learners that they will be creating and editing a spreadsheet on their computer.
2. These are the guidelines for the spreadsheet that learners must produce:
  - a) The blank spreadsheet must be saved with an appropriate name.
  - b) All the cells from A1 to E1 must be merged
  - c) The top merged row must have its height increased to double the default.
  - d) Add the heading ***Practical activity 7*** in the top merged row that is:
    - in a font of the learner's choice
    - 18 pt size
    - in any shade of green
    - formatted in bold
    - centre-aligned (horizontally)
    - middle-aligned (vertically)
  - e) Add all borders to the cells from A1 across to E1 and down to row 10.
  - f) Row 10 must be filled in any shade of red.
  - g) Cells B1 to B9 and D1 to D9 must be filled in blue.
  - h) Row 2 to 10 must be right aligned.
  - i) Row 2 to 10 must use the number format for numbers with two decimal places.

3. Learners must type the following data into the spreadsheet into the specified cells (decimals will be added automatically).

Cell reference	Value	Cell reference	Value	Cell reference	Value
A2	15	C2	123	E2	147
A3	20	C3	234	E3	258
A4	25	C4	345	E4	369
A5	30	C5	456	E5	159
A6	35	C6	987	E6	357
A7	40	C7	876	E7	951
A8	45	C8	765	E8	753
A9	50	C9	654	E9	852

4. Learners must do the following calculations on the spreadsheet in the specified cells.

Cell reference	Calculation	Suggested formula	Correct answer
<b>A10</b>	Add A2 to A9	=SUM(A2:A9)	260,00
<b>C10</b>	Average of C2 to C9	=AVERAGE(C2:C9)	555,00
<b>E10</b>	Highest number from E2 to E9	=MAX(E2:E9)	951,00

5. Ensure learners who are struggling are receiving adequate support to navigate their computers through the task.
6. Once learners have completed their spreadsheets, remind them to save again.
7. Learners pair up and swap spreadsheets with each other for feedback.

8. Each learner evaluates their partner's document against the guidelines given. Use this sample answer to assist learners with their evaluation.

	A	B	C	D	E
1	Practical activity 6				
2	15,00		123,00		147,00
3	20,00		234,00		258,00
4	25,00		345,00		369,00
5	30,00		456,00		159,00
6	35,00		987,00		357,00
7	40,00		876,00		951,00
8	45,00		765,00		753,00
9	50,00		654,00		852,00
10	260,00		555,00		951,00

9. If there were omissions or errors, learners can be given an opportunity to correct it.

## Presentation software

Start this lesson by reminding learners of what they learnt in the previous two lessons. Explain to them that the software that will be the focus of this lesson will be presentation software. Learners will learn to create and edit presentations. Remind learners that the same software developer will have presentation software in the same suite as word processing software and spreadsheet software, so they may look and function similarly.

Discuss the definition of presentations with learners: A presentation is a method of conveying ideas using text, audio, image, and video. It supports a speech that is presented by a speaker. A presentation is made up of **slides** that can be edited to suit the user's needs.

Go through these definitions with the learners before continuing with the lesson. It is very important that learners understand each of these terms as they will be used throughout the lesson.

- **Slide:** single “page” on a presentation.
- **Slide deck:** collections of slides.
- **Title:** the first level heading at the top of each slide.
- **Subtitle:** the second level heading on each slide.

- **Transitions:** how slides change from one to the next in a slide show.
- **Animations:** how content appears on the slide in a slide show.

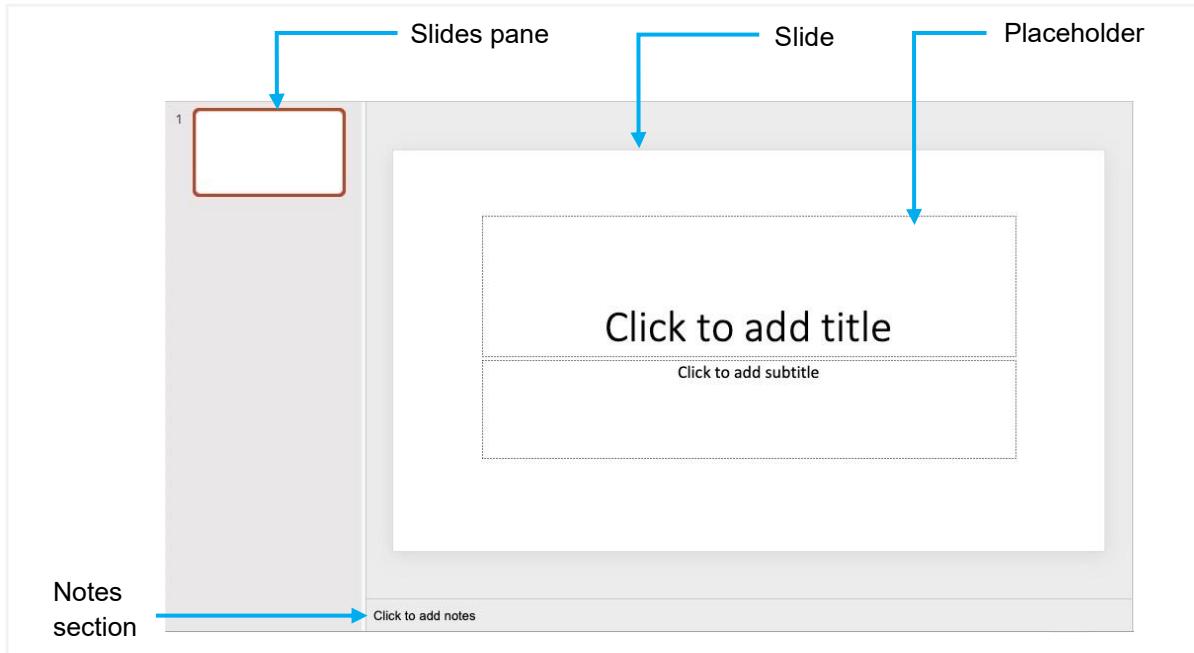


Figure 1.1.18 – Labelled screenshot of presentation software

## Creating a presentation

Start off by explaining that learners will begin by learning to create a presentation. Most computers provide default presentation software from the same suite as the word processing and spreadsheet software. If it is not already installed, it will need to be installed before continuing. Two common types of spreadsheet software are Apple Keynote and Microsoft PowerPoint. Remind learners that these are other types available.

Guide the learners to start up the software. There will be an option to create either a blank presentation or a presentation from a template.

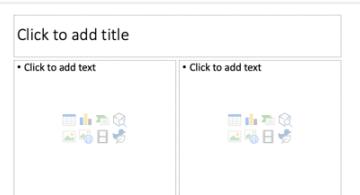
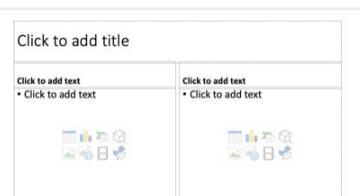
## Editing a presentation

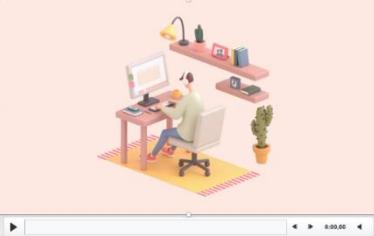
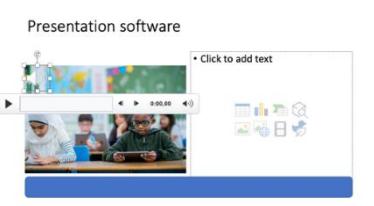
For the purposes of this module, learners will only work with blank presentations. Once a blank presentation has been created, remind learners to save it and name it appropriately. Briefly go through the tasks, such as changing fonts, changing colours, and sizing, that learners were introduced to in the previous lesson. Tap into learners' existing knowledge by pointing out how the software in the same suite looks the same so that they feel familiar with it.

A document is made to work with text and a spreadsheet is made to analyze data. A presentation is made to work with text, audio, image, and video. So, it has many additional tasks that can be performed. A presentation will be used to support a speech by a presenter. The presenter will allow the presentation to play as a slide show, with one slide following on

the other. The speaker will prompt the slides to move from one to the other as they go through their speech.

Work through this table with learners to help them understand the basic tasks most types of presentation software can do. Explain to learners that in the same way they needed to select text on their document or select a cell on their spreadsheet, they would need to select the placeholder on the slide to edit specific text. Explain where to find each menu and button on the specific presentation software they are using. If learners struggle, give them extra time and assistance to help them understand.

Task	Explanation	Example
<b>Add new slide</b>	<p>When a blank presentation opens, the presentation will only have one slide. More can be added using the new slide menu. There are options in the new slide menu that the user can choose from, depending on what they need.</p> <p>The options may include title, title and content, two content comparison, content with caption, or picture with caption. These are pre-defined slides with placeholders, but users can also insert a blank slide that contains no placeholders.</p> 	  
<b>Insert picture</b>	<p>Pictures are a useful tool in a presentation. Users can insert them either by uploading from their computer or using the internet to search for stock images. Presentation software will often have stock picture libraries linked to their software to make it easy to search.</p> 	<p>Presentation software</p> 

<b>Insert video</b>	<p>Users can insert videos from whatever source they choose. Videos will fill the whole slide and play during the presentation. The tracking bar will disappear when the video is not selected or if it is played during a presentation.</p>  <b>Video</b>	
<b>Insert audio</b>	<p>Users can insert audio from whatever sources they choose. Audios will show as a small speaker icon on the slide. The icon and the tracking bar will disappear when the audio is played during a presentation.</p>  <b>Audio</b>	
<b>Insert shape</b>	<p>Just like pictures, shapes can make the presentation visually engaging. Users can add all types of shapes from the insert shape menu.</p> 	
<b>Insert text box</b>	<p>The user may want to insert text on blank slides or on slides where there are not enough placeholders. A text box is the one way to create a new placeholder for text on the slide. This is done using the insert text box buttons.</p>  <b>Text Box</b>	

- **Animations:** Animations are used to make any text or object on the slide appear on the screen in a special way during a presentation. First the text or object must be selected, then the animation applied. Be careful not to add many animations to the same text or object. Encourage learners to experiment with animations and see which ones they like. Remind them that animations can be very busy and overwhelm the viewer, so they must be used with careful consideration.

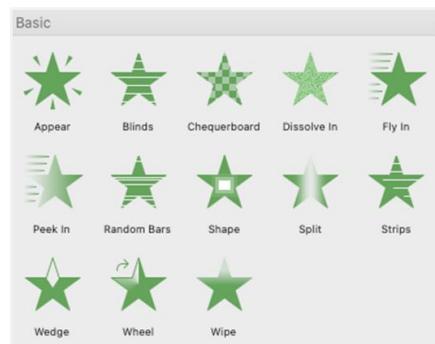


Figure 1.1.19 – Basic animations

- **Transitions:** Transitions are used between slides to move from one slide to the next in a special way during a presentation. The transition will apply to the beginning of the slide being worked on. Encourage learners to experiment with transitions and see which ones they like. Remind them that transitions can be confusing to the viewer if not used correctly so they must be used carefully.



Figure 1.1.20 – Basic transitions

### Take note:

- It is also possible to use timings and triggers to make animations and transitions even more effective.



**Timings:** The user can select how long the animation or transition takes by setting the duration the slide or image is on the screen.

**Triggers:** The user can select what causes the animation or transition to begin, either by a mouse click or after a specified time.

- These tips can be used as extension for stronger learners but can be omitted completely, if not relevant.

## Activity 1.1.8: Create, edit and save a presentation

1. Firstly, explain to learners that they will be creating and editing a presentation on their computer.
2. These are the guidelines for the presentation that learners must produce:
  - a) The blank presentation must be saved with an appropriate name.
  - b) There must have two slides.
  - c) Add the title ***Practical activity 1.1.8*** to the first slide and edit the font to be:
    - in a font of the learner's choice
    - 48 pt size
    - in any shade of orange
    - formatted in bold
    - centre-aligned (horizontally)
    - middle-aligned (vertically)
  - d) Add a subtitle to the first slide with the learner's name and the date in two lines underneath each other. Edit it to be:
    - in two different fonts
    - 32 pt size
    - in black
    - formatted in italics
    - left-aligned (horizontally)
    - bottom-aligned (vertically)
  - e) Learners must insert a picture of their choice on the first slide.
  - f) Learners must add any animation of their choice to the picture.
  - g) Add a transition of choice to slide 1.
  - h) Add the title ***What I have learnt*** to the second slide. Edit it as follows:
    - Format like slide 1 but left-aligned and in any shade of blue
    - Learners must add any animation of their choice to the title.
  - i) Add a transition of choice to slide 2.
  - j) Insert a circle in slide 2 on the right of the slide.
  - k) Learners must add an animation of their choice to the circle.

- I) Add a text box in slide 2 on the left of the slide and type the following in a bulleted list:
- I have learnt about word processing software.
  - I have learnt about spreadsheet software.
  - I have learnt about presentation software.
  - I can't wait to learn more!
3. Ensure learners who are struggling are receiving adequate support to navigate their computers through the task.
  4. Once learners have completed their presentations, remind them to save again.
  5. Learners pair up and swap presentations with each other for feedback.

Each learner evaluates their partner's presentation against the guidelines given. Use these sample answer slides to assist learners with their evaluation.

## Presentation software basics

Adam Smith  
3 November 2022



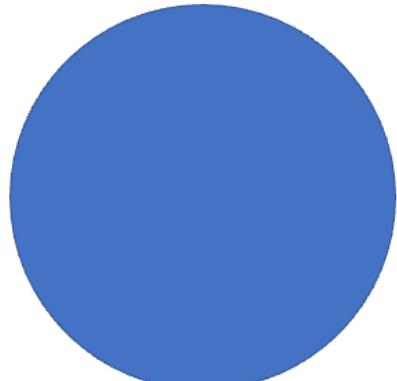
A photograph of a person with dark hair tied back, wearing a red cardigan over a blue shirt, sitting at a white desk. They are looking at a laptop screen. Behind them is a window with a black metal frame, showing some greenery outside. A small white box with the number '1' is in the top-left corner of the slide.

1

## What I have learnt

2

- I have learnt about word processing software.
- I have learnt about spreadsheet software.
- I have learnt about presentation software.
- I can't wait to learn more!



6. If there were omissions or errors, learners can be given an opportunity to correct it.

### Knowledge and skill checklist

		
I know how to start up a computer safely.	<input type="checkbox"/>	<input type="checkbox"/>
I know how to shut down a computer safely.	<input type="checkbox"/>	<input type="checkbox"/>
I can identify the different components and accessories of a computer.	<input type="checkbox"/>	<input type="checkbox"/>
I understand the basics of an operating system.	<input type="checkbox"/>	<input type="checkbox"/>
I can create and edit documents using word processing software.	<input type="checkbox"/>	<input type="checkbox"/>
I can create and edit spreadsheets using spreadsheet software.	<input type="checkbox"/>	<input type="checkbox"/>
I can create and edit presentations using presentation software.	<input type="checkbox"/>	<input type="checkbox"/>

# 2

## Basics of an internet-enabled mobile device



### Duration

4.5 hours



### Objectives

- Understand the different device types and operating systems.
- Understand how to use mobile internet.
- Understand how to use the basic functions of an internet-enabled smartphone or tablet.
- Understand how to use a variety of apps.
- Understand the different settings on different mobile devices.
- Understand security and privacy settings on different devices.



### Content

- Introduction to mobile devices
- Smartphones and tablets
- Apps
- Settings



### PowerPoint slides

Use [this link](#) to access the PowerPoint slides deck for this unit.



### Lesson Plan Guide

- 1 Introduction to mobile devices (45 minutes)
- 2 Smartphones and tablets (45 minutes)
- 3 Apps (75 minutes)
- 4 Settings (90 minutes)
- 5 Consolidation (15minutes)
- 6 Knowledge and Skills Checklist

## Additional online resources

- What is a mobile device?  
<https://www.lifewire.com/what-is-a-mobile-device-2373355>
- How Wi-Fi and cell phones work  
[https://www.youtube.com/watch?v=kxLcwIMYmr0&ab\\_channel=TheExplainedChannel](https://www.youtube.com/watch?v=kxLcwIMYmr0&ab_channel=TheExplainedChannel)
- What is an app?  
<https://edu.gcfglobal.org/en/computerbasics/understanding-applications/1/>
- App types  
<https://blog.duckma.com/en/types-of-mobile-apps/>
- How to protect your digital privacy  
<https://www.nytimes.com/guides/privacy-project/how-to-protect-your-digital-privacy>



## Teaching notes

### Introduction to mobile devices

Introduce this lesson by explaining to learners what **mobile** means. It means to be able to move freely or easily. Remind learners that they have encountered many different types of mobile devices. Mobile devices are a category of computer types. These are devices that users can easily take with them, such as laptops, smartphones, or tablets.

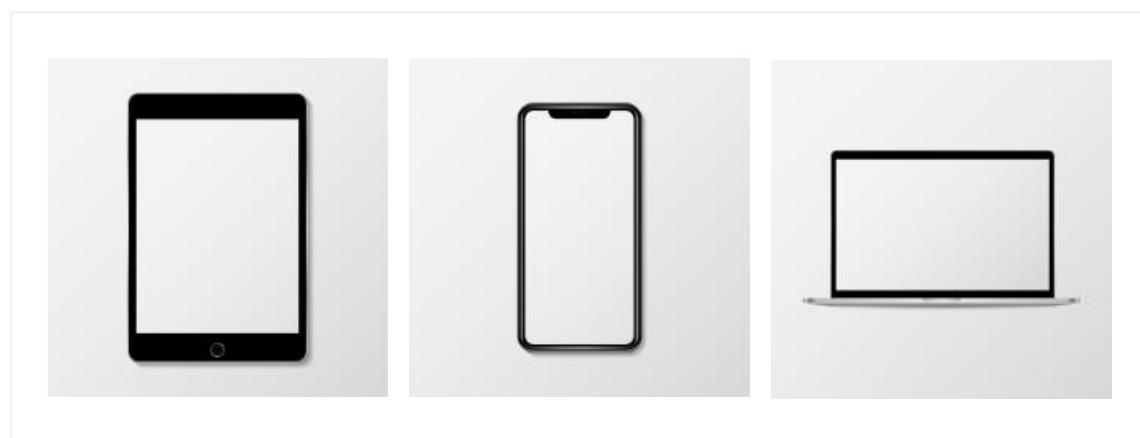


Figure 1.2.1 – Different types of mobile devices

## Activity 1.2.1: Name mobile devices

1. To elicit prior knowledge and allow learners to make connections to their daily lives, start this unit with a brainstorming session.
2. Make sure you have a whiteboard ready to register everyone's inputs.
3. Inform the learners that there are no right / wrong answers because the idea is to share with the group what they already know, and to realize what they may not know. Possible questions:
  - a) What mobile devices do you use, or have you ever used?
  - b) What are the advantages of mobile devices?

In Unit 1, learners were taught about various operating systems software across computer types. Make sure they recall this prior knowledge. Work through this table with learners. Draw their attention to the fact that different types of devices will make use of different types of OSs. Point out that devices from the same **manufacturer** will use the same OS across their products.

OS	Device	Logo
iOS	<ul style="list-style-type: none"><li>• iPad (Apple tablet)</li><li>• iPhone (Apple smartphone)</li></ul>	
macOS	<ul style="list-style-type: none"><li>• iMac (Apple desktop computer)</li><li>• MacBook (Apple laptop)</li></ul>	 macOS®
Android	<ul style="list-style-type: none"><li>• Most tablets</li><li>• Most smartphones</li></ul>	
Microsoft	<ul style="list-style-type: none"><li>• Most desktop computers</li><li>• Most laptops</li></ul>	

## Mobile internet

Remind learners again that mobile means to be able to move quickly and easily. One of the most important aspects of any mobile device is its ability to connect to mobile internet.

Mobile internet is then internet that can be accessed on a mobile device from anywhere.

Explain to learners that there are two main ways that a mobile device can connect to mobile internet.

- **Mobile network:** If not using Wi-Fi, the mobile device will need to connect to the internet using cellular data through a mobile network. For this to work, the mobile device must have a **sim card**. This is a small smart card with a unique identification number that is inserted into the device to connect the mobile device to the mobile network. A mobile network makes use of towers that send and receive radio signals from the sender to the receiver. The mobile network signal icon appears on the device to show the strength of the signal it is receiving.



Figure 1.2.2 – Mobile network signal icon.

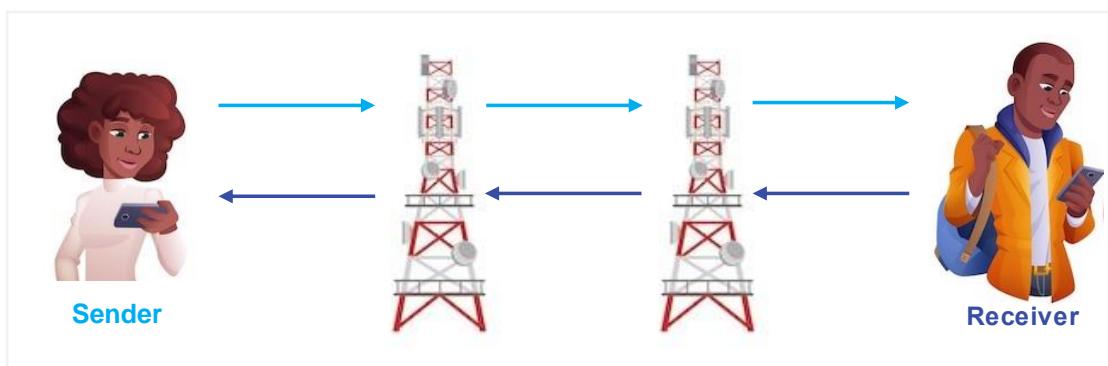


Figure 1.2.3 – Simplified example of how a mobile network works

- **Wi-Fi:** If not using a mobile network, the mobile device will need to connect to the internet using Wi-Fi. Wi-Fi is a wireless network that exists in a mall, local area like a house or an office building. A Wi-Fi network is created when a router connects to an internet service provider by wire or cable and then sends radio signals to nearby devices. To join a Wi-Fi network, the user will need to select a network that they have permission to use. There is usually a password that is entered to ensure only authorized devices are on the network. The Wi-Fi network signal icon appears on the device to show the strength of the signal it is receiving.



Figure 1.2.4 – Wi-Fi network signal icon

### Take note:



- Not all Wi-Fi networks are safe, so only join networks that can be trusted.
- Criminals can use untrustworthy networks to steal your personal data.



Figure 1.2.5 – Simplified example of how a Wi-Fi network works

### Activity 1.2.2: Access the internet via Wi-Fi

1. Show learners where to find network settings on their device.
2. Ask learners to join the network. Provide them with the name of the network and the password for the network.
3. Remind learners to be careful when typing in passwords to make sure they are right.

## Smartphones and tablets

Smartphones and tablets are two examples of mobile devices. They are the most popular types of mobile devices. Clarify to learners that laptops are also considered mobile devices, but in this specific section, the focus will be only smartphones and tablets.

Smartphones and tablets function in almost the exact same way. Whilst a tablet is larger, it has many of the same features and functions as a smartphone. A smartphone is like a smaller tablet. Throughout this unit, when smartphones or tablets are discussed, assume that the same applies to the other, unless clearly stated otherwise.

### Features

Discuss this list of key features of smartphones and tablets with learners:

- They use a battery, so they do not need to be connected to electricity to work. The battery will need to be charged using a power source but can go hours without needing to be charged.
- They are smaller than computers or laptops. This means users can put them in their pockets or a small bag and take them along without needing additional space or luggage.
- Tablets and smartphones use a sim card to connect to a mobile network provider.
- They can access the internet, either through cellular data (via a sim card) or through Wi-Fi.
- Their primary input comes from a touchscreen and virtual keyboard.
- They can download data from the internet.

### Functions

Work through this table with learners to explain to them which functions are available on smartphones and tablets.

Function	Tablet	Smartphone
Making and receiving calls	✓	✓
Sending and receiving messages	✓	✓

Connecting to the internet via cellular data, Wi-Fi or <b>Bluetooth</b>	✓	✓
Downloading data from the internet	✓	✓
Using apps specifically designed for the device	✓	✓
Connecting additional accessories	✓	✓

### Activity 1.2.3: Discuss various mobile devices

1. First, ask learners to break up into groups of no more than 10.
2. Then let learners discuss the answers to these questions in their group.

Possible questions:

- a) What are the differences between a smartphone and a tablet?
- b) What are the specific uses of each device?
3. Inform learners that there are no right/wrong answers because the idea is to share with their group what they already know/may not know.
4. Groups must now make a poster showcasing the answers to their questions
5. Each group presents their poster to the class.

## Apps

As discussed in the previous lesson, one of the main functions of a mobile device is its ability to download data from the internet. Some of the most useful data that can be downloaded from the internet is in the form of apps. Apps is a shortened form of the word *applications*. Apps are types of software that do specific tasks. Apps work inside the OS to perform these tasks.

### Take note:



- Some apps are completely free to use. These apps will have adverts that companies pay the app developer to put into the app. That is how they make money on free apps.
- Some apps are free to download but require a **subscription**. This is paid for once the app is downloaded to unlock all the features it has. Subscriptions can renew monthly or yearly.
- Some apps are free to download but make use of in-app purchases. This means that the user gets an app that has many basic functions but can purchase specific additional functions.
- Some apps cost money to download. The user will pay to download the app once-off and will then have access to all its features.
- Users must understand the type of apps being downloaded and the cost of those apps. Be careful not to sign-up for something that costs money accidentally.

Apps can be downloaded in two ways. Discuss each method with the learners and if possible, model this process for them.

1. Navigating to the **website** where the app can be downloaded and downloading it from there. This is risky because not all the apps available on the internet can be trusted.
2. Navigating to the **app store** that is on the device by default and downloading it from there. These apps must meet certain standards to be housed on the app store, so they are generally more trustworthy and safer for the device.



Figure 1.2.6 – Apps on a smartphone

Once an app has been downloaded, it will appear as an **icon** on the screen of the device. To launch the app, the user clicks on the icon. Some apps require the user to have an account. Explain to learners that in the next unit, they will be taught how to set up accounts on their device. For now, the focus is on understanding the variety of apps available and how to use them.

There are five main categories of apps. Work through each category with learners and discuss how to use the popular examples given.

## Communications

Communication apps are used to communicate with others through calls, messages, emails, chats, and social media. Most devices have default phone, email, and text message apps specifically developed by the device manufacturer for that device. Additionally, users can

download other email apps, social media apps, and chat apps. Make sure learners understand that the examples given are not the only apps available in that category.

Explain to the learners that email apps are linked to the email address that the user has. Some popular email apps that can be downloaded, in addition to the default email apps on the device are:

**Gmail** for use with a Google email address.



**Microsoft Outlook** for use with a Microsoft email address.



Make sure learners understand what 'social media' means. Social media refers to a specific set of online communities that millions of people are part of every day. People create profiles online and then engage with people in their community, often using apps. Some popular social media apps that can be downloaded are:

**Facebook** for use with a Facebook account.



**Instagram** for use with an Instagram account.



**Twitter** for use with a Twitter account.



**TikTok** for use with a TikTok account.



Explain the difference between text message apps and chat apps. Chat apps use mobile data to send and text message apps have a cost set by the mobile network provider. Some popular chat apps that can be downloaded are:

**WhatsApp** for use with a phone number.



**Telegram** for use with a phone number.



## Utilities

These are apps like alarm, camera, calculator, calendar, reminders, flashlight, weather and more. Most utility apps are installed on the device by default and additional ones can be downloaded as they are needed. Go through the utility apps available with learners on their provided devices.

## Productivity

These are the apps used to complete specific, usually work-related tasks. Remind learners that they covered word processing, spreadsheet, and presentations software in Unit 1. There are apps for those specific types of software, and they fall into this category. Explain again that a lot of these apps are loaded by default, along with the OS.

## Media

Media refers to apps like music players, **podcast** players, and photo and video galleries. Go through the media apps available with learners.

- **Music player:** allows the user to download music and listen to it on the device.
- **Podcast player:** allows the user to download podcasts and listen to them on the device.
- **Photo and video gallery:** stores the photos and videos the user took using the camera, as well as any others the user downloaded from the internet.

## Games

Apps can also be a source of entertainment in the form of games. There are many games available for download, but many of them can drain the battery of the device quickly or cost a lot of money. There are different types, such as puzzles, strategy, multiplayer and action.

### Activity 1.2.4: Investigate and use apps on a mobile device

1. Using their device, learners write a list of all the apps currently available on the device.
2. Learners then categorise each app according to the categories provided.
3. Show learners how to browse to the app store on their device.

4. Let them find one additional app for each category that they would like to download.
5. Pairs or groups now share their answer with the class or with other pairs or groups.

## Settings

Explain to learners that all devices have basic settings that can be changed. Settings refer to the way that a user can change the way the app, software or hardware look or function to suit the user's preferences. There are many settings on a device, usually the user can change the settings of nearly every app or software loaded on the device. Explain to learners that this lesson will focus on two main categories of settings: **personalization**, and privacy and security.

### Personalization

Begin this section by explaining the concept of personalization to learners. Personalization means making something meet an individual's specific requirements. With any device, the user can change certain settings to make it suit their needs or wants better. Guide learners to the settings menu of their device. Then work through this table with learners and explain the most common types of personalization settings to them.

Personalization	Explanation	Example
<b>Change the screensaver or lock screen</b>	Screensavers or lock screens can have a picture of the user's choice on them. This is what the user will see when the screen is locked. The user must have the picture saved on the device and can then select it in the relevant menu in settings.	

<h3>Change the wallpaper</h3>	<p>Just like screensavers or lock screens, wallpapers are pictures of the user's choice. This is what the user will see when the device is unlocked. The user must have the picture saved on the device and can then select it in the relevant menu in settings.</p>	
<h3>Change notifications</h3>	<p>Apps and software use notifications to alert the user of any important communication they receive. The user can change the settings for specific apps or for the whole device. This usually has three parts:</p> <ol style="list-style-type: none"> <li>1. A banner that pops up on the screen with a summary of the notification.</li> <li>2. A badge that tells the user which app is sending the notification and which notifications have been missed.</li> <li>3. A pop up on the home or lock screen of the actual message.</li> </ol>	
<h3>Change ringtones and alert tones</h3>	<p>Users can change the sound they hear when they receive a phone call, message, or notification from an app. Most devices have pre-loaded ringtones or alert tones, but on some devices, users can also upload their own sounds.</p>	

## Privacy and security

Begin this section by explaining the concept of privacy and security to learners. Make sure they grasp the concept and its importance before moving on.

- **Privacy:** In this context, it means having the ability to choose how much of the user's personal information is shared by apps, software, and the device. It also means being able to decide what will be done with that personal information. With digital devices, and all the apps and software on them, the world is more connected than ever. However, that is not always a good thing. One danger is that personal information may be collected and sold without the user even being aware of it. Another danger is that personal information could be too easy to access and put people in danger.
- **Security:** As mentioned a few times in this unit, not all apps or software can be trusted. Most digital devices contain a lot of personal information that must be protected from potential **hackers**.

### Activity 1.2.5: Discuss user privacy and security

1. Read the following paragraph to the class.

*Platforms like Facebook, Instagram, Twitter and TikTok are free to use. But how do they make money as businesses? Easy. They allow advertisers to pay to run adverts on their platform. On Instagram, every fourth post is a sponsored post that has been paid for by the advertiser. But that isn't all. They also collect personal information from users, like what products they are looking up online, where they are planning to travel to and much more. They sell this information to companies who can then target their adverts to the people they believe are most likely to buy them.*

2. Suggested questions for group debate.
  - a) Should companies be allowed to sell the personal information of their users?
  - b) How would you feel about your personal information being sold?
  - c) Would you like or dislike adverts that are very specific and targeted at you?

Work through this table with learners. Guide them to these settings on their devices and give them time to look through the settings carefully.

Setting	Explanation
<b>Locations services</b>	This can be turned on or off depending on whether the user wants apps and software to be able to see where they are using it from.
<b>Sharing information</b>	This is the biggest category, and each app or software might have their own settings for this. Most apps request access to certain information. The user can choose whether to share this information or not. It can include contact lists, calendars, photo, and video gallery, saved files, camera, and microphone.
<b>Passwords</b>	Most devices have an option to include a password to make sure that only users with the password can access the device. On phones or tablets, this is often a numerical code. On laptops or desktop computers, this can be made up of letters, numbers, and symbols. Users must make sure the password is not too weak so that hackers will not be able to easily gain access to the device.

Explain to learners that in the next unit, when they are given the opportunity to set up specific email, social media, or chat accounts, they will be shown how to control their privacy on those platforms.

### Activity 1.2.6: Set the password on a mobile device

1. First, let learners break up into pairs or small groups of no more than 5.
2. Guide learners to the settings menu on their device.
3. Encourage learners to experiment by changing their lock screen and wallpaper to one of the pre-loaded pictures.

4. Ask learners to read through the privacy and security settings on the device. Give them enough time to understand each one and ask if they have specific questions.
5. On their own, ask learners to come up with a strong password. The password must contain:
  - a) one or more uppercase letter (ABCDEF...)
  - b) one or more lowercase letter (abcdef...)
  - c) one or more symbol (@#\$%&\*)
  - d) one or more number
6. Explain to learners that they must keep this password safe and not share it with anyone.

### Knowledge and skill checklist



I know about the different device types and operating systems.

<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------

I can use mobile internet.

<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------

I can use the basic functions of a smartphone or tablet.

<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------

I can use a variety of apps.

<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------

I understand the different settings on different mobile devices.

<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------

I understand security and privacy settings on different devices.

<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------

# 3

## Introduction to the internet



	<b>Duration</b>	4 hours
	<b>Objectives</b>	<ul style="list-style-type: none"><li>• Connect a device to the internet.</li><li>• Locate the browser icon on a device and find a website.</li><li>• Understand mobile internet vs. Computer internet.</li><li>• Understand the basic components of a website.</li><li>• Set up an email account on different devices / platforms.</li><li>• Set up a social media account on different devices / platforms.</li><li>• Set up a chat account on different devices / platforms.</li></ul>
	<b>Content</b>	<ul style="list-style-type: none"><li>• Introduction to the internet</li><li>• Going online</li><li>• Setting up accounts</li></ul>
	<b>PowerPoint slides</b>	Use <a href="#">this link</a> to access the PowerPoint slides deck for this unit.
	<b>Lesson Plan Guide</b>	<ol style="list-style-type: none"><li>1 Introduction to the internet (45 minutes)</li><li>2 Going online (90 minutes)</li><li>3 Setting up accounts (90 minutes)</li><li>4 Consolidation (15 minutes)</li><li>5 Knowledge and Skills Checklist</li></ol>

## Additional online resources

- What is the internet?  
<https://edu.gcfglobal.org/en/internetbasics/what-is-the-internet/1/>
- What is the internet?  
[https://encrypted-vtbn0.gstatic.com/video?q=tbn:ANd9GcRTFNTu3KDdhf\\_AvSI5FdowLReFOzAhXDjB\\_g](https://encrypted-vtbn0.gstatic.com/video?q=tbn:ANd9GcRTFNTu3KDdhf_AvSI5FdowLReFOzAhXDjB_g)
- Google account set-up  
<https://support.google.com/accounts/answer/27441?hl=en>
- Microsoft account set-up  
<https://support.microsoft.com/en-us/account-billing/how-to-create-a-new-microsoft-account-a84675c3-3e9e-17cf-2911-3d56b15c0aaaf>
- Facebook account set-up steps  
<https://www.facebook.com/help/mobile-basic/188157731232424>
- Instagram account set-up steps  
<https://help.instagram.com/155940534568753>
- Twitter account set-up steps  
<https://help.twitter.com/en/using-twitter/create-twitter-account#:~:text=Go%20to%20twitter.com%2Fsignup.&text=Click%20the%20sign%20up%20button.&text=A%20Create%20your%20account%20pop,phone%20number%20or%20email%20addresses.>
- TikTok account set-up steps  
<https://support.tiktok.com/en/getting-started/creating-an-account>
- WhatsApp account set-up steps  
<https://www.whatsapp.com/coronavirus/get-started>



## Teaching notes

### Introduction to the internet

Start this lesson by explaining to learners that they will be using a lot of what they have learnt already to take the next step. Explain to learners that they will now be learning to browse the internet. To ensure they feel equipped, remind them that they have already learnt how to do the following:

- use a computer
- identify hardware, like computer components and accessories
- understand software, like operating systems

- create and edit documents, spreadsheets and presentations using software
- use different internet-enabled mobile devices, like smartphones, tablets, and laptops
- use a variety of apps on mobile devices
- understand the different settings on mobile devices.

## Mobile internet and computer internet

Remind learners about what they learnt in the previous lesson about mobile internet. Mobile internet is internet that can be accessed on a mobile device from anywhere. There are two main ways that a mobile device can connect to mobile internet, through Wi-Fi or a mobile network.

In this lesson, learners will compare mobile internet to computer internet. Computer internet is not mobile, meaning it cannot move as easily and freely. Work through this table with learners to explain the differences to them. Point out that laptops are a blend of the two and can use mobile internet and computer internet.

Mobile internet	Computer internet
Laptop, tablet, and smartphone	Laptop, desktop computer
The device does not need to have a cable (or wire) to connect to the internet. It is wireless.	The device connects to the internet using a cable. It is wired.
The device connects using Wi-Fi or a mobile network.	The device connects using an <b>ethernet port</b> or a USB Wi-Fi adapter (a computer accessory).
Internet is available while the user is on the move, taking the device with them.	Internet is only available in the location where the device stays and where it connects to the cable.
The user connects to the internet by navigating to the network settings and joining a Wi-Fi network or activating mobile internet with their mobile network provider (for example, MTN, Airtel or Lyca Mobile).	The user connects to the internet by plugging the ethernet cable into the ethernet port on their device.

An ethernet port is a place on the computer where the user can plug in a cable that is connected to the internet. This allows the computer to access the internet.



Figure 1.3.1 – Ethernet cables



Figure 1.3.2 – Ethernet port on a laptop

## Connect a device

In the previous lesson, learners were taught how to join a Wi-Fi network. Remind them of the steps:

1. Navigate to network settings on the device.
2. Find the network.
3. Type in the password.
4. Go online!

Explain to them that when accessing the internet using an ethernet cable, there will be no need to find the network or enter the password since the device is physically connected to a network.

### Activity 1.3.1: Connect a device to the internet using a cable

1. Show learners where to find the ethernet port on their device.
2. If one is available, show learners where to find the ethernet cable they will use.
3. If possible and a cable is available, guide them to plug it in carefully and safely. Remind them to not plug it out and in without reason.

## Going online

Once learners have connected their devices to the relevant internet network, it will be time to go online and browse the internet. Remind learners what a mobile network is. A mobile network is a regional or national network that connects devices with sim cards to each other through cellular data using towers that send and receive radio signals from the sender to the receiver. These interconnected towers form a network.

Remind learners what a Wi-Fi network is. A Wi-Fi network is a wireless network that exists in a mall, local area like a house or an office building. A Wi-Fi network is created when a router connects to an internet service provider by wire or cable and then sends radio signals to nearby devices.

Now, explain to learners that the internet is a network of networks that connects millions of computers worldwide.



*Figure 1.3.3 – The internet connecting the world*

## Browsers

If a user wants to browse the internet, they use a browser. A browser is an app or a type of software that allows the user to access the World Wide Web. The World Wide Web is the part of the internet that has websites and webpages. Almost all devices have a default browser installed as part of the operating system.

- Apple devices that use the iOS or MacOS operating system have the Safari browser.
- Devices that use the Microsoft operating system have the Microsoft Edge browser.

Two other popular browsers that can be downloaded to any device are Mozilla Firefox and Google Chrome. Just like other apps or software, there will be an icon on the device.



*Figure 1.3.4 – Apple Safari, Microsoft Edge, Google Chrome, Mozilla Firefox icons*

## Websites

Before learners explore websites, make sure they understand these important concepts.

- **Website:** a group of connected webpages that all exist in one space
- **Webpage:** a separate place on the website with specific content.
- **Landing page:** the first webpage the user sees when going to a website.
- **Links:** it is also called a hyperlink and it is a word or buttons that sends the user to another place on the internet.

Now that learners understand the role of browsers, explain to them that when they open their browser, they will go to a website. For this lesson, use a very simple webpage like the Google landing page.

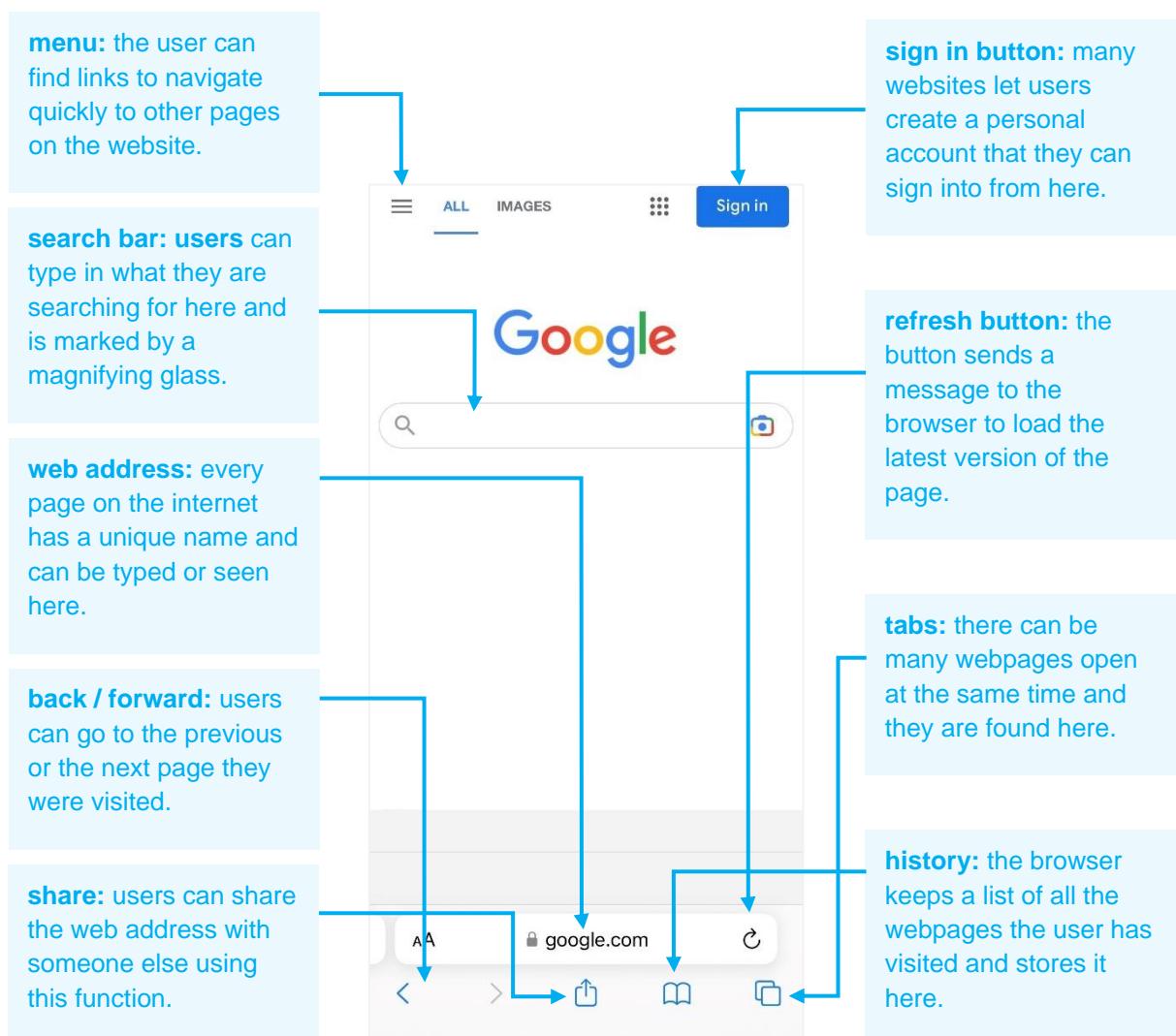


Figure 1.3.5 – The Google landing page on a mobile Safari browser

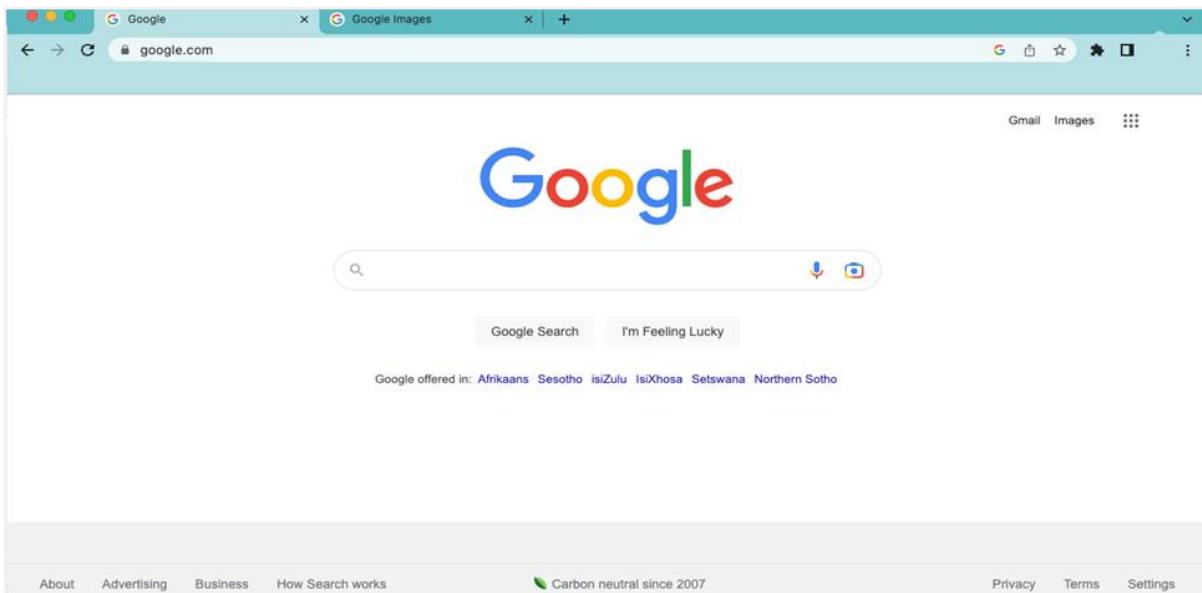


Figure 1.3.6 – The Google landing page on a computer Chrome browser

### Take note:



- Web addresses start with www. This is short for world wide web.
- Web addresses have different endings. Sometimes they show which country the website is from, for example:

.ug is an Ugandan website

.org is used for non-profit organisations

### Activity 1.3.2: Access a browser and navigate the webpage

1. First, ask learners to break up into groups of no more than ten. Make sure each group has at least two devices.
2. Show learners where to find the browser installed on their device.
3. Ask learners to open the browser and navigate to this website: [www.unicef.org](http://www.unicef.org)
4. Let them identify these features on the webpage: menu, search bar, web address, back / forward, share, history, tabs, and refresh button.

## Setting up accounts

Remind learners about the sign in function they learnt about in the previous lesson. Many websites allow users to set up a personal account for their website. Today, many websites have an app or software equivalent for users to set up an account. Explain to learners that in this lesson, they will learn how to set up an email account, a social media account and a chat account. For each, learners will be shown how to do it on one or two of the most popular **platforms**. This will equip them to be able to transfer what they have learnt to other platforms.

### Email

Begin by asking learners if they can remember which two popular email platforms they learnt about in the previous lesson. In this lesson, they will learn how to create an account. These are the basic steps:

1. **Go to the sign-up section of the email platform:** it can be on the app or software that is on the device or on the website.
2. **Complete personal details:** it will include names, some contact details and sometimes date of birth.
3. **Choose a username:** it will be the first part of the email address, for example in this email address [john.smith@gmail.com](mailto:john.smith@gmail.com), **john.smith** is the username.
4. **Choose a password:** it will keep the account safe and ensure only people with the password can sign into it.
5. **Confirm the password:** type in the same password again to make sure it is typed correctly.
6. **Read and agree to the Terms and Conditions:** these are the rules that the platform has for how the user must behave when using the platform as well as how the platform promises to treat the user.

#### Take note:

- When choosing a **username**, make sure it is:
  - Specific – it contains a name or a surname.
  - Professional – it is appropriate to use in all aspects of life.
  - Unique – it belongs only to the user and cannot be confused easily.

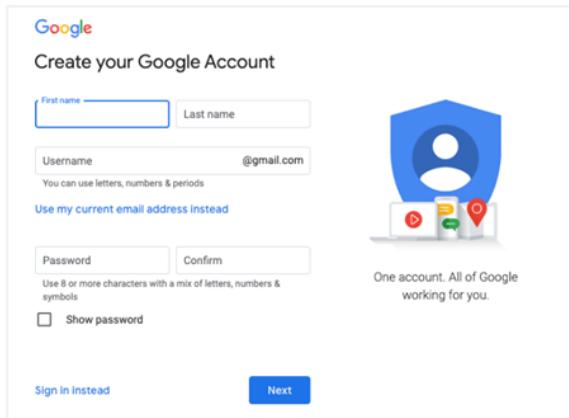


### Take note:



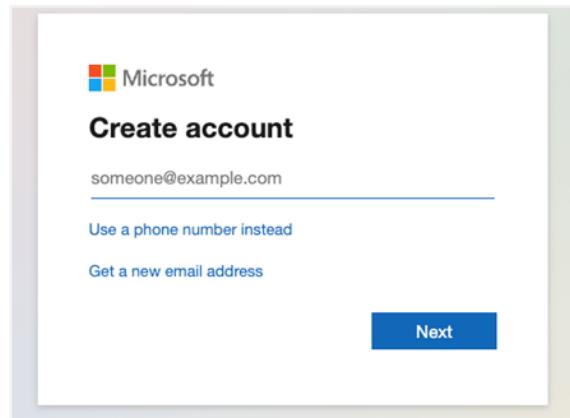
- When choosing a **password** make sure it is a strong password that contains:
  - one or more uppercase letter (ABCDEF...)
  - one or more lowercase letter (abcdef...)
  - one or more symbol (@#\$%&\*)
  - one or more number.

Most email account platforms will provide very clear steps to the user throughout the process. Encourage learners to read carefully and follow the steps. The process is quick and easy.



The screenshot shows the Google 'Create your Google Account' sign-up page. It features fields for First name and Last name, a Username field (example: @gmail.com), and Password fields (Password and Confirm). Below these are links for 'Use my current email address instead' and 'Show password'. At the bottom are 'Sign in instead' and 'Next' buttons.

Figure 1.3.7 – Google sign-up page



The screenshot shows the Microsoft 'Create account' sign-up page. It has a single input field for an email address (someone@example.com), with options to 'Use a phone number instead' or 'Get a new email address'. A 'Next' button is at the bottom right.

Figure 1.3.8 – Microsoft sign-up page

## Social media

Social media platform sign-ups function in much the same way as email platforms. Learners should be getting more confident in the sign-up process as they work through the different platforms. These are the basic steps:

1. Go to the sign-up section of the social media platform.
2. Complete personal details.
3. Choose a username.
4. Choose a password.
5. Confirm the password.
6. Read and agree to the Terms and Conditions.

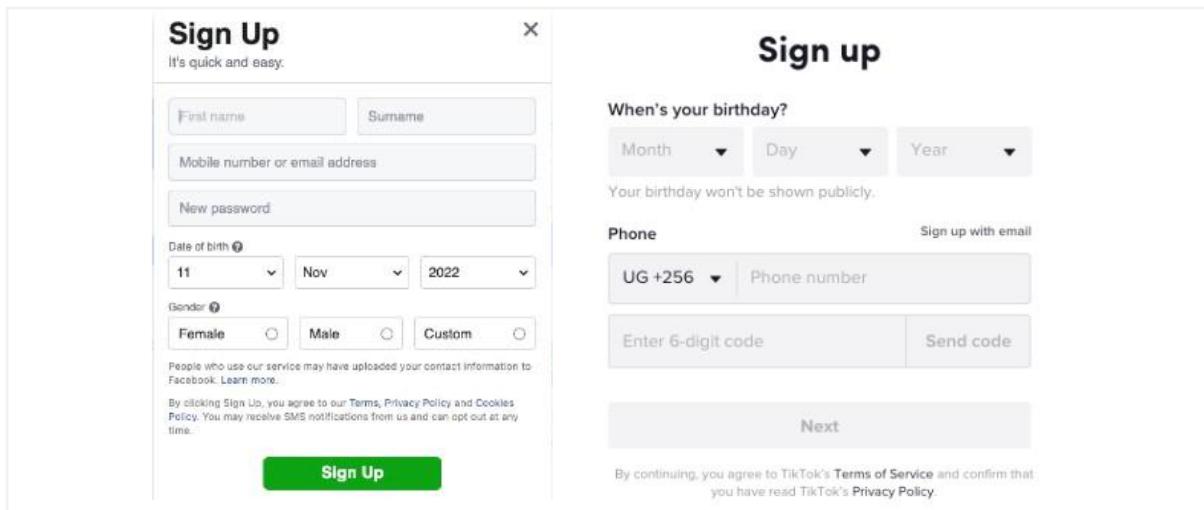


Figure 1.3.9 – Facebook and TikTok sign up pages

## Chat

The primary difference between social media platforms and chat platforms is that chat platforms are mostly linked to the user's phone number so the process is slightly different. These are the basic steps:

1. Launch the chat app or software
2. Read and agree to the Terms and Conditions.
3. Enter the phone number.
4. A verification code will be sent from the app to the provided cell phone number.
5. Complete registration with the verification code.

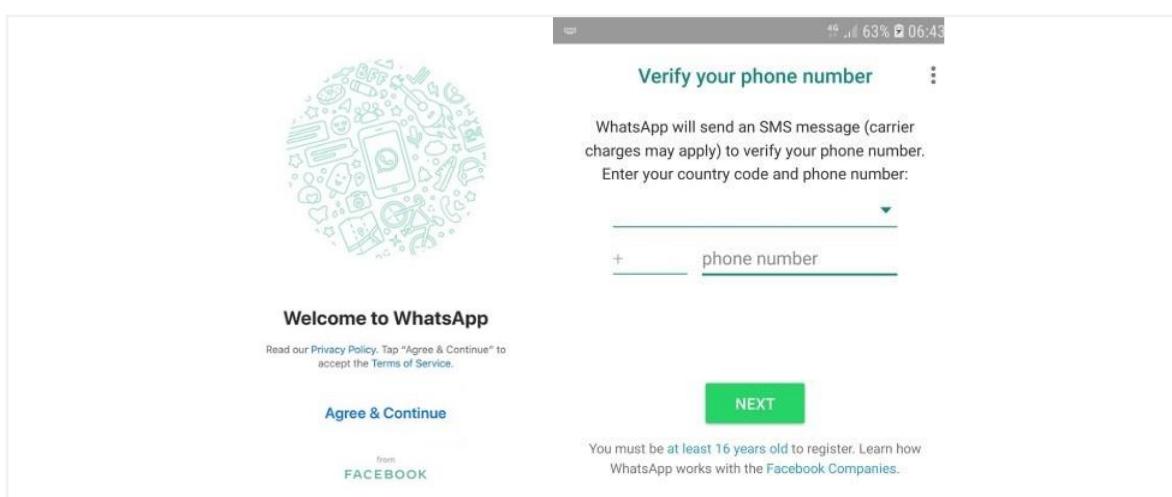


Figure 1.3.10 – The first two steps in the WhatsApp sign-up process

Once the accounts have been set up, explain to learners that there is much more they can do. Work through this table to give learners an idea of some of the other steps they can take in setting up their accounts.

Optional set-up	Explanation
<b>Profile picture</b>	It is a picture that can be seen by people on the platform that identifies the user.
<b>Cover picture</b>	It is the picture that forms a banner on the personal profile of the user, usually specific to social media profiles.
<b>About / Intro / Bio</b>	A short introduction to the user.
<b>Personal information</b>	Some users choose to include their birthdays, location, workplace, education, and relationships on their profile.

Remind learners that they must be careful with what they share on the internet. It is nearly impossible to remove anything from the internet once posted. This could affect the reputation and future work prospects of the user. Make sure that the content being shared is appropriate.

It is a good idea to draw learners' attention once more to the security and privacy settings they learnt about in the previous unit. These are especially important on email, social media, and chat platforms. Encourage learners to review their settings to make sure they are happy with them.

### Activity 1.3.3: Create an email account and join a social media platform

1. First, ask learners to break up into pairs or groups of no more than five.
2. Guide learners to the sign-up page of one email platform, one social media platform and one chat platform.
3. Let them set up an account for each of these platforms.
4. Guide them to review their privacy and security settings.

## Knowledge and skill checklist



I can connect a device to the internet.

I can find the browser and go to a website.

I understand the difference between mobile and computer internet.

I understand the basic components of a website.

I can set up an email account.

I can set up a social media account.

I can set up a chat account.

## Module 1 assessment guidance

Assist learners to set up where needed. Ensure that they know what they need to do and what is expected of them.



### Materials needed

- Laptop or tablet with an internet connection
- Paper and pen.

### Unit 1: Basics of a computer

1. Learners demonstrate that they can start up their device and login.
2. Learners create a blank document using the word processing software on their device.
3. Give the learners these instructions. Assess their documents once they are done.
  - a) Find out what OS your device uses. Type the name of the Operating System (OS) in your document.
  - b) Type how you found out the OS used on your device.
  - c) Change the font type to Comic Sans and the font to 20pt.
  - d) Format it in bold.
4. Learners create a blank spreadsheet using the spreadsheet software on their device.
5. Give learners these instructions. Assess their spreadsheets once they are done.
  - a) Merge cells A1 to C1. Fill it with any shade of blue.
  - b) Type 753 in cell A2 and 951 in cell B2. Use the =SUM function to multiply the numbers.
  - c) Change the font colour of cell C2 to any shade of green.
  - d) Put a border around cells A2 to C2.

## **Unit 2: Basics on an internet-enabled mobile device**

6. Learners create a blank presentation using the spreadsheet software on their device.
7. Give learners these instructions. Assess their spreadsheets once they are done.
  - a) Add a new slide.
  - b) Type your name in the *title* placeholder on the first slide.
  - c) List four computer components in a bulleted list in the *subtitle* placeholder. Make sure there is one component for each of these: input, output, processing, and storage. Right align the text.
  - d) Insert an image of a computer on the second slide.
1. Tell learners whether their devices use a mobile network or Wi-Fi to connect to the internet.
2. Learners find an app on their device for each of these categories. They should write these down or type them into a blank document.
  - a) Communications
  - b) Utilities
  - c) Productivity
  - d) Media
  - e) Games
3. Learners demonstrate that they can change one personalization setting on their device.
4. Learners demonstrate that they can navigate to the privacy and security settings.
5. Learners write down a strong password for you to assess.  
**(Note:** This password should not be a real password that they are using! Explain that it is just to demonstrate that they understand the characteristics of a strong password.)

**Unit 3:  
Introduction to  
the internet**

1. Learners demonstrate that they can check that their device is connected to the internet. If not, they demonstrate that they can connect it.
2. Learners open the browser app on your device and go to [www.google.com](http://www.google.com).
3. Give learners these instructions. They need to demonstrate to you that they can do the following:
  - a) Find the sign-in button and sign into the account you set up in class.
  - b) Click on the back button until you are back on the landing page.
  - c) Shut down your device.
4. Learners write down three sentences on this topic: How to set up a social media account. Assess their sentences.



## Module 2

# Information processing

This module will introduce learners to advanced search strategies and saving information in different formats, as well as new advances in search, storage and retrieval of content, including cloud information storage services.

Please note that practical activities described in each unit might require the support of a facilitator. Although the information presented is written in a way that is easy to understand, some actions, adjacent to the information presented, may also necessitate the supervision and support from a facilitator.

Additional activities have been provided for learners (these are called **Skills to practise**). These activities provide learners with opportunities to further explore and consolidate what they have learnt in class. Set aside a few minutes at the start of each lesson to discuss the learners' own independent practice of these skills and their findings.

This module includes the following units:

<b>Unit 1</b>	Browsing, searching and filtering data, information and digital content
<b>Unit 2</b>	Evaluating data, information and digital content
<b>Unit 3</b>	Managing data, information and digital content

## Learning outcomes

Learners should be able to:



- Articulate information needs.
- Search for data, information and content in digital environments, to access and navigate between them.
- Create personal search strategies.
- Update personal search strategies.

## Resources



- Training manual
- Computer with internet access
- Flipchart papers
- Markers

## Suggested teaching methods



- Presentation by facilitator
- Group exercise / Discussion / Debate
- Working in pairs / Small groups
- Presentation by learners



## New terminology to explain

These are terms that learners may not be familiar with. They should be explained within the context that they may be used.

**accessing**

sourcing or finding

<b>audio</b>	voice
<b>blog</b>	online journal where an individual, group, or company can present a record of activities, thoughts, or beliefs
<b>browser</b>	software that allows a computer user to use and view the internet
<b>Clickbait</b>	internet content whose main purpose is to attract attention and encourage visitors to click on a link to a particular web page
<b>computer network</b>	computers connected to each other
<b>data</b>	information
<b>device</b>	computing machines, e.g., smart phone, laptop, tablet, PC
<b>e-banking</b>	electronic or online banking
<b>fake news</b>	false or misleading information presented as news
<b>hardware</b>	devices or machines
<b>interface</b>	what you see on the screen and actions you complete to complete a task
<b>news portal</b>	websites that focus entirely on news
<b>peer-reviewed</b>	evaluation of scientific, academic, or professional work by others working in the same field

<b>process</b>	use
<b>remote</b>	working or learning away from colleagues, using the internet to connect
<b>search engine</b>	a software program that helps people find the information they are looking for online using keywords or phrases
<b>search strategies</b>	plans or tactics
<b>search terms</b>	key words
<b>software</b>	computer programs
<b>TCP/IP protocols</b>	Transmission Control Protocol/Internet Protocol and is a suite of communication protocols used to interconnect network devices on the internet.
<b>transfer</b>	communication or movement
<b>URL</b>	another word for website address
<b>vlog</b>	a personal website or social media account where a person regularly posts short videos.
<b>webinar</b>	seminar presented online: web + seminar

# 1

## Browsing, searching and filtering data, information and digital content



	<b>Duration</b>	4.5 hours
	<b>Objectives</b>	<ul style="list-style-type: none"><li>• Use advanced search strategies (e.g., using search operators) to find reliable information on the internet.</li><li>• Use web feeds (like RSS) to be updated with content.</li><li>• Show how to access this information and content and navigate between them.</li></ul>
	<b>Content</b>	<ul style="list-style-type: none"><li>• Main concepts: IT, ICT, and internet</li><li>• Search strategies</li><li>• Advanced search strategies</li><li>• Web feeds</li><li>• Reliability of search results</li></ul>
	<b>PowerPoint slides</b>	Use <a href="#">this link</a> to access the PowerPoint slides deck for this unit.
	<b>Lesson Plan Guide</b>	<ol style="list-style-type: none"><li>1 Main concepts IT, ICT, the internet (30 minutes)</li><li>2 Search strategies Advanced search strategies (105minutes)</li><li>3 Web feeds (75 minutes)</li><li>4 Reliability of search results (45 minutes)</li><li>5 Consolidation (15 minutes)</li><li>6 Knowledge and Skills Checklist</li></ol>

## Additional online resources



- IT online training – <https://edu.gcfglobal.org/en/subjects/tech/>
- Tutorial “Using search engines” –  
<https://edu.gcfglobal.org/en/internetbasics/using-search-engines/1/>
- How to search the internet effectively (1) –  
[https://mediasmarts.ca/sites/default/files/pdfs/tipsheet/TipSheet\\_How\\_Search\\_Internet\\_Effectively.pdf](https://mediasmarts.ca/sites/default/files/pdfs/tipsheet/TipSheet_How_Search_Internet_Effectively.pdf)
- How to search the internet effectively (2) –  
[https://mediasmarts.ca/sites/default/files/tip-sheet/tipsheet\\_we\\_are\\_broadcasters.pdf](https://mediasmarts.ca/sites/default/files/tip-sheet/tipsheet_we_are_broadcasters.pdf)

## Teaching notes

### Main concepts: IT, ICT and internet

To introduce this unit, present these three main concepts:

#### 1. Information Technology (IT)

The technology that we use to collect, **process**, protect and store information. It refers to hardware, software, and **computer networks**.

#### 2. Information and Communication Technology (ICT)

The **transfer** and use of all kinds of information.

Lead a discussion with the learners about ICT is the foundation of economy and a driving force of social changes in the 21st century. Explain how distance is no longer a problem when it comes to **accessing** information; for example, working-from-home, distance learning, **e-banking**, and e-government are now possible from any place with an Internet connection and a computing device.

#### Take note:



ICT includes all technical means that are used for handling information and simplifying communication, including computers, network hardware, communication lines and all the necessary software.

In other words, ICT includes information technology, telephony, **electronic** media, and all types of process and transfer of **audio** and video signals, and all control and managing functions based on network technologies.

### 3. Internet

The internet ("network of all networks") is a global system made up of interconnected computers and computer networks, which communicate by means of using **TCP/IP protocols**.

Discuss with the learners that although the internet developed from the need for simple data exchange, today it affects all areas of society, for example:

- **Economy:** Internet banking (paying bills, transferring money, access to account, access to credit debt and so on), electronic trading (stocks, various goods and so on).
- **Socializing:** social networks, forums like Facebook or Twitter.
- **Information:** **news portals**, **blogs**, some blogs operate mainly as news filters, collecting various online sources and adding short comments and Internet links and so on.
- **Healthcare:** diagnosing disease, medical examinations (for people living in rural areas, some examinations, that require a specialist doctor, can be done **remotely**, making appointments for medical examinations, the exchange of medical **data** between hospitals and institutes, surgery, and remote surgery monitoring).
- **Education:** online universities with **webinars**, websites with tutorials, expert advice, online training and so on.

### Searching online

Discuss the collaborative nature of the internet and how the sharing of information and ideas is fundamental to its impact. Revise with the learners that being able to search efficiently and effectively for information is one of the most important digital literacy skills. It allows one to quickly find what you are looking for without having to sort through pages of useless results.

Revise **search engines**, and list the popular tools, such as Google, Yahoo!, and Bing, and explain that while each of them is useful, they can also produce different results. Learners should be aware that Google is by far the most popular search engine and should know how to search for information online using various search engines.

## Activity 2.1.1: Brainstorm search strategies

To introduce the subject of online searching but also to gather an idea of where people are in terms of common knowledge, start this unit with a brainstorming session.

1. Make sure you have a whiteboard ready to register everyone's inputs. If the activity is run online, you can use an online platform to support with registering (ex. <https://padlet.com>) or even share a word document with the group where you can just type their answers.
2. Inform learners that there are no right/ wrong answers because the idea is to share with the group what we already know/ may not know. Possible questions:
  - What advanced search strategies can you name? how can these search strategies help you find the most reliable information?
  - What is a RSS feed and how can they help you stay updated on any new content?
  - What kind of risks may one encounter while searching online?

## Search strategies

Revise with learners a few basic **search strategies**. Remind the learners that it does not matter if you are using Google or any other search engine because these techniques are effective no matter where you search.

Highlight these three tips for searching:

- **Keep it simple:** Make your searches brief by focusing on keywords, then keep the number of these keywords to a minimum. This way, you are more likely to get relevant results.
- **Consider suggestions:** As you enter your term, search engines will suggest the most popular results involving the term. Do not be afraid to select one, as they can often give you plenty of new ideas.
- **Use natural language:** You do not have to use complicated words or phrases to get results. Search engines can recognize the language you naturally use in your everyday life, so feel free to try whatever comes to your mind.

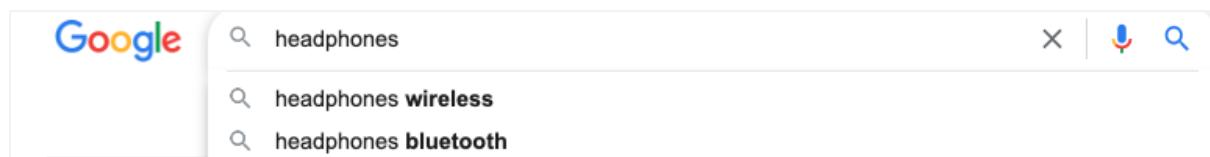


Figure 2.1.1 – Suggestions that appeared when the user typed in ‘headphones’.

If possible, show learners that depending on the search, the format of their results may vary based on what the search engine thinks will be most useful. This means the results could include maps, a portion of a Wikipedia article, lists, and more.

Search engines can find many other types of content in addition to webpages. With only a click or two, one can also search for images, videos, news, and many other types of content.

## Advanced search strategies

Explain to the learners that some internet searches remain broad because they contain words and phrases that are commonly used. These searches return thousands of results, most of which are too general to be useful. The more specific the search terms are, the more likely it is that they will return focused results.

Introduce advanced search strategies using operators, such as plus (+), minus (-) and double quotation marks ("") to narrow down the search results as far as possible. Explain the meaning of each of these operators and what they indicate to the search engine:

- (+) Plus signs are used to include words
- (-) Minus signs are used to exclude words
- ( "") Quotation marks are used to keep words together.

**Example:** Search terms will return results that contain the word ‘Uganda’ and will not contain separate searches for ‘school’ and ‘books’:

+“school books” Uganda

### Further Examples:

1. Consider a user in Kampala whose car has broken down on the side of the road after business hours. To find a towing company, the user enters this search on a smartphone: *Car breakdown Kampala*

This search returned close on a million results (846 000) results. The top results were from businesses that were closed for the day. To narrow down the search, the user added *+open +24/7 +towing* and *+roadside assistance* to the existing search terms. This focused search returned just eight results.

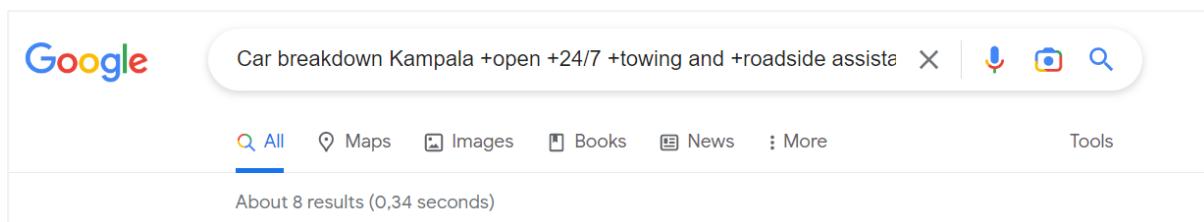


Figure 2.1.2 – An example of an advanced search.

2. Consider a person who has heard of a primary school somewhere in Uganda that provides education to orphans. The person is keen to volunteer, but has forgotten the full name of the project, only that it has something to do with St Paul and its motto.

The user enters these search terms: uganda orphan primary school +St. Paul

These search terms return 390, 000 results.

None of the results look familiar. To narrow the search down even further, the user adds the project's motto: *Invest in Education*. Although the number of results is significantly lower (890 300), the user instantly recognizes the name of the project in the very first result.

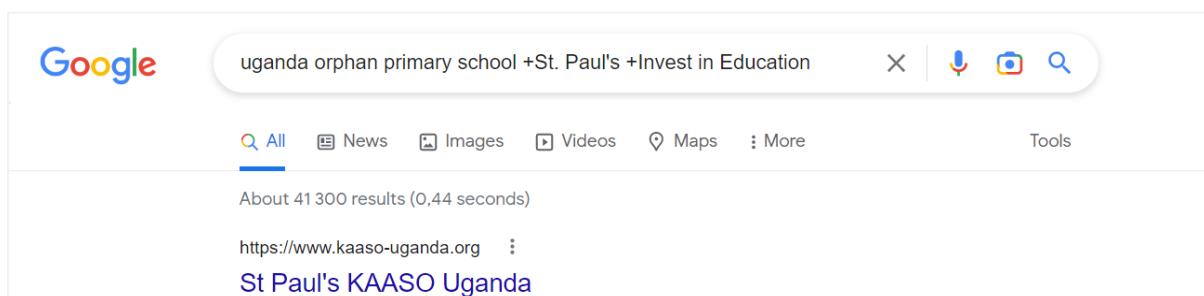


Figure 2.1.3 – An example of a refined advanced search.

## Activity 2.1.2: Use a search engine

1. Learners think of a favourite hobby or pastime, such as making toys out of found objects or physical fitness.
2. Each participant writes down search terms to find something specific in their area of interest using operators and double quotation marks.
3. They run their search terms in a browser's search box and note the number of results and the first ten results that are displayed.
4. If the results are not specific enough, the participant should tweak the search terms until they find what they're looking for.

## Web feeds

To introduce web feeds, ask learners if they have any favourite sites that they visit often. Discuss that many internet users have favourites, however, opening websites to find updated information can take time. For example, opening all the international sports sites to find out the latest scores could take upwards of 30 minutes, depending on the number of sites being searched. Also, it is not always easy to find the information immediately.



Figure 2.1.4 –  
The RSS icon

Explain to users that one way for websites to make updates for their visitors more accessible, is to set up a web feed, also known as RSS (Really Simple Syndication). The visitor clicks on the RSS icon, on the web page, and registers their name and email address. From then on, the RSS feed sends all new and updated information directly to the user's email address. Be sure to note to the learners, that using RSS feeds is considered old technology and most websites no longer use them.

Currently if users would like to follow a blog, **vlog** or website they simply need to click on the subscribe button and they will receive update notifications in the same way the RSS feeds did in the past.

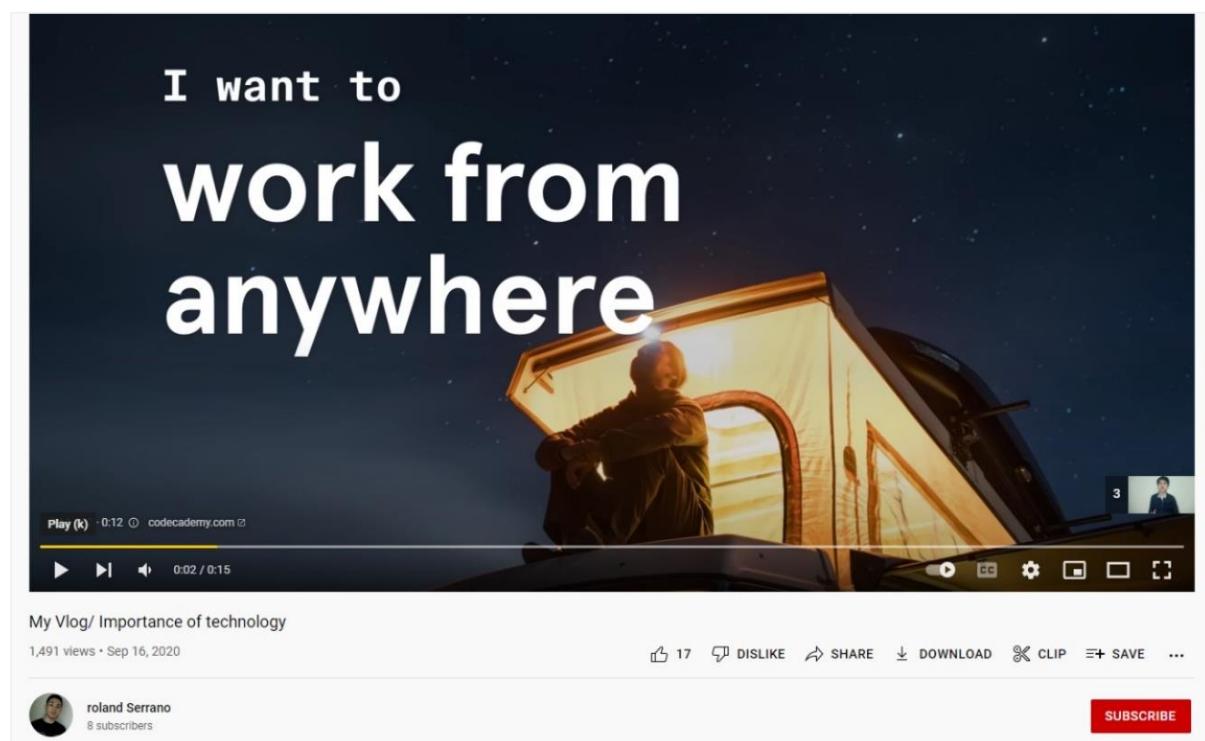


Figure 2.1.5 – A vlog with a subscribe button

The websites that most commonly include a web feed are sites that provide news and information on sport, arts and culture, music, celebrities, food, science, psychology and many more.

### Take note:



Web feeds were introduced some 20 years ago and are replaced with social media and email subscriptions. For example, users can follow the Facebook, LinkedIn and Twitter profiles to receive the latest news.

### Activity 2.1.3: Register for an RSS feed

Learners enter the following web address in a browser:

[https://blog.feedspot.com/world\\_news\\_rss\\_feeds/](https://blog.feedspot.com/world_news_rss_feeds/)

1. They open one of the sites listed in the article.
2. They find out how to register for an RSS feed from that site.
3. Learners discuss any difficulties they had understanding how to register and come up with solutions to the problems.

## Reliability of search results

Discuss with the learners their understanding of the reliability of the information they find online. Ask them how they decide if a source is reliable or not.

Provide the learners with these guidelines:

- **Relevancy:** Does this source deal specifically with your topic?
- **Scope:** Does this source only mention your topic briefly or does a substantial portion of the resource discuss your topic?
- **Currency** (as applicable to the topic): When was this piece written? Does the age of the source affect its relevancy to your topic?
- **Credibility/Reliability:** Who is the author? Do they have the authority to speak about this topic? What are the author's credentials? Has this resource been reviewed by other experts in this field of study?
- **Purpose:** Informative vs. Persuasive. What is the intention of this source? Is the author trying to persuade you or is the author presenting information? Is there a bias you should be careful of?

## Evaluating images and photographs

Photographs are often reused on the Internet, and it is hard to know where they originated, or if they have been manipulated or used to mislead. This is especially true for social media apps like Twitter, Facebook or Instagram.

You can use <https://tineye.com/> or any reverse image search tool to check the origin of a photograph, a reverse image search checks all webpages that contain a specific image.



Figure 2.1.6 – An example of a real vs fake photograph

## Media bias

Be sure to advise the learners that no reporting is without bias as it will always include an opinion. Biased sources may not include lies but could present only one viewpoint therefore giving an incomplete picture of events. Biased sources also include fake news, which is the presenting false information as true.

This topic is discussed in more detail in the next unit.

### Activity 2.1.4: Explore a topic

1. Have a list of different topics ready for learners to explore online. For example, mental health during the pandemic, the best recipes in the world, extreme sports, the importance of the bees, trees diseases, industrial revolution, robots in technology, healthy lifestyle, and so on.

2. Ask the group to organize in pairs and choose a topic to work on. The main goal in this activity is:
  - a) to search for relevant information across five different sources using simple search terms,
  - b) select at least one pertinent fact, image, graphic, or video from each source visited,
  - c) use <https://tineye.com/> or any reverse image search tool to check where an image was first used and whether it is reliable and
  - d) set up a short presentation ensuring they have used trustworthy sources. Learners must keep a record of the websites and references they used as this will be assessed at the end.
3. Once this task is finished, each group must present the work to colleagues.

### Knowledge and skill checklist



I can use advanced search strategies (using search operators) to find reliable information on the internet.

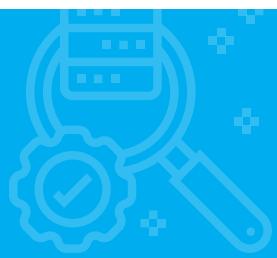
I can use web feeds (like RSS) to be updated with content I am interested in.

I can show how to access this information and content and navigate between them.

I can use advanced search strategies (using search operators) to find reliable information on the internet.

# 2

## Evaluating data, information and digital content



	<b>Duration</b>	4.5 hours
	<b>Objectives</b>	<ul style="list-style-type: none"><li>Critically assess the validity and credibility of information using a range of criteria.</li><li>Correct wrong information on the internet.</li></ul>
	<b>Content</b>	<ul style="list-style-type: none"><li>Assess sources and information online</li><li>Evaluate your sources</li><li>Evaluate websites</li><li>Fact-check websites</li><li>Correcting incorrect information on websites</li></ul>
	<b>PowerPoint slides</b>	Use <a href="#">this link</a> to access the PowerPoint slides deck for this unit.
	<b>Lesson Plan Guide</b>	<ol style="list-style-type: none"><li>1 Assess sources and information online (45 minutes)</li><li>2 Evaluate your sources Evaluate websites (90 minutes)</li><li>3 Fact-check websites (75 minutes)</li><li>4 Correcting incorrect information on websites (45 minutes)</li><li>5 Consolidation (15 minutes)</li><li>6 Knowledge and Skills Checklist</li></ol>

## Additional online resources



- Reliability of sources:  
<https://leeuniversity.libguides.com/DAL/reliability>
- How to determine credible sources:  
<https://www.teachtci.com/blog/fun-strategies-for-teaching-students-how-to-determine-credible-sources/>
- How fake news is spread -  
[https://www.youtube.com/watch?v=cSKGa\\_7XJkg](https://www.youtube.com/watch?v=cSKGa_7XJkg)

## Teaching notes

### Assess sources and information online

By now, the learners should already have an idea of what information they can find online. In this unit, you need to show learners how to evaluate data, so they can look for reliable sources and add to sharing correct information online.

Explain that unlike information found in newspapers or on television, information available on the internet is not regulated or controlled for quality or accuracy. Therefore, it is very important for users to evaluate the source or information.

Remind learners that almost anyone can publish anything they wish to on the internet. It is often difficult to find out who wrote the content, so it is the user's responsibility to judge the accuracy of the source.

Advise learners to ask themselves these questions before using resources from the internet:

- Who is the author? Is the author qualified to write on the topic? In case it is an organization, is it credible? Did I hear about it?

**Example:** An article about how excellent skin whitener products are, written by a company who sells the product, is unreliable. An article about skin whitener products written by a well-known beautician who wishes to inform users, however, may be more reliable.

- What is the purpose of the site? Who is the intended audience?
- Is the content an information piece or an opinion piece aimed at influencing your opinion?
- Is the information and language objective, unbiased and free of emotional expressions?
- Are the factual sources listed so information can be checked?

- Is information supported by evidence?
- How old is this information? When was the site last updated? If the site is about a war that ended 100 years ago, then it is acceptable if the article was written 10 years ago. But if the article is about the latest developments in technology, an article written three years ago would have outdated information.

### Check your emotions!

Advise learners to be aware of when a small piece of writing has the power to change how they feel (e.g., “Facilitator assaults learner” as a headline). This is not only a very old method to draw your attention, but it has been used as a **clickbait** to spread **fake news**. Human beings normally ignore the need to prove the accuracy of information when they feel strongly about the content, and researchers have found that content that causes strong emotions spreads the fastest through our social networks.



Figure 2.2.1 – An emotional response to fake news

### Evaluate your sources

Advise learners that as they search for information, they will need to evaluate the resources they find and select those most suitable. Explain that learners should examine each information source they find and assess sources using the following guidelines, also known as the TAARP method:

## **T – Timeliness**

Resources need to be recent enough for your topic. A paper on a topic like Ebola research, needs the most recent information, but a topic such as the Ugandan Bush War could use information written in a longer time range.

## **A – Authority**

Does the information come from an author or organization that has authority to write about the topic? Has the information been **peer-reviewed**? Do they list their qualifications? Be sure there is enough documentation to help you determine whether the publication is reliable including footnotes, bibliographies, credits, or quotations.

## **A – Audience**

Who are the intended readers and what is the publication's purpose? There is a difference between a magazine written for the public and a journal written for professors and experts in the field.

## **R – Relevance**

Does the article relate to your topic? What connection can be made between the information that is presented and facts about your topic? An easy way to check for relevance is by reviewing the introduction of the article.

## **P – Perspective (point of view)**

Biased sources can be helpful in creating and developing an argument, but make sure you find sources to help you understand the other side as well. Extremely biased sources will often misrepresent information and that can be ineffective if you want to present facts.

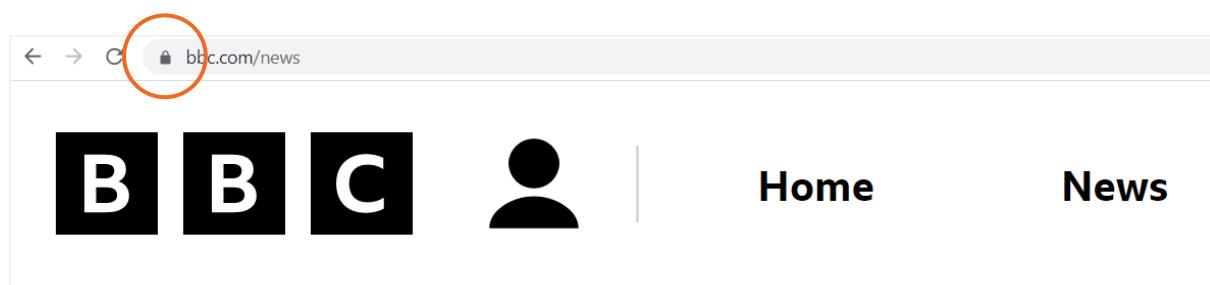


Figure 2.2.2 – A reliable and secure website will always have a lock before the URL

## Evaluate websites

Discuss how it is sometimes difficult to evaluate the credibility and usefulness of a website because no two websites are created the same way. Explain that the TAARP method can be used, but there are extra things to consider when looking at a website:

- **The look and feel of the website:** Reliable websites usually have a more professional look and feel than personal websites. They will not include adverts and will use formal language.
- **The URL of your results:** Look for .com, .edu, .gov, .net, and .org – these all mean something and can help you to evaluate the quality and reliability of the website.
- **Are there advertisements on the site?** Advertisements can indicate that the information may be less reliable.
- **Check the links on the page:** Broken or incorrect links can mean that no one is taking care of the site and that other information on it may be out-of-date or unreliable.
- **Check when the page was last updated:** Dates when pages were last updated are valuable clues to its currency and accuracy.

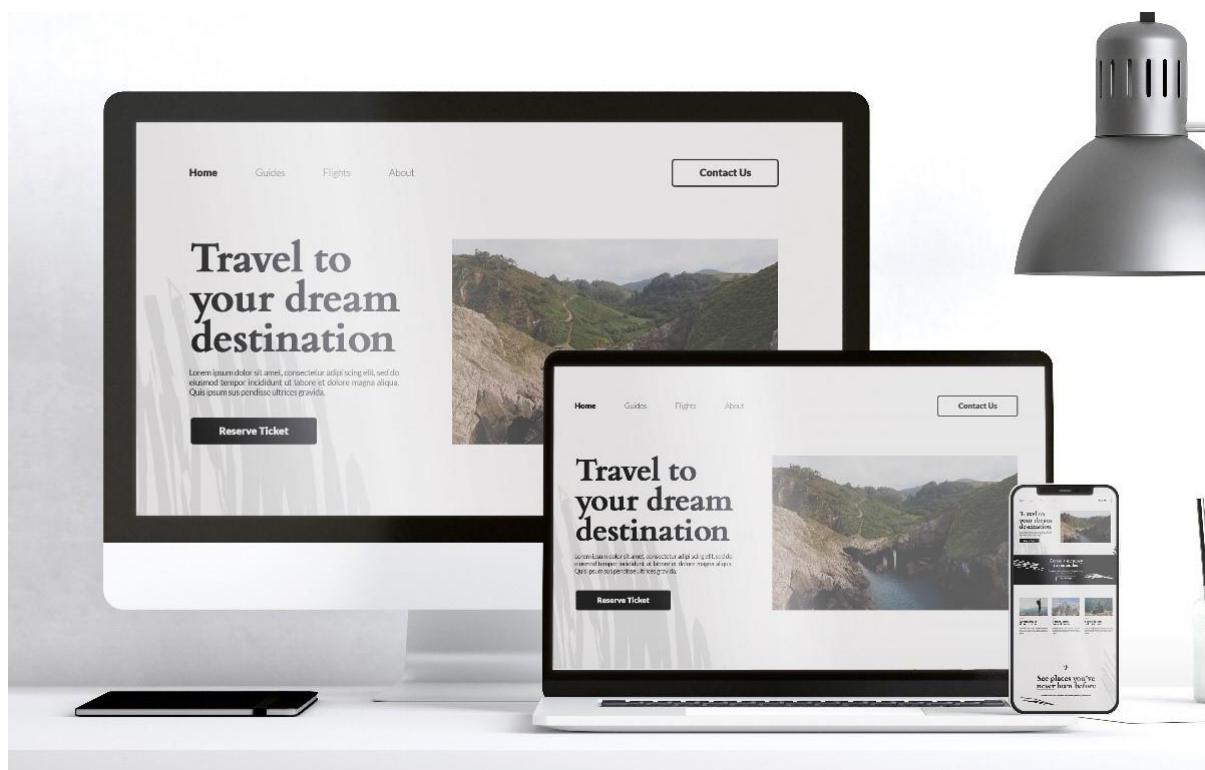


Figure 2.2.3 – The landing page of a website

### Take note:

**Informational resources** mostly present correct information. These are usually sponsored by educational institutions or government agencies. These resources often end with .edu or .gov. Remember that Wikipedia is not considered a reliable source of information because the content can be edited by anyone.

**Advocacy resources** are those sponsored by an organization trying to sell ideas or influence public opinion. These resources may end with .org. or .co.ug.



**Business or marketing resources** are sponsored by a business trying to sell products. These web pages are often very biased but can provide some useful information. You will usually find that these end with .com. or .co.ug.

**News resources** are those which provide extremely current information on news topics. Most of the time news sources are not as credible as academic journals, and newspapers differ in credibility from paper to paper. These often end with .com. or .co.ug.

**Personal web pages and resources** are sites including social media sites like blogs, Twitter pages, Facebook pages and so on. These sources can be helpful to determine what people are saying on a topic and what discussions are taking place. Be careful if trying to incorporate these sources directly into a factual report.

## Fact-checking websites

Show the learners that they can use a fact-checking website, where they can check if any information has been flagged as fake. Here is a list of some fact-checking sites you can demonstrate to the learners:

- FactCheck.org - <https://www.factcheck.org/>
- PolitiFact: sorting out the truth in politics - <https://www.politifact.com/truth-o-meter/>
- Urban Legends: Politics - <https://www.snopes.com/fact-check/category/politics/>
- Truth or Fiction - <https://www.truthorfiction.com/>

## Activity 2.2.1: Assess reliability of information online

To support the learning of how to evaluate information online, you can present a quick video showing how fake news spread.

Suggestion: [https://www.youtube.com/watch?v=cSKGa\\_7XJkg](https://www.youtube.com/watch?v=cSKGa_7XJkg)

Give each learner or group a current news topic to research. They must:

1. Use a fact checking tool to check the reliability of the information.
2. Explain how they reached their conclusion.

## Correcting incorrect information on websites

When fact checking returns an error, there are very few steps a user can take to correct the error. Remind learners that nobody owns the internet; anybody can create a website filled with incorrect information and there is no forum for reporting incorrect or false information.

If the website is a blog or has a comments section, a user can post a complaint pointing out the incorrect information. However, blogs and wikis are written by users who may or may not be a reliable source of information.

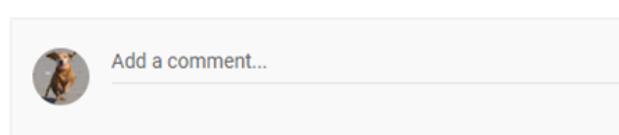


Figure 2.2.4 – An example of the comment section below a YouTube video.

## Activity 2.2.2: Talk about misinformation

This story is about two farmers struggling to manage their business in a small village. One of them uses digital tool often and the other does not know how to use them.

The story highlights the potential of using the internet to spread rumours and fake news. The main goal of the story is to:

- Stimulate personal thoughts on what is fake news and how easily someone can spread fake news, but also to stress the impact it may have on our daily life and worldwide.
- Promote a debate on the advantages of the internet and how it can be useful to help us reaching information quickly, support us connecting to others who might be able to help and so on.

Present the following story to the learners:

There were two men in a village: Akram and Bwire. Both are very hard-working people who run big farms and their own business. They talk very proudly about the products they sell to the markets as they produce high quality vegetables.

Bwire and Akram are neighbours and have known each other since childhood. However, their relationship has not always been good, as they have competed for the same clients. They believe there is no place for both in the business of such a small area.

During one of his morning walks, Akram finds Bwire very worried about his fields as the cabbages are ruined by what looks to be a fungus. He is upset that he did not notice this earlier and worries that he will have no cabbages to sell at the market on Saturday.

He is also worried that, if clients find out what happened, they might see him as incompetent and lose trust in the quality of his products. Also, he does not know how to deal with this fungus as it seems to be a completely new.

Meanwhile, Akram is thinking that this unfortunate event might be a chance for him to overtake his neighbour's business once and for all! So, he decides to create a Facebook profile of someone who allegedly bought Bwire's products and is very unsatisfied. To cover the lie, Akram found photographs of infected cabbages online and added them in the profile as if they were photographs of Bwire's bad products. Then, he started to send friendship requests to people in the village and quickly the message spread.

A few weeks later, Bwire realized that his profit was significantly lower, even in the selling of other products which were not affected by the fungus. However, he has no idea of what Akram has been doing on the internet behind his back...

Suggested questions for group debate:

1. Why do you think Bwire's profit started to go down?
2. If you were Bwire's client, how do you think you may feel watching pictures of infected cabbages? Would you still buy his products?

3. How easy to you think it is to spread a rumour and misinformation online?
4. Considering the impact fake news had on Bwire's business, how do you think it may impact politics for example or public health issues related to Covid-19? Can you think of any news on Covid-19 you may have heard and might not be true?
5. Now imagine you were in Bwire's shoes... would you have used the internet to help you with the fungus? How?

### Knowledge and skill checklist

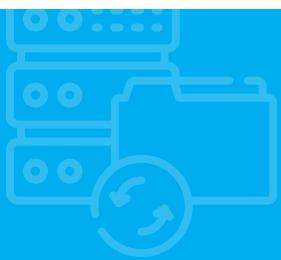


I can critically assess the validity and credibility of information using a range of criteria.

I can correct wrong information on the internet if I find it.

# 3

## Managing data, information and digital content



	<b>Duration</b>	3.75 hours								
	<b>Objectives</b>	<ul style="list-style-type: none"><li>• Is aware of new advances in information search, storage and retrieval.</li><li>• Save information found on the internet in different formats.</li><li>• Use cloud information storage services.</li></ul>								
	<b>Content</b>	<ul style="list-style-type: none"><li>• Devices to save and retrieve information</li><li>• Downloading from the internet</li></ul>								
	<b>PowerPoint slides</b>	Use <a href="#">this link</a> to access the PowerPoint slides deck for this unit.								
	<b>Lesson Plan Guide</b>	<table><tr><td>1</td><td>Devices to save and retrieve information (45 minutes)</td></tr><tr><td>2</td><td>Downloading from the internet (165 minutes)</td></tr><tr><td>3</td><td>Consolidation (15 minutes)</td></tr><tr><td>4</td><td>Knowledge and Skills Checklist</td></tr></table>	1	Devices to save and retrieve information (45 minutes)	2	Downloading from the internet (165 minutes)	3	Consolidation (15 minutes)	4	Knowledge and Skills Checklist
1	Devices to save and retrieve information (45 minutes)									
2	Downloading from the internet (165 minutes)									
3	Consolidation (15 minutes)									
4	Knowledge and Skills Checklist									

## Additional online resources



- Download a file from the internet:  
<https://support.google.com/chrome/answer/95759?hl=en&co=GENIE.Platform%3DDesktop#:~:text=Most%20files%3A%20Click%20on%20the%20file%20and%20choose%20Save%20as.>
- Save a file: <https://support.microsoft.com/en-us/office/video-save-a-word-document-fb0f9081-7c62-4fbf-954d-81b9707c0678>
- Backup files and cloud storage:  
<https://www.dropbox.com/features/cloud-storage/file-backup>

## Teaching notes

### Devices to save and retrieve information

By now learners have learned how to use computer tools to navigate online, find different sources of information, and evaluate whether they are reliable.

Next, learners need to be shown the tools available to save their information, store and retrieve it whenever they wish.

Discuss the following memory and storage devices with learners. Ideally have pictures available to show them, and ask the learners to contribute to the discussion by sharing which of these they are familiar with and what experiences they have had using them.

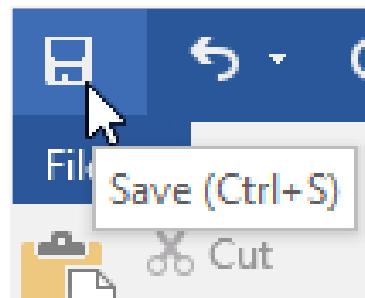


Figure 2.3.1 – Click on the disk icon to save a file

## Memory and Storage Devices



Figure 2.3.2 – A computer ROM component

### ROM (Read Only Memory)

a type of permanent, internal memory that is used solely for reading.



Figure 2.3.3 – A computer RAM component



Figure 2.3.4 – Memory cards for a camera



Figure 2.3.5 – A USB stick



Figure 2.3.6 – An internal hard drive

### RAM (Random Access Memory)

a working memory in which analyzed data and programs are stored, while a computer runs. It allows reading and writing data and is deleted/cleared when the computer shuts down.

### Memory card

a type of flash memory used to store data in digital cameras, smart phones, MP3 players, and so on.

### USB stick

a data storage device. It is small, has a high storage capacity, is reliable and fast. It belongs to the type of flash memory that remembers data, even when not under voltage, i.e., they do not need electric power to maintain data integrity.

### Internal hard drive

embedded in the computer case and is used to store data files.



Figure 2.3.7 – An external hard drive



Figure 2.3.8 – Cloud computing

### External hard drive

unlike an internal drive, which is nestled firmly inside your computer, an external hard drive is a device that you plug into a computer port. An external hard drive gives you more storage space to keep your data.

### Cloud Storage

a cloud computing model that stores data on the internet through a cloud computing provider who manages and operates data storage as a service.

Use external hard drives or cloud storage to backup or to copy files. This is done to protect information from being lost should the device be lost, destroyed, or stops working.

### Practical activity 2.3.1: Discuss data storage and retrieval

1. Access and read this article written in 2022, which addresses the four most common methods of data storage and retrieval:  
<https://cloudstorageinfo.org/4-types-of-computer-data-storage>
2. Hold a class discussion on which method you would choose and why. (For the purposes of the discussion, assume that internet access and external storage devices are readily available.)

## Downloading from the internet

Learners should already know that when files are downloaded from the internet, they are automatically downloaded to the *Downloads* folder by default, unless they have specified a different location beforehand. The files should then be copied or moved to a folder on the hard drive that is used for similar files, for example, a folder called *Assignments* where the facilitator saves the learners' completed assignments.

If necessary, demonstrate how to create and manage folders using a file management program, such as File Explorer in Windows® 10.

Get learners to note that the local hard drive, the hard drive on the actual computer device, is always labelled (C:). This is where the operating system is stored, as well as program and user files.

Revise with learners that the **File Explorer icon** is on the bottom left-hand corner of your taskbar.



Figure 2.3.10 – The file explorer icon

### Advise learners to follow these guidelines when downloading from the internet:

- Experiment with creating, copying, and moving files and folders. Warn them not to delete or rename system files and folders.
- Ensure that learners know the difference between copying a file or folder and moving a file or folder. When a file or folder is moved, it no longer exists in its original location. Copying simply duplicates a file or folder, so that there are two files or folders that are the same.
- File names and folder names should describe the information they contain. A folder called 'Stuff' does not describe what kind of files it contains.
- Folder structures need to be logical and methodical so that finding specific files is easy. In other words, each file structure should be like the other file structures. When file structures don't follow a similar pattern, the user can waste time searching for files.

**Example:** If the Assignment folder in one file structure is called Tasks in another structure and Practical Activities in a third structure, the user will have difficulty finding the instructions for a specific assignment.

- Important files should always be backed up and kept in a different location. The easiest way to do this is to copy important folders directly onto an external drive or flash drive. There is also free cloud storage, such as Google® Drive and Microsoft®

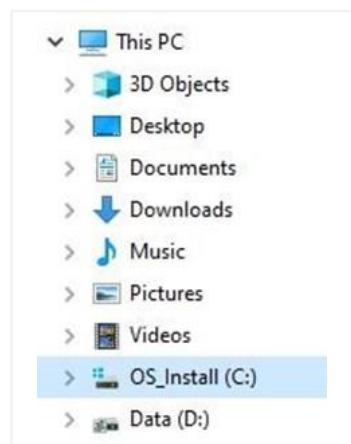


Figure 2.3.9 – A device's internal hard drive is always called (C:)

OneDrive that can be used as well. However, this depends on having consistent access to the Internet for uploading and downloading files and folders.

- Demonstrate using Google® Drive to store and retrieve files.
- Discuss the advantages and disadvantages of commonly used file formats. Include text (MS Word or PDF), audio (MP3), video (MP4) and image file (.png or .jpg) formats.
- Files downloaded from the internet can be huge, which can make downloading a slow process. Also, large files take up more storage (memory) space.

**Example:** High-resolution image files take up a lot of computer memory. If many files are being downloaded for use in an online presentation, choosing a lower resolution format, such as .png would serve the same purpose. Downloading text files is similar – a plain text file (.txt) takes up very little space, whereas a Word document or a PDF can be considerably larger than a plain text file, depending on the type of content.

### Activity 2.3.2: Back up a folder

1. Create a folder called *Clipart*.
2. Download three images from an online clipart library that is copyright free, such as Pixabay or Freepic to your *Clipart* folder.
3. Save each image in a different size or format.
4. Rename each image before downloading the next image.
5. Back up your *Clipart* folder to an external device.

### Activity 2.3.3: Back up a folder to Google Drive

Back up the Clipart folder you created in Activity 2.3.2 to a new folder on Google® Drive.

## Knowledge and skill checklist



I am aware of new advances in information search, storage and retrieval.

I can save information found on the internet in different formats.

I can use cloud information storage services.

## Module 2 assessment guidance

Assist learners to set up where needed. Ensure that they know what they need to do and what is expected of them.



### Materials needed

- Laptop or tablet with an internet connection
- Paper and pen.

#### Unit 1: Search engines

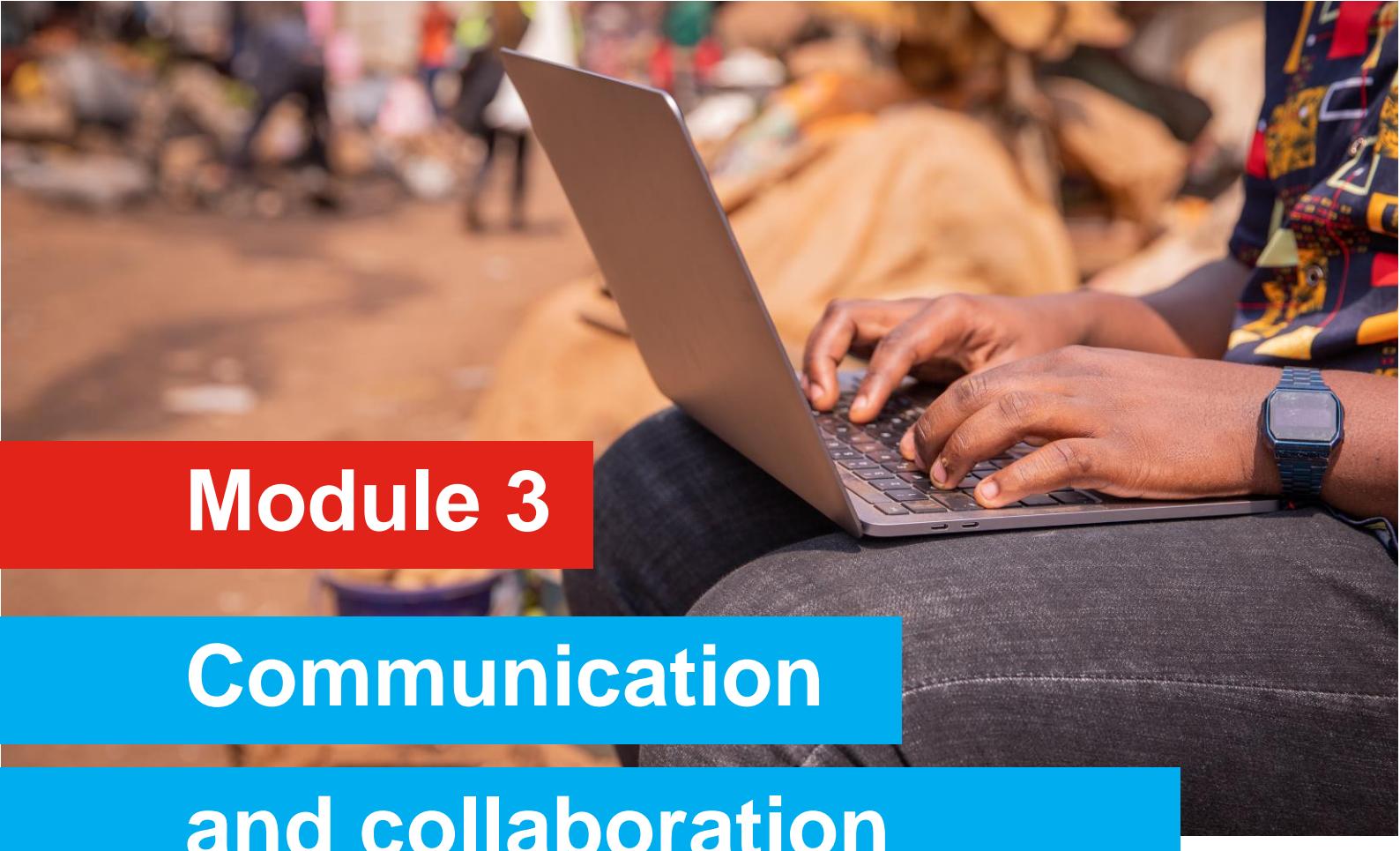
1. Learners open search engines of their choice.
2. Learners choose the best key words to search for the following: Ebola is a very contagious disease. How can changes in behaviour prevent the spread of Ebola?
3. They complete a search using advanced search strategies with their chosen key words. (Learners should write down their key words.)
4. Learners choose one website and create a web feed. Assess the results.
5. Learners compare three search results and choose one website that provides the most useful information. (They should write down the name of the website.)
6. Learners write down four strategies that they used to create their advanced search for the correct information.
7. Assess their answers.

#### Unit 2: Evaluating data

1. Learners review their search results from the previous units.
2. From their search results, they write down one website that they found unreliable.
3. From their search results, they write down one website they found reliable.
4. Learners compare the reliable and unreliable websites. They write down the differences.

### **Unit 3: Saving information**

1. Learners download a photograph and save it on their device as a .JPEG and a PDF file.
2. Learners download an article and save it on their device as a PDF and an MS Word document.
3. Learners create and name a folder on their device and place the articles and photographs in the folder.
4. Assess the folder that contains the files.



## Module 3

# Communication and collaboration

This module contains information on collaborative platforms and describes subjects related to communication and interaction online.

Please note that practical activities described in each unit might require the support of an experienced trainer. Although the information presented in the manual is written in a way that is easy to understand, some actions, adjacent to the information presented, may also require the support of experienced people.

This module includes the following units:

<b>Unit 1</b>	Interacting through digital technologies
<b>Unit 2</b>	Sharing through digital technologies
<b>Unit 3</b>	Engaging in citizenship through digital technologies
<b>Unit 4</b>	Collaborating through digital technologies
<b>Unit 5</b>	Netiquette
<b>Unit 6</b>	Digital emotional intelligence
<b>Unit 7</b>	Managing digital identity

## Learning outcomes

Learners should be able to:

- Interact through a variety of digital technologies and to understand appropriate digital communication means for a given context.
- Share data, information, and digital content with others through appropriate digital technologies.
- Act as an intermediary, to know about referencing and attribution practices.
- Participate in society using public and private digital services.
- Seek opportunities for self-empowerment and for participatory citizenship through appropriate digital technologies.
- Use digital tools and technologies for collaborative processes, and for co-construction and co-creation of data, resources, and knowledge.
- Be aware of behavioural norms and know-how while using digital technologies and interacting in digital environments.
- Adapt communication strategies to the specific audience and to be aware of cultural and generational diversity in digital environments.
- Recognize, navigate, and express emotions in intrapersonal and interpersonal digital interaction.
- Create and manage one or multiple digital identities, to be able to protect one's own reputation, to deal with the data that one produces through several digital tools, environments, and services.



## Resources



- Training manual
- Projector
- Computer with internet access
- Headphones
- Flipchart papers
- Markers

## Suggested teaching methods



- Presentation by facilitator
- Group exercise / Discussion / Debate
- Working in pairs / Small groups
- Presentation by learners
- Media selection



## New terminology to explain

These are terms that learners may not be familiar with. They should be explained within the context that they may be used.

### **cyberbullying**

includes sending, posting, or sharing negative, harmful, false, or mean content about someone else

### **digital channel**

an interface connected to the world wide web through which communication can be made

### **digital citizenship**

the behaviour and the positive engagement individuals impose when entering the digital world

### **digital medium**

a physical way of storing media or archiving it; holds data, graphics, audio, and video

### **environment**

the place that is enabled by technology and digital devices, often transmitted over the internet or other digital means, e.g., mobile phone network

### **hack**

to break into computer systems to do harm or use the information in a harmful way

<b>malware</b>	malicious computer software that interferes with normal computer functions or sends personal data about the user to unauthorized parties over the internet
<b>noise</b>	elements that can distort your communication
<b>phishing</b>	a type of cyberattack that uses email, phone, or text to entice individuals into providing personal or sensitive information, ranging from passwords, credit card information, and social security numbers to details about a person or organization
<b>thread</b>	on Twitter: a combination of tweets sent out one after the other and connected to form a chain (note: one tweet is limited to 280 characters)

# 1

## Interacting through digital technologies



	<b>Duration</b>	5 hours
	<b>Objectives</b>	<ul style="list-style-type: none"><li>Actively use a wide range of communication tools (e-mail, chat, SMS, instant messaging, blogs, micro-blogs like Twitter, social networks) for online communication.</li></ul>
	<b>Content</b>	<ul style="list-style-type: none"><li>The process of Communication and Communication Styles</li><li>Effective Email Communication</li><li>Social Media Training for Beginners</li><li>Practical activities</li></ul>
	<b>PowerPoint slides</b>	Use <a href="#">this link</a> to access the PowerPoint slides deck for this unit.
	<b>Lesson Plan Guide</b>	<ol style="list-style-type: none"><li>1 The process of digital communication (90 minutes)</li><li>2 Interacting with digital technologies (105 minutes)</li><li>3 Secure digital communication (90 minutes)</li><li>4 Consolidation (15 minutes)</li><li>5 Knowledge and Skills Checklist</li></ol>

## Additional online resources



- Basic Email Tutorial:  
<https://www.youtube.com/watch?v=cnxsl8h5qj4>
- Using digital tools to transform classrooms:  
<https://www.youtube.com/watch?v=B99FXVamqMM>
- How to post on twitter: <https://recurpost.com/blog/how-to-post-on-twitter/>
- What your Digital Communication Style Says about you:  
<https://www.webroot.com/us/en/resources/tips-articles/what-your-digital-communication-style-says-about-you>

## Teaching notes

### The process of digital communication

Simplify the process of digital communications for learners by breaking down the process of into a series of steps.

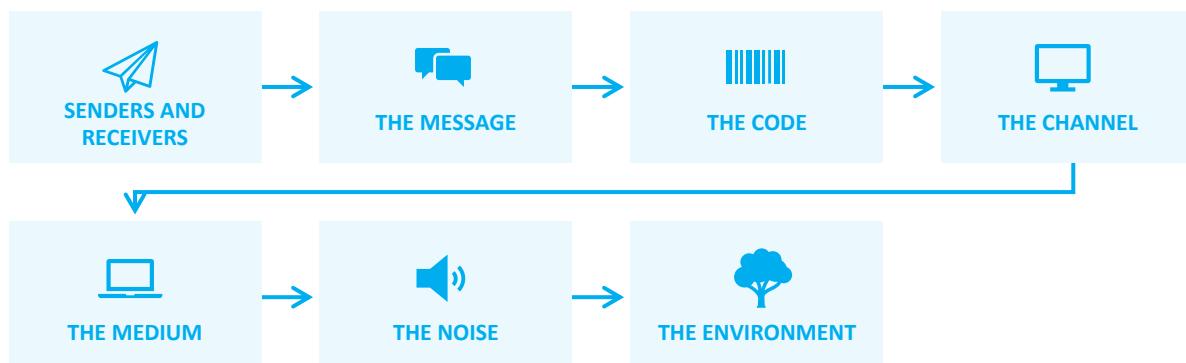


Figure 3.1.1 – The digital communication process

- **Senders and receivers:** The person doing the communication is the **sender**, and the person that the sender is communicating with is the **receiver**.
- **The message:** This is the information being sent. Remind learners that the information can be in different mediums (types).
- **The code:** All information sent digitally is encoded by the software or app that is being used when the message is sent. It is then decoded when received so that the receiver can see the message as intended.
- **The channel:** A **digital CHANNEL** is an interface connected to the world wide web through which communication can take place.

Type of communication	Digital channel
on the web	websites
search	search results
communication	email and messaging apps
online events/webinars	online conference software
digital media	video streaming and music sites
games	virtual gaming sites

- **The medium:** A **digital MEDIUM** is a physical way of storing media or archiving it, and can hold data, graphics, audio, and video.
- Digital mediums are well known as digital media, i.e., the form of media that can be created, viewed, modified, and distributed by electronic devices.
- **The noise:** These are elements that can distort your communication.
- **The environment:** The place that is enabled by technology and digital devices, often transmitted over the internet, or other digital means, e.g., mobile phone network.

## Interacting with digital technologies

Communication happens when one person (the sender) sends a clear message to another person (the recipient).

Communication is said to be **effective** when the recipient's response shows that they understood the message.

### Communicate with others

Learners should understand that they should register an account that is secure and unique whenever they interact with an online service or social media platform. This makes it difficult for another person to **hack** into their account. Their username should not be their real name, and their password should be a strong password. Strong passwords contain a mixture of letters, numbers, and symbols, and should be at least eight characters.



Figure 3.1.2 – The most popular social media apps on a mobile phone

Show learners how to post content, such as messages, images, and videos on social media sites, such as Facebook, Twitter, Instagram, and TikTok.

Some content should **not** be posted on the internet.

**Examples of content that learners should never post:**

- Images and videos that are sexual, show religion in a poor light, insult others, expose others to unwanted attention, or are simply in poor taste.
- Comments that criticize, insult, judge, bully, or lie about someone.

Show learners how to upload content to a social media site from a computer or smartphone. To do this, they should be able to navigate the device's file system to find the correct content.

**Example:** Explain how to post an image on a smartphone to a Facebook page

1. When in Facebook, go to the page where you want the image to appear.
2. Click on the Photos button to access the smartphone's gallery.
3. Select the picture you want to add.
4. Choose Share external from the drop-down menu at the top of the screen.
5. Click on Facebook's News Feed button.
6. Once the image appears on the page, add text or a caption explaining the image.
7. Click on the Post button, then select which people should be able to view the image.



Figure 3.1.3 – The Facebook app on a mobile

The steps explained above are the same for posting other content on other social media sites. The names of options might be different, but the process is the same.

Learners can post comments on a social media site, such as Twitter or Instagram.

**Example:** They should follow these steps to post a **thread** on Twitter:

1. Click on the tweet button to create a new tweet.
2. To add another tweet, select the plus icon.
3. To delete any of the tweets, choose the delete button.
4. Once all the tweets in the thread have been added, select the Tweet All button to post them.



Figure 3.1.4 – The Twitter app on a mobile phone

Instant messaging apps, also known as chat apps, are more immediate than email. They have become the accepted norm, even in the world of business and professional circles. Learners can use Voice-over Internet Protocol (VoIP) to make data audio and video calls on chat apps such as WhatsApp, Facebook Messenger, and Telegram.

Note that VoIP calls, which are audio-only, use much less data than video calls because both participants can both hear and see each other. Likewise, attachments to WhatsApp messages also use data. Plain text files require less data than image, audio, and video files.

In addition to making calls of various types, attaching files and creating group accounts, learners can change the apps settings. These include account security, notifications, storage and data, and the app language. The default is US English, but this can be changed to the user's language, i.e., the language used on the device.

Learners can use and work with a range of communication technologies, such as chat apps, email, instant messaging, social network platforms, blogs and microblogs.

### The advanced features of these technologies include:

- privacy, encryption and security settings
- cloud and data synchronization between devices
- Bluetooth and cable file transfer
- troubleshooting errors



Figure 3.1.5 – An example of a microblog

- personalization in terms of themes, notifications and home screen display
- message broadcasting
- chatbots.

### Activity 3.1.1: Communicate using instant messaging, blogs, micro-blogs like Twitter, social networks

Divide learners into small groups with at least two smartphones or tablets in each group.

Instruct each group to do the following:

1. Create individual Twitter accounts with unique usernames and strong passwords.
2. Set up their individual profiles, including a profile picture, without revealing too much personal information.
3. Find and follow one another on Twitter.
4. Post information with an image on Twitter.
5. Comment respectfully on one another's posts.
6. Find and follow organizations and groups who are tackling social and environmental issues that are negatively impacting Uganda.

## Secure digital communication

Explain how the term '**security**' is used in the context of data sharing and digital communications. In this context, it refers to the threats that can cause information to be lost, stolen or corrupted (made unusable). It also refers to access to information over a network by an unauthorized user who might steal or tamper with the information.

Examples of information that is routinely secured by organizations and individuals include:

- confidential information, such as medical records and legal documents
- personal information, such as a person's name, address, contact details and identity number
- financial information, such as bank account details of clients, accounting records of a company, staff salaries, credit records, and tax information.

When information is made secure, it is hidden from the public in such a way that no unauthorized user can find it, no matter how good they are at hacking systems.

Security in digital communication means keeping information hidden (private) when it is being transferred across a network (usually the internet) to another user or system.

This communication could be:

- an email
- an instant message
- a file transfer via services, such as Dropbox and WeTransfer
- a video conference using software, such as Skype, Microsoft® Teams, or Zoom
- a Voice over IP (VoIP) audio call
- various users collaborating on a shared document that is stored on a cloud computing website, such as IBM® Cloud, Google® Workspace or Amazon® Web Services
- filling in an online registration form to subscribe to an online service or to purchase a product online
- electronic funds transfer (EFT) to pay bills online
- downloading images and other content from websites
- uploading content to online storage, such as Microsoft® OneDrive and Google® Drive
- individual and group messaging on a data line, such as WhatsApp and Telegram
- streaming content, such as videos and audio files
- posting images, videos, audio, and text content on social media sites, such as Facebook, Instagram, Twitter, or TikTok
- creating a blog site using free online applications, such as WordPress, Wix, and Jimdo.



*Figure 3.1.6 – Digital security is very important to all users*

### Take note:

If information and the routes that it travels across a network are not secure, that information is at risk of being lost, stolen or corrupted.

The most common ways of securing data are:



- using hardware to form a physical barrier (firewall) between the internal servers and the public servers, or firewall software
- installing anti-virus software and web protection software
- encrypting all data that is sent over a public network
- using a virtual private network (VPN) to create a one-to-one channel across the Internet so that information cannot be intercepted.

## Social media

Social media refers to the creation, sharing, and exchanging of information and ideas in virtual communities and networks. The top social media apps are TikTok, WhatsApp, WeChat, Telegram, Facebook, Instagram, Twitter, LinkedIn, and YouTube.

### Guidelines to create social media accounts and communication with others

You can either present these guidelines to the learners so that they can create their own social media accounts, or you can assist them in class.

- Start by downloading and installing WhatsApp or Telegram on a smartphone or tablet. They then practise sending messages and images, as well as recording and sending a voice note and attaching a file to a WhatsApp message.
- Remind learners how to create a Gmail account if they do not already have one.
- Demonstrate how to store, share, and collaborate on files in Google® Workspace.
- Demonstrate how to do a video call using free services, such as Zoom or Skype.
- Demonstrate how to build a simple blog, using images downloaded from the Internet.
- Demonstrate accessing and using an online chat forum, such as the ChatKK site for various countries, including Uganda. **Caution:** Test this site first to see that it is only for friends. If it looks unsafe, find a chat site that is safe for Ugandan teenagers and young adults to use.
- Demonstrate how to create a Facebook page for a learner. Once created, outsiders will be able to view the site and use Facebook Messenger to communicate with the learner. Show the learners how to set up the site so that no outsiders can see the learner's 'friends'.



Figure 3.1.7 – Social media icons

### Activity 3.1.2: Actively use a wide range of communication tools

Divide the learners into small groups. Give each group a technology to research online and report to the rest of the class.

Topics can include, but are not limited to:

- A well-known chat app and its advanced settings
- The difference between a blog and a microblog
- The pros and cons of email vs. instant messaging
- Video conferencing and podcasts as useful forms of communication
- Authoritative online resources for researching communication technology.

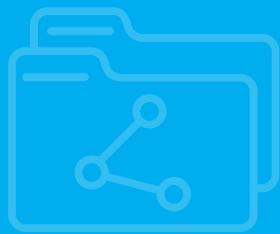
#### Knowledge and skill checklist



I can actively use a wide range of communication tools (e-mail, chat, SMS, instant messaging, blogs, micro-blogs like Twitter, social networks) for online communication.

# 2

## Sharing through digital technologies



### Duration

3 hours



### Objectives

- Create and manage content with collaboration tools (e.g., electronic calendars, project management systems, online proofing, online spreadsheets).



### Content

- Sharing through digital technologies
- Set up a shared file on a platform
- Use comments or make changes to a shared file
- Practical activities



### PowerPoint slides

Use [this link](#) to access the PowerPoint slides deck for this unit.



### Lesson Plan Guide\*

- 1 Simple file-sharing tools (30 minutes)
- 2 Sharing through digital technologies (135 minutes)
- 3 Consolidation (15 minutes)
- 4 Knowledge and Skills Checklist

## Additional online resources



- Best lessons to share lesson notes digitally:  
<http://blog.whooosreading.org/digital-notes/>
- Digitally share and Comment:  
<https://applieddigitalskills.withgoogle.com/c/middle-and-high-school/en/create-a-presentation-all-about-a-topic/create-a-presentation-all-about-a-topic/digitally-share-and-comment.html>

## Teaching notes

### Sharing through digital technologies

Digital technologies are tools, systems, devices, and resources that generate, store or process data. Some of the most common digital technologies include social media, online games, multimedia, and mobile devices.

Many people now refer to digital technologies that are present online as ‘the cloud’. It is important that learners understand what ‘the cloud’ is. Like the internet, the cloud is a collection of servers and networks that host programs and storage facilities online. Anyone with a computer and access to the internet can use the free services available in the cloud.

The cloud has two distinct components:

- **Cloud computing**, in which the online service provider hosts applications that users can run on their own computers without having to install those applications on their local computer. In other words, users can create documents, spreadsheets, presentations, and so on without having to download and install the software on their own device. Give learners an example. Explain to learners how this works by using an example that they will understand. For example, when a user opens Word, the application opens a window in the user’s internet browser for the user to work on. Cloud computing saves space on the user’s computer, the applications are always up to date, and the user can run the applications from any device using their registered account.
- **Cloud storage**, in which the user’s files are stored in a secure and private location online. This forms a reliable backup of information that is always up to date. If the user’s computer malfunctions, their files are not lost forever and can be retrieved when the device is repaired or when a new device is purchased. In addition, cloud storage allows users to share files. This allows a group of collaborators to work on the same document at the same time. Cloud storage is updated with the latest files on the user’s computer if the user is online. This is known as synchronization.

There are two cloud computing sites with free services that are commonly used for safe, easy, and reliable collaboration, file sharing, applications, and storage:

- Microsoft® 365, which hosts Microsoft® Word, Microsoft® Excel, Microsoft® PowerPoint, as well as a storage space called Microsoft® OneDrive.
- Google® Workspace, which hosts Google® Docs, Google® Sheets, Google® Slides, as well as a storage space called Google® Drive.

Both Microsoft® 365 and Google® Workspace host many other applications that can be used to streamline collaborative projects, such as calendars for scheduling, groups, podcasts, forms, and so on.

## Work in Google® Drive

Help learners to access Google apps in the Gmail window, click on the **Apps** button to the left of your profile icon.

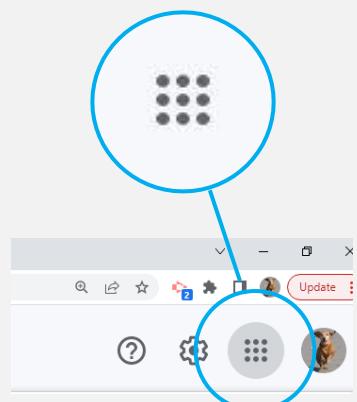


Figure 3.2.1 – the Apps button

This displays a gallery of Google apps.

Point out that the button for accessing Google® Drive is on the bottom right.

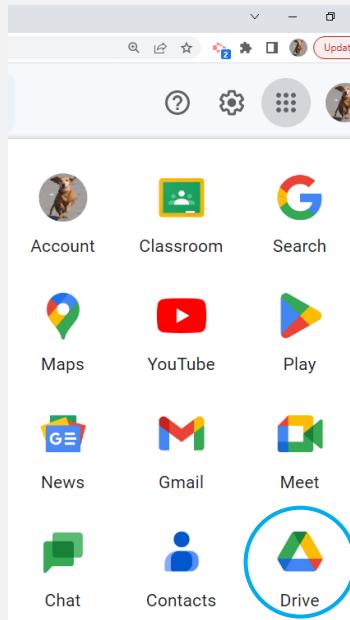


Figure 3.2.2 – Select the Drive button

Learners can then select whether to create, upload, share or find a shared document.

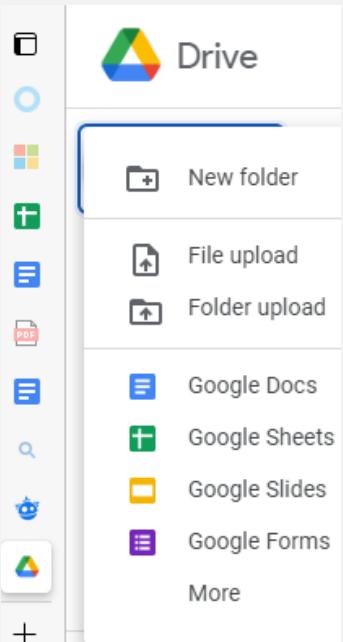


Figure 3.2.3 – The landing page of Google drive

### Activity 3.2.1: Create a file to share

1. Introduce advanced digital tools, which can be used to create content.
2. Ask learners to select one of the demonstrated apps to create specific content, either word based, or picture based.
3. Once all learners have created their files, ask them to save the file on their device.
4. Present the most common platforms to share content: Facebook, Instagram, YouTube.

### Activity 3.2.2: Share a file

1. Ask learners to open a specific digital tool, such as WeTransfer, and guide them step-by-step to locate the file they created and share it through WeTransfer with another group.
2. Ask learners to open a social media app, such as Instagram or Facebook, and ask them to share their created file as a post.

### Activity 3.2.3: Edit a shared file

1. Present simple steps on how to edit a shared file on Dropbox or Google Drive.
2. Ask learners to edit all files that were shared in the common folder of the Dropbox platform or Google Drive.

#### Knowledge and skill checklist



I can create and manage content with collaboration tools (e.g., electronic calendars, project management systems, online proofing, online spreadsheets).

# 3

## Engaging in citizenship through digital technologies



### Duration

4 hours



### Objectives

- Actively participate in online spaces and digital platforms (e.g., Twitter) and use several online services (e.g., public services, digital finance, online shopping).



### Content

- Basic concepts of digital citizenship
- Online training and e-learning
- Features of on-line services (intermediate user)
- Using the online space and digital platforms (advanced users)
- Practical activities



### PowerPoint slides

Use [this link](#) to access the PowerPoint slides deck for this unit.



### Lesson Plan Guide

- 1 Basic concepts of digital citizenship (90 minutes)
- 2 Online training and e-learning (90 minutes)
- 3 Features of online services (45 minutes)
- 4 Consolidation (15 minutes)
- 5 Knowledge and Skills Checklist

## Additional online resources



- Free-to-use typing tutors: KeyBlaze (<https://keyblaze-free-typing-tutor.en.softonic.com/>), Klavaro Touch Typing Tutor (<https://klavaro-touch-typing-tutor.en.softonic.com/>)
- Online learning services: <https://www.create-learn.us/blog/best-free-online-classes-for-kids/>
- <https://www.open.edu/openlearn/education-development/learning/childrens-university-free-online-courses>

## Teaching notes

### Basic concepts of digital citizenship

**Digital citizenship** refers to how users behave when they collaborate and engage online. A digital citizen is a person who has the knowledge and skills to effectively use digital technologies to communicate with others, participate in society, and create and consume content through digital tools.

A good digital citizen understands that all internet users leave digital footprints. They attempt to limit their footprint, or at least for it to be as positive as possible. Digital footprints or digital trails are records of what an individual searches, visits, creates, shares, posts, and installs through digital tools on a mobile device or on a computer station.



E-SAFETY



REPUTATION



RELATIONSHIPS



ETHICS

### E-Safety

This concept has become a major topic in the digital world and includes an individual's knowledge about internet privacy and how an individual's behaviour can contribute towards healthy interactions when using the internet.

Common dangers: **phishing**, **malware**, **cyberbullying**, accessing, and posting private information.

## Reputation



Society is moving along from the Age of Information to the Age of Reputation.



A person's digital reputation is how we are perceived online. It is shaped and figured by the way an individual presents themselves and the information other individuals post about them.



A person's digital reputation is more permanent than ever before because individuals place more trust in search results than any other source.

## Relationships

Digital relationships involve using technologies to interact.

These technologies can contribute both positively and negatively to relationships, specifically in personal relationships. However, it does depend on how individuals use technology. In some cases, technology can create problems, potentially stirring conflict and dissatisfaction in the relationship.



OR



Figure 3.3.1 – Digital relationships can be direct and interactive or very complex

## Ethics

Digital ethics refers to how people or organizations behave and conduct themselves while online. Ethical behaviour refers to behaviour that does not cause harm or offence.

Here are some examples of ethical behaviour.

- An individual or organization asks for permission to collect and store data about users.
- An individual or organization asks permission to sell any personal data that has been stored.
- An individual or organization understands that users have the right to request that data about them to be deleted and follows through on such requests.

## The rights and responsibilities of a digital citizen

A digital citizen is entitled to enjoy the rights of Privacy, Security, Assess and Inclusion and Freedom of expression. However, as a citizen with these rights the digital citizen has certain responsibilities, such as ethics and empathy, and other responsibilities to guarantee a safe and responsible digital environment for all digital citizens.

A good citizen	A good digital citizen
Advocates for equal human rights	Advocates for equal digital rights for all
Treats others with respect	Seeks to understand all perspectives
Does not steal or damage others' property	Respects digital privacy, intellectual property, and other rights of people online
Communicates clearly respectfully and with empathy	Communicates and acts with empathy for others' humanity via digital channels
Speaks honestly and does not repeat unsubstantiated rumours	Applies critical thinking to all online sources, including fake news
Protects self and others from harm	Is mindful of physical, emotional, and mental health while using digital tools.
Projects a positive self-image	Understands the permanence of the digital world and proactively manages their digital identity

### Activity 3.3.1: What is cyberbullying?

Learners use their devices and watch the video that focus on Digital Citizenship and Cyberbullying.

[https://www.youtube.com/watch?v=1dYgE4nv5i4&ab\\_channel=TheEdTechShowwithDanSpada](https://www.youtube.com/watch?v=1dYgE4nv5i4&ab_channel=TheEdTechShowwithDanSpada)

1. Discuss with the learners what have they understood so far by the term 'cyberbullying'.
2. Discuss the threats and risks of cyberbullying associated with your digital footprint.

### Online training and e-learning

To use a computer with the confidence they need to become truly computer literate, all learners need to be able to:

- use a **mouse** to interact with the graphic user interface (GUI) as well as open and work in applications
- find and use **control keys**, such as Alt, Ctrl and Esc, on a computer keyboard
- do **touch typing** so that they need not look at their hands when entering data but can concentrate on what they are typing on the screen.



Figure 3.3.2 – Online courses are often free

Introduce learner to free online learning courses in IT-related subjects, such as Computer Science, Coding, Mathematics, Science, Engineering and Art. Examples of institutions that offer these types of courses are:

- **Create and Learn** (<https://www.create-learn.us/>)
- **Khan Academy** (<https://www.khanacademy.org/>)
- **National Geographic Kids** (<https://kids.nationalgeographic.com/>)
- **iRobot Education** (<https://edu.irobot.com/>)
- **The Harvard University free online Introduction to Computer Science** would be suitable for 'tech-minded' learners at intermediate level.  
(<https://www.awin1.com/cread.php?awinmid=6798&awinaffid=787739&ued=https%3A%2F%2Fwww.edx.org%2Fcourse%2Fcs50s-introduction-to-computer-science>)
- **The Allison website** ([www.allison.com](http://www.allison.com)) has several online courses that learners at the intermediate level would find very useful. These include:
  - Global Digital Literacy 101
  - Communication Essentials
  - Basics of Computer Networking
  - Introduction to Mobile and Cloud Computing
- In addition to the Harvard University introduction to Computer Science listed above, the Online Course Report lists many online courses that would supplement a young adult's IT education. (<https://www.onlinecoursereport.com/free/computer-science/>)  
**Example:** *Computer Science: Programming with a Purpose*  
(<https://click.linksynergy.com/deeplink?id=XMuWjHIUEYs&mid=40328&murl=https%3A%2F%2Fwww.coursera.org%2Flearn%2Fcs-programming-java>)
- **IBM Skills Platform:** <https://skillsbuild.org/>
- **The Allison website** ([www.allison.com](http://www.allison.com)) has several online courses that learners at the Advanced level would benefit from. These include:
  - Computer Networking: Digital Network Security
  - Microsoft® Windows 11 Operating System
  - Microsoft® Office 365 Web Apps
- **ReedCourses** offers free online training in various career paths, which would interest many young adult learners. It also includes a free IT user skills course.  
(<https://www.reed.co.uk/courses/free/online/cpd/uganda?distance=40>)
- **The Learner Hub** helps young adults map out a career path that suits their abilities and interests. It provides tools to select subjects, find courses, compare courses and

discover a career path using those findings. It also gives detailed information on Ugandan learning institutions, such as Technical College Bushenyi, the Wildlife Training Institute and all the Ugandan universities. (<https://www.learnerhub.ug/>)

Online teaching and training services take many forms. Some advertise the services they offer at their premises, whereas others offer online training and e-learning.

### **International outreach and government resources**

- There are international outreach programmes, such as the UN Refugee Agency that supported continued access to education during the Covid-19 pandemic and beyond. (See page 4 of this downloadable article for information on their work in Uganda: <https://www.unhcr.org/5ea7eb134.pdf>)
- The UNICEF outreach programme in Uganda works with the Ugandan government in support of the rights of children. This includes educational needs, such as building schools, providing resources, and making schools accessible, affordable and safe. For more information, access this website: <https://www.unicef.org/uganda/what-we-do/education>
- The Kentalis International Foundation in Holland, which supports inclusive education for secondary learners in Uganda who are deaf. They do this by training teachers to work with deaf learners so that they can enroll in mainstream schools.
- The Kolibri e-Library for Uganda: [kolibri-demo.learningequality.org/en/auth/#/signin](http://kolibri-demo.learningequality.org/en/auth/#/signin)

Closer to home, the Ministry of Education and Sports website supplies information that older learners will find useful, such as where to get learner loans and grants, as well as job opportunities within the ministry.

### **Activity 3.3.2: Investigate e-Learning**

1. In pairs, learners discuss what career they would like to follow.
2. Pairs of learners access the Ugandan Learner Hub website (<https://www.studenthub.ug/>).
3. They search for and find a college or university that offers the course of study they want to follow.
4. They find out more about the institution they have chosen in terms of the duration of the course, tuition fees, price of books and residence. If not becoming a full-time learner, learners find out about extramural classes, duration of the course and distance from their place of residence.

5. Learners who wish to share what they learnt through their research should be encouraged to do so.

## Features of online services

### Online public services

The Ugandan government has an online presence that makes public services easy to find and access. There is a portal at the address



[ecitizen.go.ug](http://ecitizen.go.ug) that gives members of the public links to all public services nationwide.

Many government departments have their own website where they advertise jobs, help the public understand what the ministry can do for them, and give guidance on processes, such as government tenders and applying for national housing.

**Example:** The Ministry of Public Service advertises job vacancies online, which include application forms and help with the application process (<https://psc.go.ug/>).

At a local level, the Ministry of Local Government website provides information on district administration and inspection, urban administration and inspection, local councils development, local economic development and finance (<https://molg.go.ug/>).

### Online banking

Online banking allows clients to log onto their bank's website securely in order to:

- check the balances in their accounts, such as a savings account, a credit card, and a current account
- transfer funds from one account to another, for example from their current account to their savings account
- manage their banking profile
- add beneficiaries whom they can pay via electronic funds transfer (EFT)
- pay bills and fines

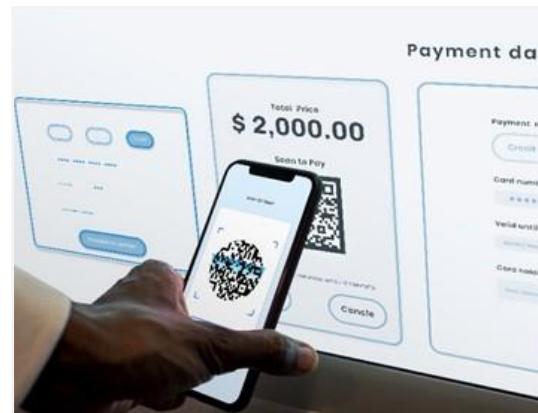


Figure 3.3.3 – Online banking security often uses QR codes to verify the user

- buy airtime, data and electricity
- send instant money to someone who doesn't have a bank account.

To keep their clients' money safe, banks build security measures into the login process as well as when clients make payments to someone who is not a registered beneficiary. These security measures include checking that a payee's bank account actually exists, using One-Time-Pins (OTPs) or Quick Response (QR) codes to secure the transfer of funds.

Like all online services, online banking can be done from anywhere, as long as the client has a safe and reliable internet connection.

## **Online shopping**

Online shopping can be fun or frustrating depending on how easy it is to navigate a site without getting lost in a range of products you don't want.

Good online shopping sites have categories of products, and their search engine accurately finds the product you are looking for. When it comes time to pay for a product, the online shop uses the most secure payment method between themselves and your bank.



*Figure 3.3.4 – Online shopping often requires fingerprint verification as a security measure*

### **Describe to learners how online shopping works from a user's point of view:**

1. Before going to an online store, the buyer decides on the products they want to buy. If they don't know which brands are affordable and good quality, they may do online research.
2. The buyer finds an online store that sells the products they want at reasonable prices.
3. The buyer registers for an account on the site using a secure username and password.
4. They then select the category the desired products belong to, and navigate to their product.



### Take note:

Some online stores offer a ‘**wish list**’ feature, which allows buyers to save a product that they may only want to buy later. This functions as a bookmark, so that the buyer can find the exact product again later.

5. Once the buyer is happy with the product, they ‘add to cart’, which is a virtual shopping cart. They can then choose to check out.
6. The buyer must now provide personal details to pay for the product and to have it delivered to their address. They enter their delivery address and the preferred method of payment details. This may include providing credit card details or logging in to a PayPal account.



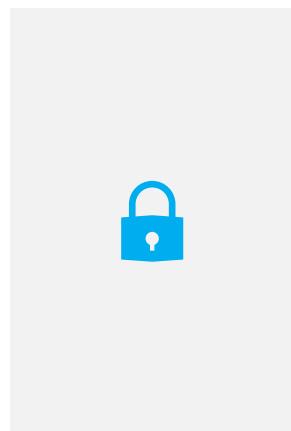
### Take note:

At this point, an **additional delivery fee** may be added to the customer’s bill.

7. The buyer completes the transaction.

## Guidelines for interacting with online services

While online shopping can be convenient, people need to shop with caution. Provide learners with these simple guidelines for safe and secure online shopping.



Ensure that the site is safe. In other words, check that there is a **padlock** next to the address line and that the address starts with **https:**.

*Figure 3.3.5 – Notice the padlock next to the web address, this shows that this is a secure site to visit*



Ensure that the payment methods on the site are authentic. You do this by researching the **SSL** (Secure Sockets Layer) certificate they use. For the technically minded learner, this site explains these certificates in more detail:  
<https://www.kaspersky.com/resource-center/definitions/what-is-a-ssl-certificate>



Well-known sites such as Amazon, Microsoft, and Google, are considered safe. However, it is important to be wary about little-known online services before registering on their sites. Encourage learners to find user reviews and comments about their services and professionalism. This will be a good indication of a site's trustworthiness.

### Activity 3.3.3: Buy a product from an online store

1. In this group activity, learners are told that they need to purchase a smartphone online.
2. They are to do online research to find out what brand and model has the basic features an entry-level user would need.
3. Learners then compare prices for the same brand and model at three online stores and make their choice.
4. Learners add their chosen product to the site's shopping cart and investigate the security of the payment method, noting the company that supplies the SSL certificate.
5. Learners exit the online store without making a purchase.
6. Learners do research on the SSL certificate the online store uses.
7. Hold a class discussion on the results of their research, as well as security issues that surround online banking and online shopping.

## Activity 3.3.4: Help a community use digital resources

Divide the class into three main groups. Each group will research one topic and recommend ways that they can become involved to improve on the situation in their community.

**Note:** Learners must use reliable sources of information, such as government websites, as well as university and college websites. Wikipedia and other informal sources are not reliable because the contributors are not necessarily professional researchers, and anyone can edit the articles.

### Topics

- Poverty
- Environmental degradation
- Youth Unemployment

## Using the online space and digital platforms

The main aim of a digital platform or space is to support communication, collaboration, and exchange of information and ideas between individuals, groups, businesses, professionals, and institutions. They can also be seen as marketplaces for businesses, educational spaces for learners and lecturers, social spaces for community exchanges, and many other spaces where people connect with one another for work, leisure, advice, and support.

In the world of work, there are project and team management platforms, as well as customer relationship management platforms.

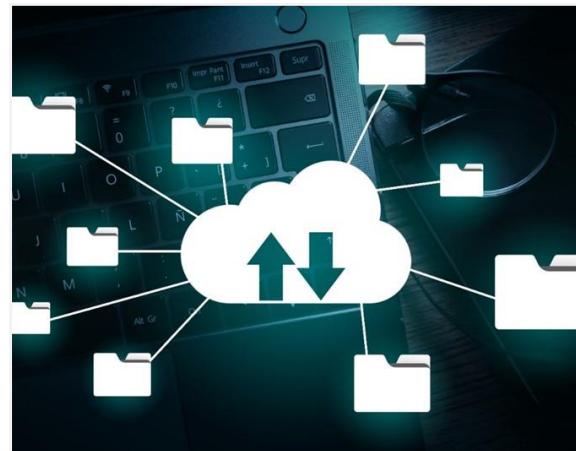


Figure 3.3.5 – Cloud computing is an example of digital platform use

## Examples of digital spaces

SourceForge is online platform where software developers can use tools to develop their open-source programs and projects. Many of the finished programs are free to use. There is a comment section where users can give a developer feedback on their program.



There are application development platforms, such as Visual Studio, OutSystems, and Android studio that have built-in compilers and debuggers for developing program code consistently and accurately.



Scratch is a free-to-use development platform that is commonly used to teach children the basics of programming without having to write actual code. It uses jigsaw-like blocks that are joined together to form lines of code. Children choose from various backgrounds and characters to create a story and 'code' it.



eLearning platforms are digital spaces that contain several online services that provide resources to learners and trainers/lecturers. These platforms form a central system that supports the learning process. They are also known as learning management systems. Two such platforms are Google® Classroom and Google® Scholar.



Google Classroom

Microsoft® Teams is a digital space that includes productivity tools, such as collaborative software and video/audio conferencing features.



Microsoft Teams

The Microsoft® Edge browser has a Collections feature that enables users to create visual collections of related information copied from websites, blogs, chats, forums, and the like.



Websites hosting artists' work for evaluation and feedback, such as DeviantArt, which features photography, fine art, videos and more.



Digital platforms for groups of professionals, such as engineers, accountants, publishers, doctors, lawyers, and so on.

## Activity 3.3.5: Find digital platforms

Learners research and discuss the following questions:

1. What is open-source software?
2. What digital and human components would be necessary to create an effective digital platform for a group of lawyers?
3. Someone you know is a project manager at an engineering company. She is an engineer and has good computer skills with applications, such as word processing, spreadsheet, and presentation software. Help her find a project management platform that is reliable, affordable, and relatively easy to use.

### Knowledge and skill checklist



I can actively participate in online spaces and digital platforms (e.g., Twitter) and use several online services (e.g., public services, digital finance, online shopping).

# 4

## Collaborating through digital technologies



	<b>Duration</b>	3 hours
	<b>Objectives</b>	<ul style="list-style-type: none"><li>• Use advanced features of communication tools (e.g., video conferencing, data sharing, application sharing).</li></ul>
	<b>Content</b>	<ul style="list-style-type: none"><li>• Main concepts of digital collaboration</li><li>• Security and privacy</li><li>• Practical activities</li></ul>
	<b>PowerPoint slides</b>	Use <a href="#">this link</a> to access the PowerPoint slides deck for this unit.
	<b>Lesson Plan Guide*</b>	<ol style="list-style-type: none"><li>1 Main concepts of digital collaboration (75 minutes)</li><li>2 Security and privacy (90 minutes)</li><li>3 Consolidation (15 minutes)</li><li>4 Knowledge and Skills Checklist</li></ol>

## Additional online resources



- 30 Of The Best Digital Collaboration Tools For Learners - <https://www.teachthought.com/technology/12-tech-tools-for-learner-to-learner-digital-collaboration/>
- Importance of Teamwork & Collaboration in a Digital World - <https://blog.bit.ai/importance-of-teamwork-and-collaboration/>
- Digital Collaboration Tool: <https://www.youtube.com/watch?v=TSz2CxnuGkQ>
- <https://ec.europa.eu/jrc/en/digcomp/digital-competence-framework>
- <https://zapier.com/blog/dropbox-vs-google-drive/>
- <https://support.google.com/a/users/answer/9302892?hl=en>
- <https://kissflow.com/project/best-project-management-tools/>

## Teaching notes

### Main concepts of digital collaboration

The aim of this unit is to introduce learners to what it means to collaborate through digital technologies, to know the most common tools to collaborate online, and to be able to identify the right tool for a particular need.

#### Definition of collaborating through digital technologies

Collaborating through digital technologies means: “to use digital tools and technologies for collaborative processes and for co-construction and co-creation of resources and knowledge”. Bring the learners’ attention to the words ‘co-construction’ and ‘co-creation’ – these imply that some degree of working together with others is necessary. This is collaboration, which is enhanced or improved by using digital technologies in specific ways.

#### The importance of collaboration through digital technologies

Currently we use digital technologies more often than before in our private and working lives to interact with others.

Exchanging documents, photos, information, or using the online environment to organize work or



Figure 3.4.1 – We can collaborate using different devices and platforms

study has become increasingly important, especially since the Covid 19 pandemic forced many people to live, work and study at home. There are numerous tools that allow for the exchanging of information in the online environment, in a quick and easy way.

Especially in a work environment, it has become essential to be able to interact with co-workers or other people online, exchange documents and information, and to be able to manage tasks, organize meetings and so on. Digital tools help people to manage work (not only remotely), speed up the exchange of information, and increase team productivity.

### **What are the most useful tools for collaborating in an online environment?**

There are many tools that help us to collaborate online with others. Share and recommend the following to the learners. You can also add your own recommendations if they are not listed here.

<b>Conferencing and online meeting tools</b>	<ul style="list-style-type: none"><li>• Skype</li><li>• GoToMeeting</li><li>• Zoom Meetings</li><li>• Google® Meet</li><li>• Microsoft® Teams</li></ul>	All these tools are Web Conferencing and Online Meeting Tools that allow people to organize meetings remotely or easily see each other when people are far away. You can also share your screen and show presentations and files to the other people in the call.
<b>Saving and sharing files</b>	<ul style="list-style-type: none"><li>• Google Drive</li><li>• Dropbox</li><li>• WeTransfer</li></ul>	With these apps, you can save files and store them in an online space, separate from your devices. This is useful because you can recover the file even if your devices have some problems, assuming you have archived them correctly and using the app. These tools enable people to work and collaborate with other people by having the possibility to share their space or documents with colleagues, friends, or family members.
<b>Schedules and calendars</b>	<ul style="list-style-type: none"><li>• Google Calendar</li><li>• Teamup</li></ul>	These are apps designed as an agenda. They look like a calendar that you can organize and personalize. The interface is very simple in both, and users can decide to display a single day, a week, or even longer time intervals. Users can mark appointments, schedules meeting, and even share these with other people.

<b>Project management</b>	<ul style="list-style-type: none"> <li>• Trello</li> <li>• Redbooth</li> <li>• Asana</li> </ul>	<p>These are project management tools that help people to keep track of projects and plan for deadlines and deliverables. Users can create lists, assign tasks to other members of their team who share the same space, set deadlines, and customize everything as efficiently as possible.</p>
<b>Testing opinion</b>	<ul style="list-style-type: none"> <li>• Google Form</li> </ul>	<p>This Google application allows users to create surveys free of charge and very easily. Users can customize surveys and use different ways of asking questions: multiple answers, open answers, satisfaction scores, and so on.</p>

### Activity 3.4.1: Let's try it!

This activity is practical and serves to put into practice the more theoretical knowledge acquired during the first part.

1. Learners will practise how to test opinions using Google Forms or Survey Monkey and set up a project using their choice of project management software.
2. At the end of the activity, the teacher will ask these questions:
  - a) Did you find the tools you tried useful?
  - b) Did you already know them?
  - c) Do you think they are useful in the work context and beyond?
  - d) What would you use them for?

## Security and privacy

Ensure that learners understand what security and privacy mean, how they differ, and how they relate to one another.

**Security** refers to the numerous processes that protect an individual's personal information from other people. This can be achieved through different ways:

- Virtual Private Networks (VPNs)
- Antivirus programs
- Strong Passwords

**Privacy** refers to a person's right to preserve and protect their identity and maintain a safe and protected space around one's integrity, physical presence, thoughts, feelings, and intimate activities.

In the digital world, privacy must be seen as a crucially important right for individuals as a society and as a collective. And the way to achieve privacy is to ensure that security is well-entrenched and fully applied.

### Activity 3.4.2: Digital privacy

1. Ask the learners how important their privacy is to them rating it from 1 to 5. Record the information on the blackboard.
2. Then, ask the learners who say privacy is not important and encourage the other learners to debate the topic.
3. Using examples from the debate, discuss with all learners what do they understand by the term Security and Privacy.
4. Provide the definition of Privacy and Security and provide examples used on digital tools.
5. At the end, the teacher will recap what has been discussed in the unit and explain the rights everyone has as a digital citizen and ask the security and privacy settings of their social media accounts on their computer stations.

### Knowledge and skill checklist



I can use advanced features of communication tools (e.g., video conferencing, data sharing, application sharing).

# 5

## Netiquette

**Duration**

3 hours

**Objectives**

- Adapt the most appropriate behavioural norms and knowledge while using digital technologies and interacting in digital environments.

**Content**

- What does netiquette mean?
- What to avoid when applying netiquette
- Practical activities

**PowerPoint slides**

Use [this link](#) to access the PowerPoint slides deck for this unit.

**Lesson Plan Guide**

1      What does netiquette mean? (75 minutes)

2      What to avoid when applying netiquette (90 minutes)

3      Consolidation (15 minutes)

4      Knowledge and Skills Checklist

## Additional online resources



- Netiquette meaning, definition & explanation - <https://www.youtube.com/watch?v=7-HopTAFUm0>
- Examples of bad netiquette - <https://www.cybersmile.org/what-we-do/advice-help/netiquette/examples-of-bad-netiquette>
- Examples of good netiquette - <https://www.cybersmile.org/advice-help/category/examples-of-good-netiquette>
- <https://ec.europa.eu/jrc/en/digcomp/digital-competence-framework>
- <https://www.cybersmile.org/what-we-do/advice-help/netiquette/examples-of-bad-netiquette>
- [https://slangit.com/meaning/keyboard\\_warrior](https://slangit.com/meaning/keyboard_warrior)

## Teaching notes

### What does ‘netiquette’ mean?

The aim of this unit is to encourage appropriate behaviour in the online environment. Explain to learners that respecting others and the places where we are is as important in the physical environment as it is in the online one. This is very important, especially because people tend to behave differently when they are online; some people may become more aggressive, or they say things that they would not say if they were not online. There are many examples of bad online behaviour: cyberbullying and body-shaming are just a few examples of behaviours that we witness daily on the web, not to mention racism and hate towards minorities, in general. It is important that you emphasize how critical it is to respect others – both online and offline!

### Definition of netiquette

The definition of netiquette is: “To be aware of behavioural norms and know-how while using digital technologies and interacting in digital environments. To adapt communication strategies to the specific audience and to be aware of cultural and generational diversity in digital environments”. In other words, netiquette is the online equivalent of etiquette. It is a way of behaving that respects and upholds the dignity and humanity of the people you are interacting with online. Explain it to learners by using the example of table manners (or any other

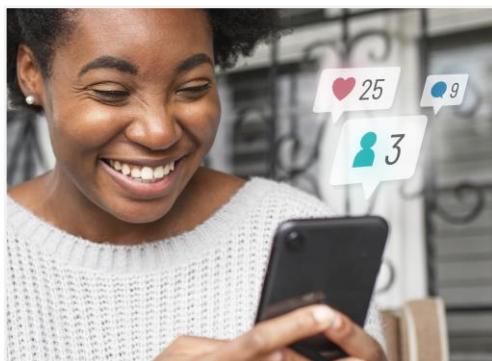


Figure 3.5.1 – Respectful behaviour helps build online relationships

social setting where certain behaviour is expected). Discuss the reasons that there is a certain standard of behaviour in that scenario, and even talk through some of them. Then, apply that to online behaviour, and explain that netiquette helps people to feel safer and more comfortable when using the internet.

## What to avoid when applying netiquette

In general, we can consider bad examples of netiquette all those online behaviours that are disrespectful towards others. These attitudes can differ.

<b>Disrespecting intellectual property</b>	<p>Sharing content, photos, materials of others without citing the source is considered wrong and an example of bad netiquette. This is in addition to this simply being illegal, which we will not discuss here.</p> <p>Encourage learners to always check where they are getting content from. They should check whether it is open source, or if there are certain restrictions imposed on sharing it without acknowledgement or compensation.</p>
<b>Not respecting other people's opinions</b>	<p>Not respecting other people's opinions and therefore adopting hostile and insulting attitudes towards these people is an example of bad netiquette. It is important to always try to establish a dialogue with others without using words or tones that are inappropriate or that may cause offense.</p>
<b>Expressing ourselves in a disrespectful way</b>	<p>When writing a message, an email or a post, learners must be aware of how they write and how they express themselves and their ideas. Remind learners that people on the other side do not see their expressions or hear tone of voice. This can lead to misunderstandings.</p> <p>Using unclear or hostile language, using capital letters (which implies shouting), not signing off on a message or email, and not contextualizing the content of your message are just a few examples of bad netiquette.</p> <p>Remind learners also to use formal or informal language depending on the person they are dealing with, whether they are a friend, an acquaintance, a colleague, or a stranger. For example, a message or email to you (the facilitator) would differ in tone and language to a message or email they might send to a friend or sibling.</p>

### **Disrespecting the privacy of others**

Many people share photographs or private information about themselves on social networks. This is their choice. However, it is important to emphasize the importance of respecting other people's privacy. It is considered bad netiquette to share people's sensitive data (or photographs, videos, other information) without the other person's permission.

### **Activity 3.5.1: Keyboard warrior**

Provide learners with the Case Study. The Case Study includes Facebook posts.

#### **Case study**

A girl (Lily) posts on her Facebook profile a photo after receiving her first dose of the vaccine against Covid 19:





**Olly: Maybe the vaccine will make your brain grow too!**

R: Emily: People who don't want to be vaccinated are very intelligent... oo

R: Olly: MY BODY, MY CHOICE

R: Emily: Your choice not to take the vaccine is selfish! If everyone decided not to vaccinate, the situation would still be terrible.

R: Steven: People who don't vaccinate deserve to get sick



**Billy: I think everyone is free to choose for themselves 😊**

R: Emily: Yes, but they should not attack people who have decided to be vaccinated!

R: Olly: didn't attack anyone, I just expressed MY OPINION

R: Emily: It is impossible to talk to a DONKEY!

R: Olly: Fxxxk off Emily

R: Billy: Please, don't think we should argue about this. There are many people who have different opinions.

Let's try to respect each other!

R: Thank you Billy. agree with you. I am very happy

1. The teacher invites learners to reflect on the text, then asks these questions:
  - a) What do you think is bad netiquette in these comments?
  - b) How would you have reacted to Olly's comment?
  - c) Do you think Emily answered to Billy properly?
  - d) Who do you think acted appropriately in these comments?
  - e) Can you find bad and good examples of netiquette in the text?
  - f) Why do you think it is easier to be mean online than in reality?
  - g) Have you ever been a keyboard warrior?
  - h) What do you do when you recognize that someone is using mean behaviour online?

- After answering the teacher's questions, the learners should try to rewrite the text transforming the behaviours from negative to positive.

### Activity 3.5.2: The Netiquette Manifesto

Divide the learners into groups and ask them to write a "Netiquette manifesto", i.e., all the positive behaviours they think should be kept online.

- They must present the manifesto in the form of a digital presentation.

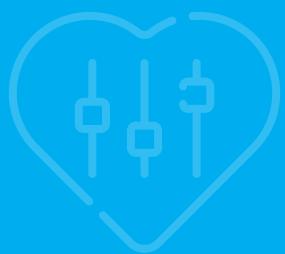
#### Knowledge and skill checklist

I can adapt the most appropriate behavioural norms and knowledge while using digital technologies and interacting in digital environments.



# 6

## Digital emotional intelligence



	<b>Duration</b>	3 hours
	<b>Objectives</b>	<ul style="list-style-type: none"><li>Identify conflicts to mitigate the psychosocial impact.</li></ul>
	<b>Content</b>	<ul style="list-style-type: none"><li>What is digital emotional intelligence?</li><li>Communication styles</li><li>Interpersonal digital interaction</li><li>Practical activities</li></ul>
	<b>PowerPoint slides</b>	Use <a href="#">this link</a> to access the PowerPoint slides deck for this unit.
	<b>Lesson Plan Guide</b>	<ol style="list-style-type: none"><li>1 What is digital emotional intelligence? (45 minutes)</li><li>2 Communication styles (45 minutes)</li><li>3 Interpersonal digital interaction (75 minutes)</li><li>4 Consolidation (15 minutes)</li><li>5 Knowledge and Skills Checklist</li></ol>

## Additional online resources



- DQ101: <https://www.sait.ca/news/2022/01/dq101-digital-emotional-intelligence>
- Role of DQ in digital transformation: <https://www.cloudcredential.org/blog/the-role-of-emotional-intelligence-in-digital-transformation/>
- The digital transformation of emotional intelligence: <https://www.youtube.com/watch?v=cgAZvCIRI1Q>

## Teaching notes

### What is digital emotional intelligence?

Help learners to understand that we are emotional beings and how we feel affects the way that we navigate the digital world. Participating on social media and other digital platforms brings us together, but if we don't communicate well, it can also divide us and do harm.

When we are with people, it is easy to judge their mood and their intentions by watching body language and listening for their tone of voice. When we communicate digitally, we don't have this information; we can only interpret what we see on the screen of our device.

Emphasize that digital actions have real-world consequences.

**Example:** Ask learners to think of how a person feels when they receive unkind or hateful messages and the negative impact this can have on their life. Now, ask learners to think about how receiving positive messages makes them feel – most people will say that it can easily make you feel good about yourself.

We need to develop awareness and skills that help us navigate the digital world so that we can manage the positive and negative impacts of interacting digitally. These skills are our digital emotional intelligence.

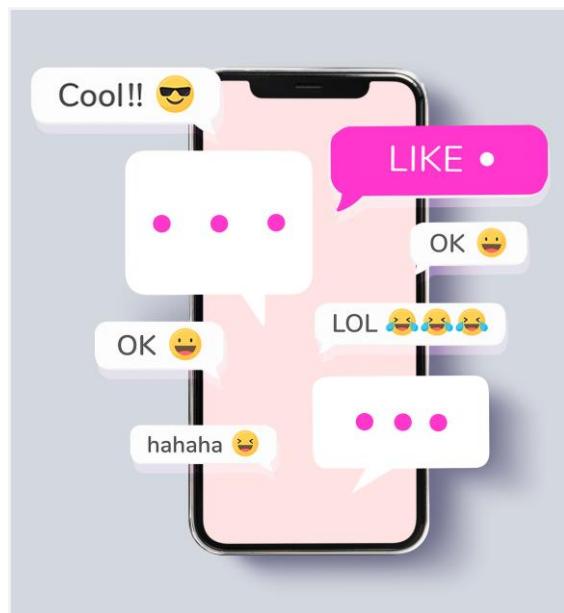


Figure 3.6.1 – It is important to have emotional intelligence when engaging online

## Physical versus digital emotion indicators and tools

Learners need to learn how to interpret or read digital emotions. This table compares digital emotion indicators to physical ones.

Digital	Physical
likes/shares/ratings	eye contact
emotions/emojis	smile
emotions/emojis	facial expression
device (mobile phone, tv, laptop, tablet, social media platform or channel)	body language
views	touch
CAPS/stickers/abbreviations	tone of voice
language/image used	language used
silence/no reply	silence
questions	questions
journey (geolocation, website, social media, apps visited) device (mobile phone, tv, laptop, tablet) time (hour, day, week, month, season, year)	journey (where/how/when)
pattern disruption (unusual behaviour)	pattern disruption (unusual behaviour)

## Digital emotions are more contagious

Digital emotions are more ‘contagious’ than physical emotion because of the speed of digital communications. Online communities are bigger and broader, so messages travel farther and faster across generations, time, space, and culture than they do in the purely physical world. Explain to learners that updating their Facebook status, and liking or posting an Instagram photo, can prompt an emotional response in networks of people thousands of kilometres away.

## Digital Emotion Communication Tools

Here are some emojis used to communicate digitally.

	Emoticons and emojis represent facial expressions and feelings.
	Hand signals or actions, such as digital gestures (poking, nudging by clicking), can represent intimate interpersonal/emotional actions face-to-face.
	Labels that evaluate, liking, loving, disliking, on sites such as Facebook and Instagram show approval or disapproval.
	Text, the number of words used, the use of punctuation, as well as things like a delay in responding, all carry meaning.
	<p>Strong language or using CAPS refers to stating how you are feeling.</p> <p>We don't do this very much in day-to-day communication, but we seem to do it more digitally to compensate for a lack of non-verbal cues, such as body language, to clarify emotional meaning and to strengthen feelings.</p>
	Voice and video tools like GIFS convey emotions that replace body language.
	Emojis and GIFS can send virtual emotions, like hearts, to replace in-person emotional communication.

## Communication styles

Remind learners that the tone we use when communicating can affect the way others respond to us. This is true of face-to-face communication, as well as digital communication.

### What type of communicator are you?

- **Passive:** Passive communicators often act indifferent and fail to express their feelings or needs, which can allow others to take advantage of them.  
*"It really doesn't matter that much."*
- **Aggressive:** Aggressive communicators often express themselves in a "loud" way and tend to issue commands, ask questions in a rude manner, and fail to listen to others.  
*"I'm right and you're wrong."*
- **Passive-aggressive:** These communicators most likely communicate with body language and appear to be aware of their needs, but at times they struggle to voice them.  
*"That's fine with me, but don't be surprised if someone else gets mad."*
- **Assertive:** Assertive communicators can express their own needs, desires, ideas, and feelings while also considering the needs of others.  
*"I respect the rights of others."*

## Interpersonal digital interaction

By now, learners should be understanding netiquette in a broad sense. Remind them that respecting others trying to make a good impression when communicating on the internet include many of the aspects of netiquette. Give learners these basic guidelines for interacting positively online:

- Whatever you write or post online, whether in a WhatsApp chat, email or on social media, can be found by others. This includes messages and photographs that have been deleted, and even websites you've visited. (Here, remind learners about the concept of their 'digital footprint'.)
- Being consistently polite shows respect. And respect is something you get when you give it.
- Being grateful for compliments, help or advice by saying a simple "Thank you" shows respect. The same goes for saying "Please" when you ask for help or advice.



Figure 3.6.2 – Your digital footprint is larger than you

- Following this rule shows respect for others, not only the person you're communicating with: If you have nothing good to say about a person, then say nothing. In other words, avoid gossip!
- Instead of using long words and complicated sentences, write clear, simple sentences that are easy for anyone to read and understand. Encourage learners to make sure that their writing is so clear that no one can misunderstand them.
- Don't swear, gossip, criticize, judge or condemn anyone online. Not only is this rude, but it is also traceable as part of a person's digital footprint.
- Encourage learners to only use emoticons when they know exactly what they mean and only when they know a person well. Emoticons can be misleading.

**Example:** Show the learners this example of frog emoticons. Tell them that, if they don't know what they are using the emoticon for, or if they use one randomly, they could risk being misunderstood or offending someone without realizing it. For example, an emoticon might tell a person you think they are a frog, that they are green with jealousy, that you are green with jealousy, or that they should hop off somewhere!



Figure 3.6.3 – Simple netiquette rules allow open communication

When people are not face-to-face in the same physical space, there may be misunderstandings, prejudices, and a lack of awareness and understanding of who others are. Conflicts can arise from a response to a post or message simply because the recipient took something said literally (at face value) or personally.

It is important that learners follow a simple rule in all their online dealings, which is: Until they know more about a person, they should not assume that they know how to communicate with them. This is not a one-size-fits-all world. There are many different races, cultures, religions, histories, and backgrounds – people's communication styles and manners will be impacted by all of these.

Communicating comfortably with people who have different backgrounds, appearances, and opinions on the internet means accepting that everyone is different. For example, if someone's profile picture shows that they have a tattoo, assuming that the person is a gangster would do that person a disservice. The tattoo might be religious or something they find significant or beautiful. That is their right. Acceptance of others is the only way to communicate with them easily and well.

That is not to say that learners need to stay in a place or continue communicating with someone that makes them feel uncomfortable. The internet, and most especially social media, are places where people with similar interests can get together and share their thoughts and feelings. However, this presents bullies and 'trolls' with a perfect opportunity to make others feel bad about themselves. It is also a perfect place to stalk someone or take



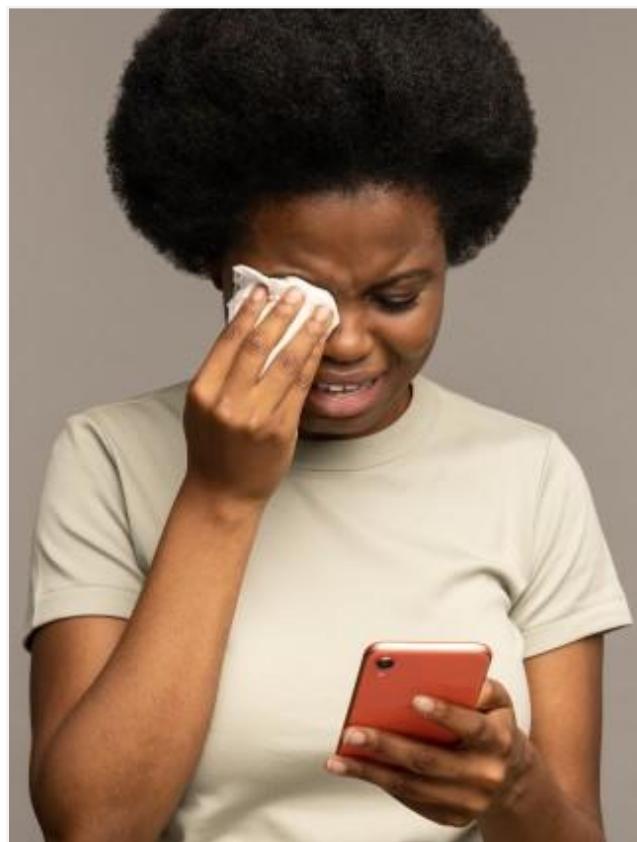
*Figure 3.6.4 – We communicate with people from many cultures*

revenge on them for some perceived injustice. For example, a person may be so angry or heartbroken that they decide to post negative information or private images, etc. of the person that upset them.

In many situations, it is necessary to report the offender to the social media network (there are multiple ways to do this on the various platforms) and to then block them. Blocking someone from contacting you means that they are unable to reach you via that platform.

Remind learners that their online identity is not their whole identity. If they are feeling traumatized by cyberbullying or trolling, they need to understand that this is not the whole picture of who they are as people. Likewise, remind learners that actively bullying or trolling people is a horrible thing to do – remind them to always think about the people on the other side of the screen. These are people with lives, families, dreams, and aspirations. Tell them to carefully consider before they post something: they should not say anything online that they would not say to a person's face in reality!

Chat rooms and forums are usually monitored by moderators who look out for conflicts and shut them down. These conflicts can be in various contexts, such as political, religious, gender, race, sexual orientation, abuse of any kind, and negative activism.



*Figure 3.6.5 – Cyberbullying can be traumatizing for the victim*

## Activity 3.6.1: Mitigate the psychosocial impact of cyberbullying

1. Ask learners to do online research to find out:
  - a) what a psychosocial impact is
  - b) how to identify conflicts
  - c) effective ways to resolve conflict.
2. Present learners with a conflict situation that commonly occurs in their social circle and is easy to identify as a conflict.
3. Hold a class discussion on the best and most respectful way to resolve the conflict.

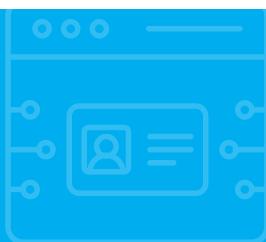
### Knowledge and skill checklist



I can identify conflicts to mitigate the psychosocial impact.

# 7

## Managing digital identity



### Duration

3 hours



### Objectives

- Compare multiple digital identities.
- Explain the more appropriate ways to protect one's own reputation.
- Change the data produced through several tools, environments, and services.



### Content

- Definitions and protecting identity
- Practical activities



### PowerPoint slides

Use [this link](#) to access the PowerPoint slides deck for this unit.



### Lesson Plan Guide\*

- 1 Definitions and protecting identity (45 minutes)
- 2 Practical activities (120 minutes)
- 3 Consolidation (15 minutes)
- 4 Knowledge and Skills Checklist

## Additional online resources

- Passwords: How to protect your digital assets -  
<https://www.funeralwise.com/learn/digitallegacy/how-to-manage-passwords/>
- The Digital Identity: What It Is + Why It's Valuable -  
<https://learn.g2.com/digital-identity>
- What is Digital Identity and How Does it Work -  
<https://www.techfunnel.com/information-technology/what-is-digital-identity/>
- <https://ec.europa.eu/jrc/en/digcomp/digital-competence-framework>
- <https://www.zdnet.com/article/identity-management-101-how-digital-identity-works/>
- <https://www.techrepublic.com/article/how-to-protect-yourself-and-your-organization-against-digital-identity-fraud/>
- <https://www.imperva.com/learn/application-security/phishing-attack-scam/#:~:text=Phishing%20is%20a%20type%20of,instant%20message%2C%20or%20text%20message>



## Teaching notes

### Definitions and protecting identity

This unit aims to make learners aware of the information they leave online. Explain that digital identity is something that relates to who they are online and how they identify themselves online. For example, when a person uses a username and password to authenticate themselves on a website, they are using their digital identity.

More and more services require us to log in from devices, both private and public. E-commerce, banking, health services, tax services are just a few examples. Explain to learners that every time they register their digital identity or do certain actions online, their private data are taken and recorded. Explain that this happens often without the user even realizing it (i.e., it may not be obvious that it is happening). Therefore, they need to be aware and learn how to best manage their digital identity online.

### Definition of managing digital identity

Managing digital identity means: "To create and manage one or multiple digital identities, to be able to protect one's own reputation, to deal with the data that one produces through different digital tools, environments and services". In other words, being able to control how you present yourself online from choosing an appropriate username to the things that you share when using that username.

## Why do we have to worry about our data?

Remind learners that every time they consent to a privacy policy to access a site, download an app, answer surveys on social media, or enter a site using our information, they are generating data. This data is relevant to many companies because it reveals consumer behaviour – in other words, the things that people like and click on, etc.

Emphasize, however, that it is not just that they are leaving traces of what they like and do not like as consumers, they also leave very important private information that can be very damaging to us if used maliciously by others. For example, their bank account details or social accounts with photographs and personal information.



Figure 3.7.1 – Your digital identity can be stolen by hackers

## Identity theft

Explain that cybercriminals are people who specialize in online theft by hacking into people's digital identity and stealing their personal or financial data. Cybercriminals hack into systems or use tricks to steal identities, and then money, information, and more.

You can give the example of some influencers (very famous people on social media) who have had their identity stolen by hackers, who lock them out of their own social media accounts and then demand a ransom to give them back their online identity.

## How to defend ourselves against cybercriminals

Explain that there are ways that learners can protect themselves and their identities. Firstly, encourage them to be aware. Knowing how cybercriminals operate is key to preventing being targeted.

Another piece of advice for learners is that they should always exercise caution when they are online. For example, they should never open suspicious e-mails or messages. Often, cybercriminals pretend to be organizations that the victim recognizes (e.g., a bank). It is, therefore, very important that learners can recognize whether the information they receive is true.

Tell them to ask themselves these questions:

- Is it written correctly in your language?
- Are there any strange signs?
- Does it talk about operations of which you are not aware?

Encourage learners to trust their instincts. If they have the slightest suspicion that something is not right, they should not click on, or download anything. Learners may ask what they should do if they are not sure whether something is right or not. An example is a message from their bank. In this case, they could call their bank branch and ask for an explanation or to confirm that the message is indeed from them.

Explain that the method of sending an email from a ‘familiar’ source with a link that must be clicked, is called a phishing attack.



Figure 3.7.2 – There are ways of protecting your digital identity

## Ways to protect our digital identity

Give learners these tips for protecting themselves online:

- **Use two-factor authentication:** Two-factor authentication means that verifying a user's identity is not only done through one step (e.g., password), but also through additional steps, such as entering a code or authorization via the telephone.
- **Change and diversify passwords:** Encourage learners to not use the same passwords for all their accounts, and to try to change them often.
- **Avoid sharing sensitive information:** Learners must be very careful about the kind of data they share online. An example of data that is considered too sensitive to share online is a person's home address (be careful of geolocation on photos you post on social networks!).

### Activity 3.7.1: Protecting multiple digital identities

**Note:** For this activity, learners must be able to do research online.

Present learners with the following scenario for discussion in small groups:

1. You have been asked to teach a group of pre-teen learners how to protect their reputations online. **Note:** They have very basic computer skills and no online presence.
2. What would you tell them about online identities?
3. How would you explain what a strong password is and why you recommend using them?
4. How would you explain what online reputation is and why it needs protecting?
5. List the types of information and content that could damage their reputation online.
6. Formulate five sound principles they can follow to protect their online reputation.

## Activity 3.7.2: Research data privacy

**Note:** This activity addresses the issue of data privacy and protection. Learners will need to research this information online.

1. Private data can be hidden and protected online through various means. Do research and make short notes on the following:
  - a) Browsing incognito
  - b) Using a virtual private network
  - c) Using various search engines
  - d) Deleting browser history
  - e) Data encryption
  - f) Disabling file and media sharing
  - g) Securing devices using firewalls and anti-virus software.
2. Discuss your findings in pairs.

### Knowledge and skill checklist



I can discriminate multiple digital identities.

I can explain the more appropriate ways to protect one's own reputation.

I can change the data produced through several tools, environments, and services.

## Module 3 assessment guidance

Assist learners to set up where needed. Ensure that they know what they need to do and what is expected of them.



### Materials needed

- Laptop or tablet with an internet connection
- Paper and pen.

Before the assessments begin, learners should switch on their devices and log in.

**Set up an online meeting** and invite all class members.

#### **Unit 1: Interacting through digital technologies**

1. Learners demonstrate that they can change their profile picture on one of their chat accounts.
2. Learners write three microblogs. Assess these.

#### **Unit 2: Sharing through citizenship through digital technologies**

1. Divide the group into pairs. Explain that the learners will work independently, but they will share their work with their partners.
2. Learners create a folder on their online storage drive. They share this with their partner.
3. Learners create a blank document in the folder.
4. Learners write five sentences about their favourite social media platform in their document.
5. Learners go to their partner's document and change the font type and font size.

<b>Unit 3: Engaging in citizenship through digital technologies</b>	<ol style="list-style-type: none"> <li>1. Give learners this URL and ask them to navigate to the webpage: <a href="https://cookstoveproject.org/">https://cookstoveproject.org/</a>.</li> <li>2. Give learners some time to read about the dangers of open fire cooking.</li> <li>3. Learners write or type a list of three reliable websites where they can buy safe cookstoves in Uganda.</li> <li>4. Learners open one of their social media platforms. They demonstrate that they can search for posts about safe cookstoves.</li> <li>5. Then, they like, comment, and share the post that is most relevant.</li> </ol>
<b>Unit 4: Collaborating through digital technologies</b>	<ol style="list-style-type: none"> <li>1. Learners set up a meeting in their calendars.</li> <li>2. They invite you and one other person (e.g., their partner, or another classmate).</li> <li>3. Send a meeting invite to each learner. The meeting invites can be scheduled in five-minute slots. Each learner must demonstrate that they can accept the meeting invite and then join the meeting at the allotted time.</li> </ol>
<b>Unit 5: Netiquette</b>	<ol style="list-style-type: none"> <li>1. Send this text to learners via email or private message, or you can write it on the board. Tell them that it is a Facebook post: "I HATE this job. Everyone is so STUPID. My boss doesn't do any work. What a JOKE!!!! Maybe I'll just grab some money from the cash register next week."</li> <li>2. Learners must re-write this post to show good netiquette. Assess their new text.</li> </ol>
<b>Unit 6: Digital emotional intelligence</b>	<ol style="list-style-type: none"> <li>1. Read this scenario to the learners: "You have received a message on Instagram that is threatening and unkind to you."</li> <li>2. Ask learners to consider the scenario and to write down how they can make sure they continue to feel safe on the internet.</li> </ol>

**Unit 7: Managing digital identity**

1. Learners must conduct research on how to access their data on Facebook.
2. Once they know how, they should access their data.
3. Learners write down a list of content that could harm their reputation. (Note: This is not linked to the previous question and the list should be generic.) Assess their lists.
4. Privately, they then review their own data and remove anything that could harm their reputation.
5. They demonstrate that they can clear the computer or device's browser history.



## Module 4

### Content

This module focuses on content creation for the digitally competent citizen. We aim to create a shared understanding of what it means to be a digitally competent citizen, as well as developing and testing materials, which create a clear pathway to upskilling learners in the main relevant digital areas.

This module will outline how to create and edit digital content to improve and integrate information into an existing body of materials, while also highlighting the important issues around copyrighting and licensing in the digital sphere. It will also briefly touch on the programming aspects of how to utilize computer systems.

Please note that practical activities described might require the support of an experienced facilitator. Although the information presented in this guide is written in a way that is easy to understand, some actions, adjacent to the information presented, may also require the support of experienced people.

This module includes the following units:

<b>Unit 1</b>	Developing digital content
<b>Unit 2</b>	Integrating and editing digital content
<b>Unit 3</b>	Copyright and licenses
<b>Unit 4</b>	Programming

## Learning outcomes

Learners should be able to:



- Create and edit digital content in different formats, to express oneself through digital means.
- Modify, refine, improve, and integrate information and content into an existing body of knowledge to create new, original, and relevant content and knowledge.
- Understand how copyright and licenses apply to data, digital information, and content.
- Plan and develop a sequence of understandable instructions for a computing system to solve a given problem or perform a specific task.

## Resources



- Training manual
- Computer with internet access
- Flipchart papers
- Markers

## Suggested teaching methods



The following teaching methods are suggested:

- Presentation by facilitator
- Group exercise / Discussion / Debate
- Working in pairs / Small groups
- Presentation by participants
- Media selection



## New terminology to explain

These are terms that learners may not be familiar with. They should be explained within the context that they may be used.

<b>copyright</b>	copyright ownership gives the creator (owner) the exclusive right to use the work.
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<b>copyright</b>	the exclusive and assignable legal right, given to the originator for a fixed number of years, to print, publish, perform, film, or record literary, artistic, or musical material
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<b>default setting</b>	a setting that is automatically given to a software application, computer program, or device
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<b>domain hosting</b>	provides unique domain names for websites
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<b>domain name server (DNS)</b>	translates IP addresses into everyday language
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<b>plagiarism</b>	using someone else's work without giving them proper credit
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<b>search engine optimization (SEO)</b>	the process of improving your site to increase its visibility when people search for products or services related to your business
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<b>vlog</b>	a combination of the words 'blog' and 'video'
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<b>web hosting</b>	a service that provides content storage, such as a website with all its text and other content on a server in the cloud
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# 1

## Developing digital content



	<b>Duration</b>	6 hours																
	<b>Objectives</b>	<ul style="list-style-type: none"><li>Produce or modify complex, multimedia content in different formats, using a variety of digital platforms, tools and environments.</li><li>Create a website using a programming language, up-to-date web application frameworks.</li></ul>																
	<b>Content</b>	<ul style="list-style-type: none"><li>Developing digital content</li><li>Using installed applications to create digital content</li><li>File formats for digital content</li><li>Web browser support</li><li>Common types of online digital content</li><li>Create a website</li></ul>																
	<b>PowerPoint slides</b>	Use <a href="#">this link</a> to access the PowerPoint slides deck.																
	<b>Lesson Plan Guide</b>	<table><tr><td>1</td><td>Developing digital content (45 minutes)</td></tr><tr><td>2</td><td>Using installed applications to create digital content (45 minutes)</td></tr><tr><td>3</td><td>File formats for digital content (45 minutes)</td></tr><tr><td>4</td><td>Web browser support (45 minutes)</td></tr><tr><td>5</td><td>Common types of online digital content (30 minutes)</td></tr><tr><td>6</td><td>Create a website (135 minutes)</td></tr><tr><td>7</td><td>Consolidation (15 minutes)</td></tr><tr><td>8</td><td>Knowledge and Skills Checklist</td></tr></table>	1	Developing digital content (45 minutes)	2	Using installed applications to create digital content (45 minutes)	3	File formats for digital content (45 minutes)	4	Web browser support (45 minutes)	5	Common types of online digital content (30 minutes)	6	Create a website (135 minutes)	7	Consolidation (15 minutes)	8	Knowledge and Skills Checklist
1	Developing digital content (45 minutes)																	
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5	Common types of online digital content (30 minutes)																	
6	Create a website (135 minutes)																	
7	Consolidation (15 minutes)																	
8	Knowledge and Skills Checklist																	

## Additional online resources

- How to start a blog: [https://www.bluehost.com/how-to-start-a-blog?irpid=101&clickid=P61C101S570N0B5578A2D4499E0000V105&gclid=CjwKCAjwkaSaBhA4EiwALBqQaMjW1r8iWI9DzPWzC7MHz-j\\_Oq05jf2avhd5hvUQUbGOHeALLnhB3BoC36UQAvD\\_BwE&gclid=src=aw.ds](https://www.bluehost.com/how-to-start-a-blog?irpid=101&clickid=P61C101S570N0B5578A2D4499E0000V105&gclid=CjwKCAjwkaSaBhA4EiwALBqQaMjW1r8iWI9DzPWzC7MHz-j_Oq05jf2avhd5hvUQUbGOHeALLnhB3BoC36UQAvD_BwE&gclid=src=aw.ds)
- <https://wordpress.com/>
- How to write long form content: [https://webflow.com/blog/the-modern-web-design-process-putting-content-first?utm\\_source=google&utm\\_medium=search&utm\\_campaign=Google-Search-Dynamic-Search-Ads-Core-BBSS&utm\\_term=dsa-45211625058\\_548501651919\\_ss\\_paid-bb&qclid=CjwKCAjwkaSaBhA4EiwALBqQaIqhkWAfHPFUf4Iyzp0GdRufRiJyr5RRdWtBOm8izhZOC2GCZxU12BoC894QAvD\\_BwE](https://webflow.com/blog/the-modern-web-design-process-putting-content-first?utm_source=google&utm_medium=search&utm_campaign=Google-Search-Dynamic-Search-Ads-Core-BBSS&utm_term=dsa-45211625058_548501651919_ss_paid-bb&qclid=CjwKCAjwkaSaBhA4EiwALBqQaIqhkWAfHPFUf4Iyzp0GdRufRiJyr5RRdWtBOm8izhZOC2GCZxU12BoC894QAvD_BwE)
- How to create an infographic: <https://piktochart.com/blog/how-to-create-an-infographic-and-other-visual-projects-in-5-minutes/>
- <https://www.visme.co/>
- <https://venngage.com/>
- How to create a video: [https://vimeo.com/create/video-maker-online?vcid=42496&utm\\_medium=cpc&utm\\_source=google&utm\\_campaign=seat\\_plan&utm\\_term=nonbrand&qclid=CjwKCAjwkaSaBhA4EiwALBqQaCsJz8fozq1M5XGCa90r0LAXKCrYia9oyGFz1a-oOPZNuHZEleYIFxoCecQQAvD\\_BwE&gclid=src=aw.ds](https://vimeo.com/create/video-maker-online?vcid=42496&utm_medium=cpc&utm_source=google&utm_campaign=seat_plan&utm_term=nonbrand&qclid=CjwKCAjwkaSaBhA4EiwALBqQaCsJz8fozq1M5XGCa90r0LAXKCrYia9oyGFz1a-oOPZNuHZEleYIFxoCecQQAvD_BwE&gclid=src=aw.ds)
- How to create a podcast: [https://restream.io/blog/best-podcast-recording-and-editing-software/?from=ppc\\_blogtest&utm\\_source=google&utm\\_medium=cpc&utm\\_campaign=Search / How to / Tier 1-7\\_v1\\_\(AL\)&utm\\_campaignid=18292822955&utm\\_adgroup=Podcast\\_software:\\_how\\_to\\_choose\\_and\\_which\\_are\\_the\\_best&utm\\_adgroupid=146763447771&utm\\_content=620791896423&utm\\_term=how%20to%20create%20a%20podcast&utm\\_device=c&utm\\_adposition=&from=cpc-google&qclid=CjwKCAjwkaSaBhA4EiwALBqQaIDsaNssSeO2c90IT9muNVTfEyOWH3N16ieRusOrNe-rELBDG5OsIBoCRJkQAvD\\_BwE](https://restream.io/blog/best-podcast-recording-and-editing-software/?from=ppc_blogtest&utm_source=google&utm_medium=cpc&utm_campaign=Search / How to / Tier 1-7_v1_(AL)&utm_campaignid=18292822955&utm_adgroup=Podcast_software:_how_to_choose_and_which_are_the_best&utm_adgroupid=146763447771&utm_content=620791896423&utm_term=how%20to%20create%20a%20podcast&utm_device=c&utm_adposition=&from=cpc-google&qclid=CjwKCAjwkaSaBhA4EiwALBqQaIDsaNssSeO2c90IT9muNVTfEyOWH3N16ieRusOrNe-rELBDG5OsIBoCRJkQAvD_BwE)



## Teaching notes

### Developing digital content

Digital content is any content that has been created on a computer, tablet, or mobile phone. The content can be text, sound (audio) that is recorded using a microphone, or videos created using a tablet or smartphone.

Many people think that digital content is created for online use only. Much digital content is shared with others online, such as social media posts, group messaging chats, videos on YouTube, and music on Spotify. However, some digital content is created solely for the user and is not shared online.

Share these examples of digital content that is not shared online:

- A to-do list created in a plain text editor, such as Windows® Notepad
- Notes, research, and website addresses in a Microsoft® Word or Google® Docs document, which a learner uses to write an assignment
- A personal budget created on an electronic spreadsheet, such as Microsoft® Excel or Google® Sheets
- A photo taken on smartphone
- A drawing created with graphics software, such as Adobe® Illustrator
- A voice note recorded on a smartphone
- A video of children playing recorded on a camcorder.

Even though many of these examples could be uploaded to the internet, that was not necessarily the user's original intention.

Learners should be able to do the following:

- Take a photograph
- Record a voice message
- Create a simple document in a plain text editor or word processor
- Create a table in a document
- Copy web addresses into a document while doing research on the internet



*Figure 4.1.1 – Tablets and smartphones can be used to record videos or sound clips that are inserted into documents or presentations.*

- Record a simple video using a smartphone or tablet.

If learners can't perform all of these tasks, demonstrate each of them and allow the learners to practice until they can complete all the skills without assistance.

### Activity 4.1.1: Write a vlog script

Learners should do this activity in groups. Explain that the vlog they will be creating will be uploaded to the school website, which they will create later. In other words, the vlog must focus on something to do with the school, such as a recent event or the history of the school.

1. The groups discuss and decide on a subject that they know well.
2. Then, they write a script that matches their chosen topic.
3. The groups save the script for later.

## Using installed applications to create digital content

Learners should be able to design, create, and edit content that can be uploaded to an online publication, such as the school's online newsletter. They should be confident with creating multimedia articles that contain spreadsheets, graphs and charts, audio, video, and links to external resources found on the web.



*Figure 4.1.2 – Many installed apps include templates that are easy to edit*

### Take note:



Learners who have had no experience with designing and creating publications such as newsletters and website landing pages, could use Microsoft® Publisher templates to familiarize themselves with design terms and multimedia layout before moving on to using a web-building template, such as WordPress.

Learners should be able to create links to other files that automatically update when the original file is updated. For example, when a spreadsheet that is embedded in a Word document is updated in Excel, the spreadsheet in the document should automatically update as well.

## File formats for digital content

There are various types of media, and within each media type, there are various formats. The format of a digital file generally depends on the formats supported by the hardware and software used to create the file.

For example, a document created in Microsoft® Word is saved as a .doc or .docx file by default, depending on the version of Word being used. However, this can be changed to many other file formats, as shown here.

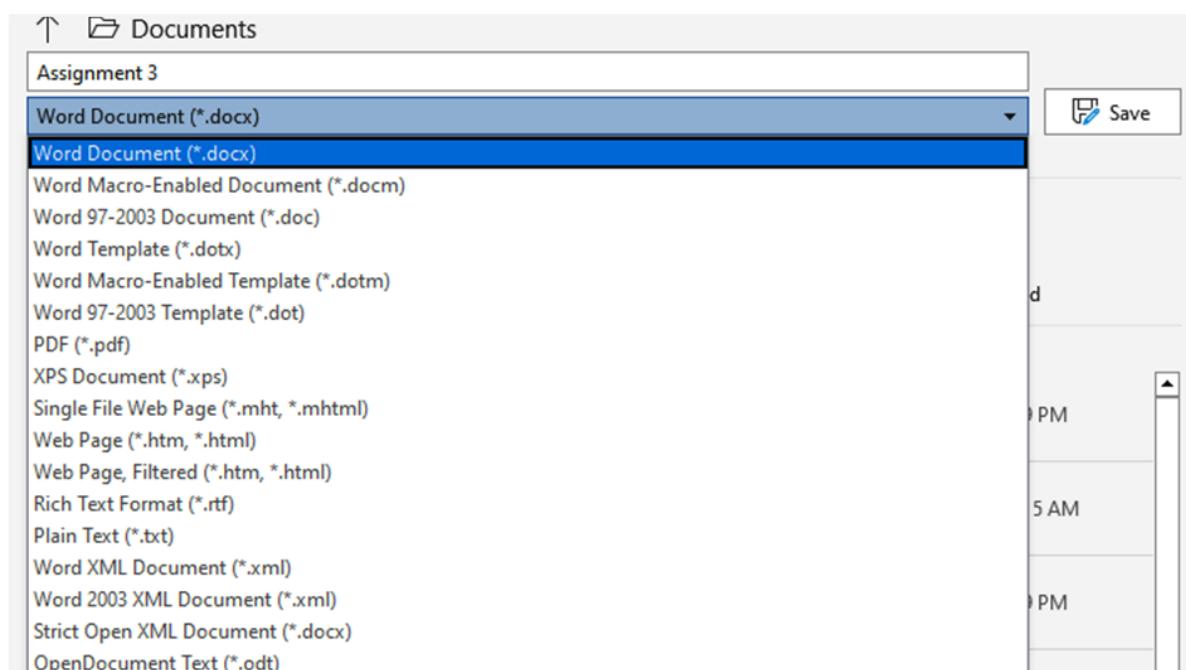


Figure 4.1.3 – File format options when saving a document

Selecting the most suitable file format is important when uploading content to the internet. The larger the file, the more slowly it will upload and the more storage space it will require. This will make the user experience frustrating for those who don't have powerful computers with large storage space, or unreliable, slow internet connections. When surfing the internet, every webpage the user accesses is downloaded onto their device for display. Downloads of webpages with high-definition video and high-resolution images generally fails for the average user (i.e., the download freezes or fails to open with a time-out error).

### Common file formats

Learners should know about and use the most suitable formats for images, videos, and audio files when posting digital content to the web. Provide learners with information on the multimedia formats most used on the internet:

- **Images:** JPG, PNG, and GIF
- **Audio:** MP3, WMA, and FLAC
- **Video:** AVI, MP4, and MKV



## Additional online resources

- This PDF document gives more information on multimedia files:  
<http://www.cathkin.s-lanark.sch.uk/faculties/technologies/computing/n3-5/downloads/Media%20Types.pdf>

## Web browser support

Most web browsers support the common multimedia file formats. However, when using a file format that is not common, it is always advisable to check whether the most common web browsers support it. These browsers are:

- Microsoft® Edge
- Google® Chrome
- Mozilla® Firefox
- Apple® Safari

## Guidelines to follow when teaching online digital content

Review the five common types of online digital content explained later in this unit and demonstrate how to access and use each type. Then demonstrate how to design and plan a page of digital content that includes multimedia. If required, demonstrate how to:

- layout and design in a document
- create graphs and charts in a spreadsheet program, or in a document
- download free-to-use clipart, photos, diagrams, and illustrations for use in a digital document.

Demonstrate how to create a blog using WordPress or any of the free site builders mentioned in this article:

<https://themeisle.com/blog/best-free-blogging-sites/>

Give learners the time and opportunity to outline, design, and create the content, and build a single-page informative and attractive website or blog. Ask learners to select text, image, audio, and video content in the best possible format for users to download.



Figure 4.1.4 – Demonstrate how to use templates

## Common types of online digital content

### Blogging

Blog posts are a basic way of creating engaging content. Many people enjoy reading well written and insightful blogs or articles. For many people, accessing and reading these is a daily ritual.

Blogging allows people and organizations to share lots of information in an informal way. It is often used to create a connection with readers, hooking them in to come back for more. It can be time consuming to maintain a successful blog, as followers expect regular episodes. Share with learners that most successful bloggers plan their posts carefully, and most create a bank of materials before they kick it all off.

Encourage learners who are interested in blogging to create a plan with ideas for the first two to three months of blog content. They should also then implement a schedule for uploading new episodes. This keeps posts consistent, and readers engaged with the content.



Figure 4.1.5 – Plan your strategy and content well ahead of time

The image shows a blog post thumbnail. At the top left is a profile picture of a man. To its right, the author is listed as 'By GUILLAUME DECUGIS published JULY 13, 2016' and the categories are 'Content Marketing Strategy / Content Marketing Tools and Technology / SEO'. Below this is a blue sidebar with social sharing icons: LinkedIn (503), Facebook (306), Twitter (106), Google+ (217), and a plus sign. The main title '7 Ways Technology Can Make You a Smarter Content Marketer' is centered above a green circular graphic. The graphic features various icons representing technology and marketing, such as a smartphone, laptop, lightbulb, and gear. The text '7 WAYS TECHNOLOGY CAN MAKE YOU A SMARTER CONTENT MARKETER' is overlaid on the graphic. At the bottom of the graphic, it says 'By Guillaume Decugis' and 'Content Marketing Institute' with its logo. Below the graphic, a quote reads: 'They're right. When used appropriately, technology can bring more efficiencies — a tactical benefit. However, I prefer to emphasize that when used strategically, technology helps'.

Figure 4.1.6 – An example of an attractive blog design

## Additional online resources



- Share this link with learners who are interested in starting their own blog:  
[https://www.wix.com/blog/2021/02/how-to-start-a-blog/?utm\\_source=google&utm\\_medium=cpc&utm\\_campaign=9852964004^122617225367&experiment\\_id=^b^504114447774^^DSA&qclid=CjwKCAjwh5qLBhALEiwAiods-cylXXhYEWcT\\_ZrqTbAelxDqSkTV\\_pdKfnoxlptSsbI02lw87MxOC6dwQAvD\\_BwE](https://www.wix.com/blog/2021/02/how-to-start-a-blog/?utm_source=google&utm_medium=cpc&utm_campaign=9852964004^122617225367&experiment_id=^b^504114447774^^DSA&qclid=CjwKCAjwh5qLBhALEiwAiods-cylXXhYEWcT_ZrqTbAelxDqSkTV_pdKfnoxlptSsbI02lw87MxOC6dwQAvD_BwE)

## Longform content

In the instant world we live in, creating and sharing longform content can be a bit of a gamble. Most people like to receive their information in short, bite sized chunks. However, the definition of longform is adapting to reflect this. Some experts define longform content as articles longer than 700 words, while others believe that an article must exceed 1,800 words to be considered longform. These types of longform content articles can appeal to enthusiastic readers; it engages them and provides them with an escape. Some organizations and news outlets also use it to properly unpack a current issue or news item in more detail. For example, *The Guardian* newspaper (in the UK) has a weekly longform article called *The Guardian Long Read*, which is very popular.

This type of content can work particularly well if there is a focus on **Search Engine Optimization** (SEO), including key word optimization. By pinpointing words that can be used often in a natural way, and which will be of interest to your target audience, a writer can ensure that the content lands on the readers' screens.



Figure 4.1.7 – Longform articles need detailed planning



## Additional online resources

- Share these tips for making content readable and valuable with learners:

<https://medium.com/swlh/10-tips-to-make-long-form-content-readable-and-valuable-5b6e117965ae>

## Infographics

Infographics are eye catching, engaging, and can be easy to create. Infographics are one of the most-used types of digital content. The reason is that they catch the eye of the user and draw them in. Infographics can be really engaging, providing high quality imagery, and presenting lots of information in a quick snapshot. In addition to this, infographics can be very easy to make, depending on the app or tool used.



Figure 4.1.8 – An example of an infographic

Tools, such as Canva or Microsoft<sup>®</sup> PowerPoint, can be used to create beautiful, brief, and branded imagery, to share with an audience. Many content creators also use infographics and other imagery on their social media channels for maximum impact.

Encourage learners to try using Canva, which has been designed for amateurs to be able to create beautiful imagery that is as good in quality as imagery created by professional graphic designers. There is a free version that is more basic, but it will be enough to get learners started: <https://www.canva.com/>

## Podcasts

Over the past five years, the popularity of podcasts has increased tenfold. Podcasts are an innovative way to consume information of all kinds, including true crime, comedy, current affairs, cooking, health and wellness, business, education, and much, much more.



Figure 4.1.9 – A presenter recording a podcast

This type of content allows people to absorb digital content even while they are on the go, for example out for a run or while travelling to work or school. Listeners can listen to podcasts free of charge on a variety of platforms and apps, including Apple Podcasts, Spotify, PocketCast, Google Podcasts, Stitcher, and more.

Share this link with learners who are interested in learning more about how podcasts are made, and what is required to start a podcast:

<https://www.thepodcasthost.com/planning/how-to-start-a-podcast/>

## Video and vlogs

Video is an ideal way to get in touch with an audience in a way that will make a huge impact. It is estimated that YouTube has over two billion active users monthly. Considering that the global population is around eight million, that means that a quarter of the global population is watching at least one YouTube video a month! Social media platforms, such as TikTok, have also ensured that video creation is the most popular form of digital content creation and consumption.



Figure 4.1.10 – A vlogger recording a video

The term '**vlog**' is a combination of the words 'blog' and 'video'. A vlog is a personal blog on which a vlogger regularly posts short videos of interest to their audience. Vlogs usually include text and other content that support or explain each video.

Many vloggers record themselves talking about a specific subject. Vlogs can be used for many things that consist of steps and stages, such as a travel journal, a set of yoga exercises, product reviews, graphic design, and so on.

A vlog can be published on a website created by the vlogger, or vloggers can use existing platforms, such as their own channel on YouTube or their TikTok account.

Encourage learners to try out Powtoon, which is an online animation program that learners can use to create interesting and brief explainer videos: <https://www.powtoon.com/>

## Activity 4.1.2: Create a vlog

Learners will now record their first vlog using the script they wrote in the first activity.

1. The groups practise creating the vlog until they are happy with the content and the quality.
2. The groups upload the final version of their vlog to the shared folder on the school network, the school's social media page. Alternatively, they can save it locally and wait to be able to upload it to the school's website, which they will create at the end of this unit.
3. Learners also make a backup copy on a flash drive or cloud storage, such as OneDrive or Google® Drive.

## Create a website

Websites connect businesses, professionals, groups, and individuals to one another in unique ways. There are no limits to the purposes that we use websites for – advertising goods and services, online shopping, physical training, friendship circles, and chat rooms, community services, blogs, vlogs, and more – the possibilities are endless.

### Reasons for creating a website

#### Professionalism and increased trust

When a business doesn't have an online presence, such as a website or social media page, people tend not to trust that business. When buying a product or looking for a professional service, an attractive website that is always up to date and appears high on the first page of search results is the website most people will consider worth exploring. Potential customers searching the web will also trust a website that has all the information they need in one place.

Small businesses, community organizations, or schools need a website. It is easy to create a website together with a Facebook page that is linked to your website.

## A business website brings more customers

Search engines scan all the text related to a website. This includes what is known as metadata, which are collections of keywords about the site and its services that site owners add to draw more visitors to their site. This process is known as **search engine optimization** (SEO).

When a user's search terms match keywords in the metadata of a well-optimized website, that website will be one of the first to display. This can happen even when a user is researching something that's vaguely related to the website. This is how businesses attract new customers who are not looking specifically for the website's products or services. There's a much greater chance of someone discovering a website if it uses excellent SEO.

### Take note:



Metadata resides in the part of a website that visitors never see. It is written into the code of the website but does not appear on the pages that display

## Contact information and live chats

Websites are always available. They can be accessed from anywhere on any internet-connected device. We live in what is known as a 'global village' because we can connect with people across the world in different time zones. A website is always live, regardless of the time in the region where a business is based. In this way, websites broaden an organization's reach and promote it 24/7.

## Create a website using a template and existing platform

There are many excellent free website platforms with varying features. We have listed some examples of free website builders that can be used to create a website based on a design template. Users of these website builders don't need to know how to code the website or design the layout. All the user needs to do is to choose a suitable template and add text, images, and other content to the template to personalize it.

- **About.me**

About.me is perfect for groups or organizations. It gives visitors a way of contacting the group or organization that is direct and personal. About.me is also ideal for professional services, business owners, and entrepreneurs.

- **Google® Workspace (formerly Google® Sites)**

Google® Workspace is a very easy drag-and-drop site builder where users can create pages containing various types of digital content, including text, graphics, audio, and video. It is recommended that the user first create their content in a Google application, such as Docs, Sheets, or Slides so that the content displays perfectly in Google® Workspace.

- **Wix**

Wix is a template-based site builder that is easy to use when creating a website. It provides a gallery of templates to choose from, and users can upload their own digital content.

- **WordPress**

WordPress was first launched in 2003. Because it has kept up to date with the latest web technologies, it is still most people's first choice for a blog site and website builder. It is also one of the best site builders to use for websites that are complicated. Sites with many internal and external links and a lot of multimedia additions are best created using WordPress.

## Using code in website creation

Most free template-based website builders include the code that adds functionality to the website. However, sometimes it is necessary to add back-end code using a suitable web development programming language, such as HTML, JavaScript, or Python.

## Web and domain hosting

**Web hosting** and **domain hosting** are related but not the same. Explain that web hosting is a service that provides content storage, such as a website with all its text and other content on a server in the cloud. On the other hand, domain hosting provides unique domain names for websites. Because the average internet user cannot be expected to remember or identify an IP address, a **domain name server** (DNS) translates IP addresses into everyday language.

Just to bring the point home, give learners this list of IP addresses converted to familiar domain names:

207.46.170

Microsoft.com

66.220.149.25	Facebook.com
209.85.231.104	Google.com
208.80.152.2	Wikipedia.com

Both web hosting and domain hosting are paid services on the web. When users use free web-building services, the web hosting and domain services are also free. However, users are required to choose a domain name from a list provided by the web-building service. This means that the name a user chooses will be combined with the service's name. It is possible to change the domain name but, to do that, a fee will be charged.

**Take note:**



Metadata resides in the part of a website that visitors never see. It is written into the code of the website but does not appear on the pages that display

## Guidelines to follow when teaching website creation

Follow these guidelines when teaching learners how to create a website

- Demonstrate how to add pages to a website and link them to one another.
- Demonstrate how to add links to multiple pages in the same website, as well as embedded links to other related websites.
- Demonstrate how to use the editing tools in a free website builder, such as WordPress, to customize the content and look and feel of an existing website. This includes visual elements, such as colours, themes, images, and fonts, as well as text editing tools.
- Encourage learners to view the source code of various websites.

 <https://naads.or.ug>

[National Agricultural Advisory Services - Agriculture in Uganda - NAA...](https://naads.or.ug)

The National Agriculture Advisory Services (NAADS) is a statutory semi-autonomous body under the Ministry of Agriculture, Animal Industry and Fisheries (MAAIF) mandated to manage the distribution of agricultural inputs to farmers for sustainable household food security and incomes.

Figure 4.1.11 – Use this website as an example

- In other words, right-click on a website displayed in a browser, then select the **View page source** option from the context menu.

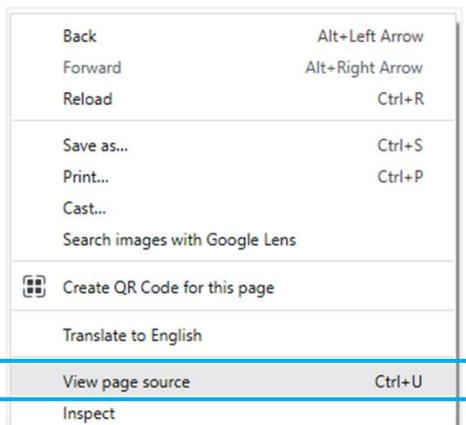


Figure 4.1.12 – See the source code of a website by right-clicking on the website before opening the webpage

- The code below is the start of the HTML code that adds functionality to the National Agricultural Advisory Services in Uganda.

```
<!DOCTYPE html>
<!-- Open Html -->
<html lang="en-US">
<!-- Open Head -->
<head>
    <!-- Global site tag (gtag.js) - Google Analytics -->
<script async src="https://www.googletagmanager.com/gtag/js?id=G-2T2F1W8SVG"></script>
<script>
    window.dataLayer = window.dataLayer || [];
    function gtag(){dataLayer.push(arguments);}
    gtag('js', new Date());

```

Figure 4.1.13 – The displayed source code

- Notice that the URL in the address bar has changed from naads.or.ug to view-source:https://naads.or.ug/

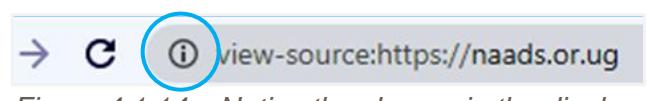


Figure 4.1.14 – Notice the change in the display

Let learners study this simple HTML guide to coding a website before they do any coding themselves: <https://blog.hubspot.com/website/how-to-code-a-website>

- Demonstrate how to code the back- and front end of a website using a web app framework to fully integrate the functionality, content, and design elements.



### Take note:

The most used programming languages are discussed in Unit 4: Programming.

## Activity 4.1.3: Program a website

This is an individual activity in which learners develop and program the school website that was created using a template. Learners can use HTML, Python, or any other suitable programming language.

1. Supply learners with the following:
  - a) Images of the three pages in the school website. Do not supply the website itself because these learners could view the source and copy it.
  - b) The school logo
  - c) A school calendar
  - d) A blog on an event
  - e) A video clip of learners in the grounds of the school
  - f) An audio recording of the learner choir singing any song.
2. Learners represent the three-page website for the school as a diagram detailing where the content will go and showing links and embedded content.
3. Instruct learners to program the website so that it is easy to navigate, attractive, and user friendly.
4. Instruct learners to review and test one another's websites.
5. Instruct learners to publish their websites using their own name on the school intranet.

### Knowledge and skill checklist



I can produce or modify complex, multimedia content in different formats, using a variety of digital platforms, tools and environments.

I can create a website using a programming language and up-to-date web application frameworks.

# 2

## Integrating and re-elaborating digital content



	<b>Duration</b>	4 hours
	<b>Objectives</b>	<ul style="list-style-type: none"><li>• Use advanced formatting functions of different tools (e.g., mail merge, merging documents of different formats, using advanced formulas, macros).</li></ul>
	<b>Content</b>	<ul style="list-style-type: none"><li>• Content creation and integration</li><li>• Storing content</li><li>• Practical activities</li></ul>
	<b>PowerPoint slides</b>	Use <a href="#">this link</a> to access the PowerPoint slides deck.
	<b>Lesson Plan Guide</b>	<ol style="list-style-type: none"><li>1 Content creation (135 minutes)</li><li>2 Storing content (90 minutes)</li><li>3 Consolidation (15 minutes)</li><li>4 Knowledge and Skills Checklist</li></ol>

## Additional online resources



- Insert footnotes: [https://www.youtube.com/watch?v=r9\\_dw\\_CxG6w](https://www.youtube.com/watch?v=r9_dw_CxG6w)
- Insert charts: <https://www.youtube.com/watch?v=bOMKI2RPzrA>
- Macros: <https://support.microsoft.com/en-us/office/create-or-run-a-macro-c6b99036-905c-49a6-818a-dfb98b7c3c9c#:~:text=In%20Word%2C%20you%20can%20automate,to%20accomplish%20a%20task%20automatically.>
- <https://www.customguide.com/word/how-to-create-a-macro-in-word>
- <https://www.youtube.com/watch?v=D33xcH1ZpI>
- Mail merge: <https://www.youtube.com/watch?v=9oeuE8nqliQ>
- Merge documents: <https://www.youtube.com/watch?v=zLNIRlvaU2w>
- Use formulas: <https://www.youtube.com/watch?v=Jl0Qk63z2ZY>

## Teaching notes

### Content creation and integration

Content creation and integration is to modify, refine, and integrate new information and content with an existing body of knowledge and resources to create new, original, and relevant content and knowledge.

To create highly engaging content for your audience, encourage learners to bear the context and to constantly ask themselves: Who am I trying to reach?

Learners should use their strengths to reach the target group. They can start by carrying out some market research to ensure they are making the right choices. While you are showing them how to integrate their content into already existing resources, you will show them how to use productivity software and apps to achieve this in an efficient and useful manner.

Using tools that already exist means that they will expend less time and energy, while still achieving the end goal: to create content that is highly engaging, meets their needs, and the needs of their target audience.

YouTube has a massive bank of publicly available materials, which can be extremely useful. Podcast content on this topic is also freely available and can help to supplement the resources you are sharing.

## Storing content

When learners have created and integrated their digital content, it is vitally important that they have the skills and knowledge to know where to safely save this content for ease of access but also security.

Cloud file sharing can be a useful platform, providing users with the ability to access their content from any device. This flexibility means that they are not tied to a physical PC, which is important in a dynamic and ever-changing world. Encourage learners to try Dropbox, Google Drive, and One Drive and change the way they share materials.

### Guidelines to follow when teaching content creation and integration

As the facilitator, you may find these guidelines useful:

- Use the Home tab in Word to explain and demonstrate what basic text formatting is and how it can enhance readability in terms of:
  - fonts that are easy to read and increasing font sizes to create headings
  - text styles, such as bold and italic, to emphasize words or phrases
  - text colour and highlighting
  - text alignment and paragraph settings, such as interline spacing
  - built-in styles for headings, body text, lists, quotations and references

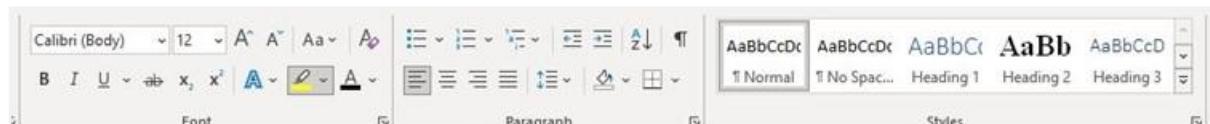


Figure 4.2.1 – Show learners the home tab and demonstrate how to use it.

- Use the Insert tab to explain and demonstrate inserting the following:
  - the Pages group to create new pages and page breaks
  - the Tables group
  - the Illustrations group where images from elsewhere (pictures) are inserted and shapes, SmartArt, charts and screenshots can be created/inserted
  - the Header & Footer group to insert headers, footers and page numbers.

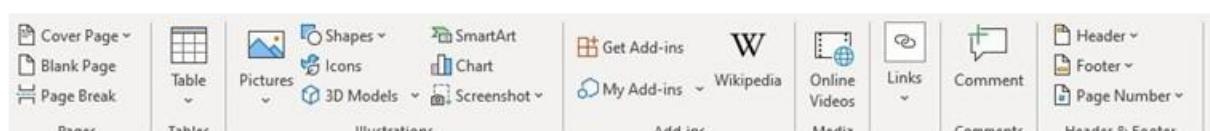
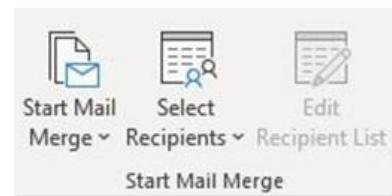
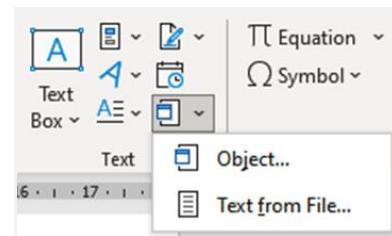


Figure 4.2.2 – Show learners the insert tab and demonstrate how to use it.

- Use the Design tab to explain and demonstrate using built-in themes and effects.
- Use the Layout tab to explain and demonstrate how to set up a page sizes, orientation, and margins.
- Describe what a mail merge is and why it is used.
- Demonstrate how to create a source document in Word and a recipient list in either Word or Excel.
- Demonstrate the use of the Mail Merge Wizard, which begins when the learner clicks on the **Start Mail Merge** option.
- Demonstrate how to merge documents of different formats, such as:
  - inserting an Excel spreadsheet or chart into a Word document
  - importing a plain text delimited file, such as a .csv file, into an Excel spreadsheet
  - importing text from another document in Word using the **Text from File** option in the Object drop-down menu in the Text group
  - combining two or more Word documents into one PDF document
  - inserting a link to an external link to a document or file
  - embedding a presentation in a document
  - importing and exporting documents and spreadsheets as objects for use in other programs.
- Explain and demonstrate the following in a spreadsheet application, such as Excel:
  - how to perform mathematical, statistical, and logical operations using built-in functions, such as SUM, AVERAGE, VLOOKUP, and COUNTIF
  - how to add the Developer tab in the Ribbon
  - how to use the Developer tab to record and use macros for repeated tasks.
- Give learners access to this tutorial, or any other one that you have identified as suitable, before asking them to record one: <https://www.guru99.com/introduction-to-macros-in-excel.html>.



*Figure 4.2.3 – Show learners the mail merge tab and demonstrate how to use it.*



*Figure 4.2.4 – Show learners the text from file option and demonstrate how to use it.*

## Activity 4.2.1: Mail merge

In this individual activity, learners are required to do a mail merge of a letter written by an employee (the learner) to 12 company clients. The letter can be about new products or discounts on current products (the learner can choose what to write about):

1. Learners write a simple letter in Word that contains:
  - a) the sender's company name and address
  - b) the current date
  - c) a subject line saying what the letter is about
  - d) a field for the insertion of the recipient's name and address
  - e) a salutation giving the sender's name and position in the company.
2. Learners create a 12-person recipient list in Excel (the source document).
3. Learner's work with the Mail Merge Wizard to complete the task.

**Note:** Although the merged document could be printed, previewing the document is good enough to assess the result.



## Activity 4.2.2: Record and play a macro

Even though many applications have a macro feature, this is an individual activity carried out in Excel.

1. Provide the learners with a set of numerical data in a spreadsheet.
2. Instruct the learners to insert at least three functions to carry out calculations on the data.
3. Instruct learners to record the steps for a repetitive task and save these as a macro.
4. Learners check one another's spreadsheets to see that all the functions work correctly and that the steps in the macro are complete and correct.
5. Hold a class discussion on how functions and macros are time-savers that streamline repetitive tasks.

### Knowledge and skill checklist

I can use advanced formatting functions of different tools (e.g., mail merge, merging documents of different formats, using advanced formulas, macros).



# 3

## Copyright and licenses



	<b>Duration</b>	4.5 hours
	<b>Objectives</b>	<ul style="list-style-type: none"><li>• Know how to apply licenses and copyrights.</li></ul>
	<b>Content</b>	<ul style="list-style-type: none"><li>• What is copyright?</li><li>• Using a copyright-protected work without infringing</li><li>• Copyright Law</li><li>• Copyright law and the internet</li></ul>
	<b>PowerPoint slides</b>	Use <a href="#">this link</a> to access the PowerPoint slides deck.
	<b>Lesson Plan Guide</b>	<ol style="list-style-type: none"><li>1 What is copyright? (45 minutes)</li><li>2 Using a copyright-protected work without infringing (75 minutes)</li><li>3 Copyright Law (45 minutes)</li><li>4 Copyright law and the internet (90 minutes)</li><li>5 Consolidation (15 minutes)</li><li>6 Knowledge and Skills Checklist</li></ol>

## Additional online resources



- Creative Commons: <https://creativecommons.org/>
- How to cite sources online:  
<https://blog.hubspot.com/blog/tabid/6307/bid/33098/how-not-to-steal-people-s-content-on-the-web.aspx>
- How to copyright material in Uganda:  
<https://ursb.go.ug/intellectual-property>

## Teaching notes

### What is copyright?

**Copyright** ownership gives the owner the exclusive right to use the work, with some exceptions. When a person creates an original work, fixed in a physical form (electronic or hardcopy), they automatically own copyright to the work. Many types of works qualify for copyright protection, for example:

- Audiovisual works, such as TV programmes, films, and online videos
- Sound recordings and musical compositions
- Written works, such as lectures, articles, books, and musical compositions
- Visual works, such as paintings, posters, and advertisements
- Video games and computer software
- Dramatic works, such as plays and musicals



Figure 4.3.1 – Copyright covers all areas of content that is created.

## Using a copyright-protected work without infringing

In some circumstances, it is possible to use a copyright-protected work without infringing on the owner's copyright. Some content creators choose to make their work available for reuse with certain requirements. For more about this, encourage learners to read up about *Creative Commons licenses*.

There are six Creative Commons (CC) licenses. These CC licenses indicate the use restrictions that have been granted by the content creator. The content creator still owns the copyright to that content but, through the selected CC license, the creator is granting people and organizations the right to reuse it under specified restrictions.

LICENSES	TERMS
	 <b>Attribution</b> BY Others can copy, distribute, display, perform and remix your work if they credit your name as requested by you
	 <b>No Derivative Works</b> ND Others can only copy, distribute, display or perform verbatim copies of your work
	 <b>Share Alike</b> SA Others can distribute your work only under a license identical to the one you have chosen for your work
	 <b>Non-Commercial</b> NC Others can copy, distribute, display, perform or remix your work but for non-commercial purposes only.
	

Figure 4.3.2 – Creative Commons content may be licensed in different categories

## Copyright Law

Copyright law exists in all countries. Work created in a country is subject to the copyright laws of that country and the copyright laws of the country in which it may be used. For example, if you live in Uganda and would like to use work created in Germany, not only must you adhere to the copyright laws of Uganda, but also those of Germany.



Figure 4.3.3 – Copyright law gives the creator legal protection

## Copyright law and the internet

Access to the internet makes it very easy to copy other people's work directly into your own document. However easy it may be, it is illegal if you do not acknowledge the person who created it. The creator is the owner of that content, so copying it and letting people think it is your own work is **plagiarism**, which is a form of theft. This applies to all types of content, such as written content, images, videos, and audio recordings.

Make sure that learners understand that they can reuse any content they like, provided they don't sell it for profit and if they write a reference to the owner below it or next to it.

Learners may ask questions about how people get caught out stealing other people's text content. The test for plagiarism is very easy for facilitators, lecturers, editors, publishers, and other professionals to do. Because so much content is online, plagiarism 'hunters' can simply copy and paste suspicious content into a search engine.

Give the learners an example of a learner who writes an assignment on the latest advances in computer technology. The lecturer notices that the text content and style are too professional for this learner to have written it. The learner is interested in computers and is brilliant at programming, but typically they do not express themselves well. So, the facilitator copies and pastes the following line of text into Google:

***"There are 11 top emerging technology trends to watch"***

And this popped up at the top of the results:

The screenshot shows a Google search results page. The search query is "There are 11 top emerging technology trends to watch". The results section starts with a link to "11 Top Emerging Technology Trends to Watch in 2022" from clariontech.com. Below the link, a snippet of the article content is shown, listing five emerging technology trends: Cloud-Native Platforms, Decision Intelligence, Cryptocurrency And Bitcoins, Artificial Intelligence (AI), and Machine Learning, and Robotic Process ...

Figure 4.3.4 – Show learners the webpage, scroll to the bottom

If the learner had scrolled to the bottom of the landing page or any other page, they would have seen that the material on the site is subject to copyright, which they have now infringed.

The learner could have used the information in the article quite legally by adding this as a footnote:

Copyright 2022 Clarion. All Rights Reserved.

Figure 4.3.5 – Highlight the copyright at the bottom of the site

Adapted from: *11 Top Emerging Technology Trends to Watch in 2022* on <https://www.clariontech.com/blog/>. Information accessed on 13 March 2023.

## Online plagiarism checkers

There are free plagiarism checker apps online that allow people to upload suspicious content for checking. These checkers compare the suspicious content with content in hundreds of similar or related documents. It is very difficult to get past these checkers as they are powered by computers that can check and compare word for word and line by line.

## Copyright your own work

Many countries adhere to the international copyright agreements, and Uganda is one of them. On 1 January 1995, Uganda entered into an international copyright agreement with the title *Agreement on Trade-Related Aspects of Intellectual Property Rights*.

Show learners how to register copyright of their own original work by visiting:  
<https://copyrightindex.com/get-copyright-registration-Uganda/>

## A list of references

When learners use many sources for written assignments, they can briefly footnote each reference, which is then linked to a complete list of references at the end of the assignment.

They should also experiment and familiarize themselves with the various options in the Footnotes and Citations & Bibliography groups on the References tab in Microsoft® Word.

### Activity 4.3.1: How to copyright my own material

1. Learners write down the steps they need to take when registering copyright on the Copyright Index website.
2. Learners then do research on registering copyright for their own work in the USA, the United Kingdom, and South Africa.
3. Learners share what they found out with the rest of the class.

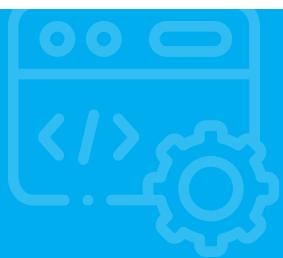
### Knowledge and skill checklist



I know how to apply licenses and copyrights.

# 4

## Programming



	<b>Duration</b>	4 hours
	<b>Objectives</b>	<ul style="list-style-type: none"><li>• Use several programming languages.</li></ul>
	<b>Content</b>	<ul style="list-style-type: none"><li>• Programming and coding basics</li><li>• Tips to help you learn a new programming language</li><li>• Practical activities</li></ul>
	<b>PowerPoint slides</b>	Use <a href="#">this link</a> to access the PowerPoint slides deck.
	<b>Lesson Plan Guide</b>	<ol style="list-style-type: none"><li>1 Programming and coding basics (135 minutes)</li><li>2 Tips to help you learn a new programming language (90 minutes)</li><li>3 Consolidation (15 minutes)</li><li>4 Knowledge and Skills Checklist</li></ol>

## Additional online resources

- How to modify functions and settings:  
<https://answers.microsoft.com/en-us/windows/forum/all/how-do-i-change-the-function-key-settings/e542b094-ebf5-441f-93da-80367ac15b07>
- <https://blogs.helsinki.fi/learners-digital-skills/1-introduction-to-the-use-of-computers/1-1-computer-functionality/operating-system-settings/>
- Programming languages:  
<https://www.simplilearn.com/tutorials/python-tutorial/python-variables>
- <https://futurecoder.io/>
- <https://www.simplilearn.com/best-programming-languages-start-learning-today-article>
- Python: <https://ca.indeed.com/career-advice/career-development/beginner-projects-for-python>
- Java: <https://ca.indeed.com/career-advice/career-development/popular-java-applications>
- Javascript: <https://ca.indeed.com/career-advice/career-development/what-is-javascript>
- C and C++: <https://ca.indeed.com/career-advice/career-development/c-sharp-vs-c-plus-plus>



## Teaching notes

### Programming and coding basics

The operating system in any computer is the bridge between the hardware and the user. Without an operating system, the computer would not start up, let alone run.

Software consists of programs that let the user speak to the operating system. A program is a list of instructions that are passed to the operating system for execution in the processor.

Without software, the operating system would have nothing to do other than keep the computer up and running.

### Writing a program

All programs go through set stages, where the programmer:

- decides how to program a solution to solve a problem; for example, how to measure dam levels using input from sensors at various levels around the dam

- draws a flow diagram to show input, processing, and output of each module or section in the program
- writes an algorithm or pseudocode, setting out all the instructions in human language, thus creating a program structure
- codes the algorithm using a suitable programming language
- tests and debugs the program until it is functioning correctly
- documents the program for handover to the client.

## **What are basic programming languages?**

Basic programming languages include a set of vocabularies that coders use in software development to create and maintain applications, queries, and scripts for different applications. Computers use various languages to communicate. These programming languages translate human input into machine-readable code.

Just like human languages, programming languages have rules and set structures. Some programming languages are only used for specific applications, whereas others are compatible with many systems.

Coding is a key element in the software development cycle. Software developers understand how to use a language, write the source code in a text editor, execute it on an interpreter, or compile it for execution.

## **The importance of learning how to code**

The following are some of the main benefits of learning basic programming languages:

- Increases the number of job opportunities
- Leads to career promotions within your department or organisation
- Increases the number of approaches to solve a problem or requirement
- Leads to contracts or opportunities as a freelancer
- Teaches how to combine technical skills and creativity
- Equips a person with knowledge of how software systems work
- Teaches persistence, organizational flexibility, and problem-solving skills.

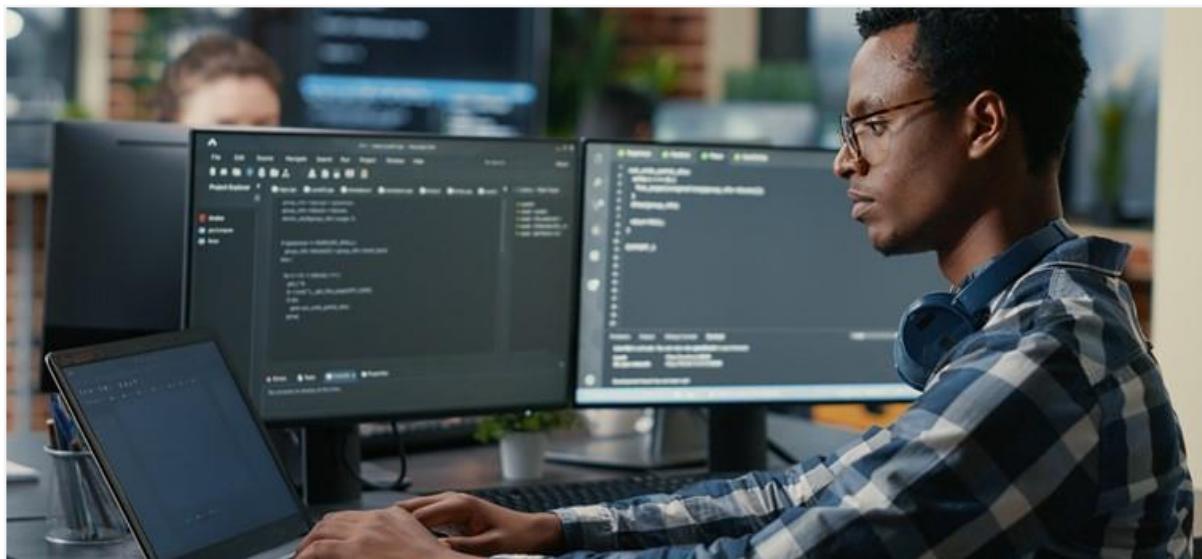


Figure 4.4.1 – Coding is often used to maintain a database

## Most popular programming languages to learn

Each language has advantages and areas of application. Identifying them can help learners to decide which language to learn.

Here are five basic programming languages to explore:

### Python

This is a high-level and general-purpose language that focuses on code readability. It's one of the most popular beginner languages because of its ease of use, wide application, active community, and freedom of use.

Programmers can use it for object-oriented, structured, or functional tasks. Python has a comprehensive standard library. The libraries provide tools for many tasks, such as creating internet applications, graphical user interfaces, and data analytics.

Unlike most languages, Python uses English words instead of punctuation. Python helps you work fast as a 'glue' language used to integrate systems. It's also a popular rapid application development (RAD) language. Python can be used in the following application areas:

- Data analysis
- Databases
- Documentation
- Machine learning
- Web scraping
- Mobile apps
- Image processing
- Computer networking
- Web frameworks
- Scientific computing
- System administration



Figure 4.4.2 – Python is often used to maintain large servers

## Java

Developers mostly use Java for web apps' back-end interfaces or general service application programming interfaces (APIs) enhanced by frameworks such as Spring and Dropwizard.

Java differs from JavaScript in that it's a strongly typed language. This means that it is more difficult to learn. On the flip side, this complexity ensures that Java has higher performance capabilities. Java enforces its performance by multi-thread work that can run concurrently. JavaScript only uses a single thread. Java also balances complexity and performance by avoiding many items that the coder can manage in other languages.

Developers use Java to create Android applications for mobiles. The Java virtual machine allows the language to run on many platforms. Scala and Kotlin also run on the Java virtual machine, making all these languages compatible and necessary to develop mobile apps. Specialized industries, such as cloud computing, the Internet of Things (IoT), and enterprise architecture use Java.



Figure 4.4.3 – Java is often used to programme automated machines

## JavaScript

This is the world's most popular programming language. Coders mainly use it to create web interfaces or websites. It is easy to learn. Programmers may classify JavaScript as a high-level language, multi-paradigm, and just-in-time (JIT) compliant. It features dynamic typing, first-class functions, and prototype-based object orientation.

JavaScript can be a significant enabler of website interactivity and richness. While HTML builds the foundation for a website, JavaScript drives the website. JavaScript has a famous library called JQuery, which is used by most websites.

The language has become easy to adapt, especially with the creation of industry-standard tools, such as beginner-friendly VueJS and high-level reactJS. JavaScript can be used to program both front- and back-end applications. For example, it is used in back-ends to power mobile applications and web apps, or to act as a standalone API to incorporate other companies and services.

## C and C++

C is a low-level language. This means that it requires the programmer to understand the underlying computer hardware and machine language. High-level languages have abstracted the computer details. For example, when using a low-level language, your program can take care of memory management in the code. Typically, higher programming languages automate the process of memory management for computers.

Although C is low level, it compensates by having better performance than other easy-to-learn languages. While performance might not be a significant concern for a social media app, it's a substantial consideration for gaming apps, movie special effects software, and portions of operating systems.

C++ improves on C and is used to simplify programming, though it's still a low-level language. You can easily translate C programs to C++. In comparison, coders may use it for embedded systems, whereas C++ is better structured for application development. C and C++ are two of the earliest programming languages, which means learning these languages are useful for learners to learn as a basic foundation, even as times change.

## **Structured Query Language (SQL)**

Structured Query Language (SQL) is used to retrieve data stored in a relational database. Computers send SQL queries to a server, which then returns the requested data. SQL allows you to retrieve, insert, update, delete, and create data within a database. There are many variants of SQL, and all variants have several similarities. The ANSI standard requirement enforces these similarities as significant commands, such as where, select, and delete.

SQL database servers are useful in websites and apps for storing information, such as a user's posts and profiles. SQL jobs and career opportunities include high-paying jobs in business intelligence and data science.

## **Tips to help learners learn a new programming language**

Be encouraging when discussing the prospect of learning a new language or progressing into advanced programming. With the correct strategy, most learners can excel at learning how to code.

Here are some guidelines for encouraging learners on their path of learning a new programming language:

### **Help learners to determine their goals and skills**

Before a learner can choose a language to learn, they need to lay down some goals and skills. Explain that it is necessary for them to understand what they seek to create and how they wish to learn the language, especially because every language dominates a particular area in software development. For example, if they wish to develop for the web, they can begin with JavaScript.

Learning multiple languages is necessary to become a successful software developer. Understanding their goals and skills can help them select the best language to learn. Another consideration is to know how they learn. Learners that want to learn by getting everything upfront to develop a firm foundation in coding can be encouraged to start with C as a start. Python or Ruby may be the best simple languages to start with for learners who enjoy learning by doing.

### **Explain computational thinking**

Computational thinking is a crucial skill in programming that helps you approach a problem systematically and create a solution in a way that a computer can process and fulfil the task. This skill helps programmers to understand and implement computer logic. Learners can start the learning process by using abstractions, pattern recognition, and algorithms. This helps programmers learn to be more intuitive when they learn new languages because they will understand computer jargon and logic.

## Provide learners with online resources

After deciding which language to learn, learners can search for online resources that can teach them or give them more information. Some learners prefer to be self-taught. In this case, they can look for online classes, web applications, and resources that make learning the language more accessible. Learners who prefer a formal setting can opt for a university degree or a certification.



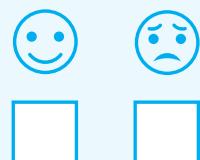
Figure 4.4.4 – It's important to understand how to apply computer logic

### Activity 4.4.1: Use HTML and JavaScript

1. Groups of learners download and install a programming language of their choice, such as Python, JavaScript, or C++.
2. Each group creates ONE of the following programs:
  - a) A calculator to calculate interest on a loan
  - b) A program to find the highest of five random numbers
  - c) A program to list five random numbers in descending order
  - d) A program that prints the words Hello Uganda! on the screen
3. The groups compile and debug their programs.
4. Each group demonstrates their program to the class.

### Knowledge and skill checklist

I can use several programming languages.



## Module 4 assessment guidelines

Assist learners to set up where needed. Ensure that they know what they need to do and what is expected of them.

### Materials needed



- Before the assessment, learners should prepare photographs and video clips to show a day in their life
- Laptop or tablet with an internet connection
- Paper and pen.

#### **Unit 1: Developing digital content**

1. Learners plan a post for vlog. The post must be about a day in their life.
2. Learners write down a script for a vlog.
3. They use the photos, two videos, and their script to make their vlog.
4. Learners choose any software to make a vlog that includes their photos, videos, and sentences.
5. Learners add music to their vlog.
6. Learners upload their vlog as a story on Instagram.
7. Assess their Instagram story.

#### **Unit 2: Integrating and re- elaborating digital content**

1. Learners will work in pairs for some of this activity but explain that they will work independently for most of the activity steps.
2. Learners create two documents on their online storage drive.
3. Learners create list A in the first document and list B in the second document:
  - a) List A: Five behaviours to protect your digital identity
  - b) List B: Five warnings that a message or email might be a scam.

	<ol style="list-style-type: none"> <li>4. Learners share both documents with their partner.</li> <li>5. Learners download both of their partner's documents and convert them to PDFs.</li> <li>6. They combine the two PDFs into a single PDF.</li> <li>7. Learners demonstrate that they can use mail merge to send the PDF to three members of your class, and you.</li> </ol>
<b>Unit 3: Copyright and licenses</b>	<ol style="list-style-type: none"> <li>1. Learners go to Google images. Search for <i>Sanaa Gateja artworks</i>.</li> <li>2. Learners find out the name of the artist and the artwork of a picture they like.</li> <li>3. Learners download the picture.</li> <li>4. Learners create a new post on Facebook and upload the picture. They must reference the artwork correctly on their post (include the name of the artist and the artwork).</li> <li>5. Learners go to Google images again. Search for <i>bead artworks</i></li> <li>6. Learners use the usage rights filter to find a picture that is licensed as Creative Commons.</li> <li>7. Help learners to find the license type. They write down what it means.</li> </ol>
<b>Unit 4: Programming</b>	<ol style="list-style-type: none"> <li>1. Learners write down the steps to follow when creating a website using code.</li> <li>2. Learners must include instructions on how to personalize the website using the code editor.</li> <li>3. Learners also include instructions on how to add the following features. Assess these when the learner is done. <ul style="list-style-type: none"> <li>a) A unique colour theme for a page</li> <li>b) A content menu</li> <li>c) An image slideshow</li> <li>d) A calendar of upcoming events.</li> </ul> </li> </ol>



## Module 5

# Safety and security

This module focuses on online safety and aims at drawing learners' attention to this issue and informing them on how to reduce risks and keep safe online.

During this module, you will teach learners about security measures used to protect computer networks and devices. As these lessons will most likely take place in a computer classroom at a school or community centre, we strongly advise that no learner be allowed to install or uninstall security software or make changes to the settings on any device, as this may compromise the integrity of the cybersecurity of the computer centre.

Please note that practical activities described in each unit might require the support of an experienced trainer. Although the information presented in the manual is written in a way that is easy to understand, some actions, adjacent to the information presented, may also require the support of experienced people.

This module includes the following units:

<b>Unit 1</b>	Protecting devices
<b>Unit 2</b>	Protecting personal data and privacy
<b>Unit 3</b>	Protecting health, well-being and building digital resilience
<b>Unit 4</b>	Protecting the environment

## Learning outcomes

Learners should be able to:



- Protect devices and digital content, and to understand risks and threats in digital environments.
- Know about safety and security measures and to have a due regard to reliability and privacy.
- Protect personal data and privacy in digital environments.
- Understand how to use and share personally identifiable information while being able to protect oneself and others from damages.
- Understand how to use and share personally identifiable information while being able to protect oneself and others from damages.
- Be able to avoid health-risks and threats to physical and psychological well-being while using digital technologies.
- Be able to protect oneself and others from possible dangers and risks in digital environments (e.g., cyberbullying).
- Be able to get clear recourse and help if risks or dangers happen.
- Be aware of the environmental impact of digital technologies and their use.

## Resources



- Training manual
- Computer with internet access
- Flipchart papers
- Markers
- Editing programme

## Suggested teaching methods



- Presentation by facilitator
- Group exercise / Discussion / Debate
- Working in pairs / Small groups
- Presentation by participants
- Media selection



## New terminology to explain

These are terms that learners may not be familiar with. They should be explained within the context that they may be used.

### **connections**

friends, family, acquaintances

### **cookies**

cookies are text files with small pieces of data, like a username and password, that are used to identify your computer as you use a computer network

### **malicious**

harmful or damaging

### **malware**

software that is specifically designed to disrupt, damage, or gain unauthorized access to a computer system

### **post**

share

### **pushed**

installed

### **Virtual Private Network (VPN)**

a service that protects your internet connection and privacy online by creating an encrypted tunnel for your data, protecting your online identity by hiding your IP address, and allowing you to use public Wi-Fi hotspots safely

# 1

## Protecting devices



	<b>Duration</b>	6 hours
	<b>Objectives</b>	<ul style="list-style-type: none"><li>Frequently check the security configuration and systems of devices and/or applications used.</li><li>Know how to react if a computer is infected by a virus.</li><li>Configure or modify the firewall and security settings of my digital devices.</li></ul>
	<b>Content</b>	<ul style="list-style-type: none"><li>Security and passwords</li><li>Protecting devices</li><li>Software updates</li><li>Increasing security</li><li>Malicious code</li></ul>
	<b>PowerPoint slides</b>	Use <a href="#">this link</a> to access the PowerPoint slides deck.
	<b>Lesson Plan Guide</b>	<ol style="list-style-type: none"><li>1 Security and passwords (45 minutes)</li><li>2 Protecting devices (90 minutes)</li><li>3 Software updates (45 minutes)</li><li>4 End-of-life software (45 minutes)</li><li>5 Increasing security (75 minutes)</li><li>6 Malicious code (45 minutes)</li><li>7 Consolidation (15 minutes)</li><li>8 Knowledge and Skills Checklist</li></ol>

## Additional online resources

- What is an antivirus program? – <https://www.computerhope.com/jargon/a/antiviru.htm>
- Top 10 antivirus programmes – [https://www.googleadservices.com/pagead/aclk?sa=L&ai=DChcSEwjSIJz-s9\\_6AhVQ0-OKHaXMC6MYABACGgJkZw&ohost=www.google.com&cid=CAESa-D2GuuZok\\_tO55XxVDMv-e0TAmw4gaz\\_M0ujYecvqOn-hFmJvoNBxGCfnawy-QxyPk\\_dSSvLZlo41NUf3RIFMeNE5vuMr6k7ujCKcMixANc5q8pSUO8JD\\_LadsEkncDAMa53PtY7nG9dtAQ&sig=AOD64\\_2Td2aGEDBFomP0DAUAWoinp3wYtg&q&adurl&ved=2ahUKEwi6tpX-s9\\_6AhUfTEEAHftmBJkQ0Qx6BAgHEAE](https://www.googleadservices.com/pagead/aclk?sa=L&ai=DChcSEwjSIJz-s9_6AhVQ0-OKHaXMC6MYABACGgJkZw&ohost=www.google.com&cid=CAESa-D2GuuZok_tO55XxVDMv-e0TAmw4gaz_M0ujYecvqOn-hFmJvoNBxGCfnawy-QxyPk_dSSvLZlo41NUf3RIFMeNE5vuMr6k7ujCKcMixANc5q8pSUO8JD_LadsEkncDAMa53PtY7nG9dtAQ&sig=AOD64_2Td2aGEDBFomP0DAUAWoinp3wYtg&q&adurl&ved=2ahUKEwi6tpX-s9_6AhUfTEEAHftmBJkQ0Qx6BAgHEAE)
- Firewalls – <https://www.checkpoint.com/cyber-hub/network-security/what-is-firewall/#:~:text=A%20Firewall%20is%20a%20network,network%20and%20the%20public%20Internet.>



## Teaching notes

### Security and passwords

#### Change default log-in passwords and usernames

Most network devices come with default passwords to make them easier to setup. These default passwords are not secure – they may be available on the internet or may even be physically labelled on the device itself. Remind learners that if they leave these unchanged, they create opportunities for cybercriminals to gain unauthorized access to information, install malicious software, and cause other problems.



Figure 5.1.1 – It is very hard to identify cybercriminals

#### Use strong and unique passwords

Encourage learners to choose strong passwords to help secure their devices. Remind them that they should not use the same password with multiple accounts. This way, if one account is attacked, the attacker will not be able to access any other accounts.

## Why do you need strong passwords?

Discuss the use of personal identification numbers (PINs), passwords, or passphrases that learners use every day. For example, using an ATM or debit card in a shop, or logging in to an email account. Tracking all the number, letter, and word combinations may be difficult, but remind learners of why these protections are so important. Explain that hackers and cybercriminals are a real threat to their information.

Often, an attack is not specifically about a person's account, but about using the access to information to launch a larger attack. Explain that if someone has access to a person's password, they can use this access to pretend to be the victim.



Figure 5.1.3 – Strong passwords include a mix of letters, numbers, characters and CAPS



Figure 5.1.2 – strong, unique passwords are an important step in protecting your devices

One of the best ways to protect information or physical property is to ensure that only authorized people have access to it. Checking that those requesting access are the people they claim to be is the next step. This process is more important and more difficult in the cyberworld.

Passwords are the most common means of authentication, but only work if they are complex and private. Many systems and services have been successfully breached because of non-secure and inadequate passwords. Once a system is in danger, it is open to abuse by other unwanted sources.

## Avoid common mistakes

Most people use passwords that are based on personal information and are easy to remember. However, that also makes it easier for an attacker to crack them. Ask learners to consider one of their four-digit PINs.

Ask the learners:

- Is it a combination of the month, day, or year of your birthday?
- Does it contain your address or phone number?

- Think about how easy it is to find someone's birthday or similar information.
- What about your email password – is it a word that can be found in the dictionary?

If so, it may be vulnerable to so-called 'dictionary attacks', which attempt to guess passwords based on common words or phrases.

Although intentionally misspelling a word ("daytt" instead of "date") may offer some protection against dictionary attacks, an even better method is to rely on a series of words and use memory techniques to help remember how to decode it. For example, instead of the password "hoops," use "ILTpbB" for "I like to play basketball." Using both lowercase and capital letters adds another layer of secrecy. Changing the example to "lI!2pBb." creates a password that is very different from any dictionary word.

## Length and complexity

Explain to learners that they should consider using a password or passphrase longer than the minimum allowed characters, but that they may not want it to be too long if they must continually type in this password.

An example of a long password based on a phrase is:  
 "Pattern2baseball#4mYmiemale!". This is a strong password because it has 28 characters and includes upper and lowercase letters, numbers, and special characters.

Encourage learners to try different variations of a passphrase – for example, some applications limit the length of passwords, and some do not accept spaces or certain special characters. Emphasize that learners should not include common phrases, famous quotations, and song lyrics.

## Dos and don'ts

Remind learners that once they have come up with a strong password, it can be tempting to reuse it. However, this is a terrible mistake. Reusing a password – even a strong one – endangers a user's accounts just as much as using a weak password. If attackers guess the password, they could access the user's other accounts that use that same password.

**Password**

.....

*show password*

Password must contain numbers  
 Password must contain uppercase letters  
 Password must have at least one special characters  
 Length must be greater than 8 characters  
 Password should not contain strings  
 Password must not contain repetitions

Figure 5.1.4 – Some apps provide guidelines on how to create a strong password

Share these techniques with learners to assist them with developing unique passwords for each of their accounts:

- |   |  |
|---|--|
|  | Use different passwords on different systems and accounts.   |
|  | Use a password or passphrase longer than the minimum allowed password.                                   |
|  | Develop ways to remember complex passwords.  |
|  | Consider using a password manager program to keep track of your passwords. (See more information below.) |
|  | Do not use passwords that are based on personal information that can be easily accessed or guessed.      |
|  | Do not use words that can be found in any dictionary of any language.                                    |

## Protect your passwords

After choosing a password that is easy to remember but difficult for others to guess, learners should not write it down and leave it somewhere where others can find it. Remind learners that writing down a password and leaving it in their desk, next to their computer, or, worse, taped to their computer, makes it easily accessible for someone with physical access to your workspace. They should also never tell anyone what their passwords are and encourage them to be alert and to watch for attackers trying to trick them through phone calls or email messages requesting that they reveal their passwords. Tell learners that if they must write it down, they must ensure they keep it in a safe, and preferably secret, place.



Figure 5.1.5 – Be careful where you store your login and password details

Programs called password managers offer the option of creating randomly generated passwords for a user's accounts. The user then accesses those strong passwords with a master password. Remind learners that, should they use a password manager, they must remember to use a strong master password.

Explain to learners that password problems can happen from the web browsers' ability to save passwords and the online sessions that have been saved to memory. Depending on their web browsers' settings, anyone with access to the computer may be able to discover their passwords and gain access to their information. They should, therefore, always remember to log out when they are using a public computer (at the library, an internet cafe, or even a shared computer at the school). Emphasize that they should avoid using public computers and public Wi-Fi to access sensitive accounts, such as banking and email.

There is no guarantee that these techniques will prevent an attacker from learning their password, but they will make it more difficult.

### Take note:

#### Remind learners of these security basics



- Keep your operating system, browser, and other software up to date.
- Use and maintain antivirus software and a firewall.
- Regularly scan your computer for spyware. (Some antivirus programs incorporate spyware detection.)
- Use caution with email attachments and untrusted links.

## Protecting devices

### The importance of computer security

Computers play an important role in our lives. We also view and upload (add) personally identifiable information on them. Therefore, it is vital to implement and maintain computer security. Strong computer security ensures safe processing and storage of our information.

### Improving computer security

Share the following steps with learners for how to make a computer more secure. While no individual step will remove all risk, when used together, these defence in-depth practices will strengthen a computer's security and help minimize threats.



Figure 5.1.6 – We leave data as we use digital devices, this is called our digital footprint

## Secure your home network

Remind learners that, when they connect a computer to the internet, it is also connected to millions of other computers – a connection that could allow attackers access to your computer.

Although cable modems, digital subscriber lines (DSLs), and internet service providers (ISPs) have security monitoring, it's crucial for users to secure their router, which is the first device that receives information from the internet.

Encourage learners to ensure that they secure their router before connecting it to the internet, as this will strengthen the computer's security.



Figure 5.1.7 – Computers are connected via the internet

## Home network security

Home network security refers to the protection of a network that connects devices – such as routers, computers, smartphones, home appliances, Wi-Fi-enabled baby monitors, cameras – to each other and to the internet within a home.

Many home users share two common false impressions about the security of their networks:

- Their home network is too small to be at risk of a cyberattack.
- Their devices are “secure enough” right out of the box.

Most attacks are not personal in nature and can occur on any type of network – big or small, home or business. If a network connects to the internet, it is inherently more vulnerable and open to outside threats.

By following simple but effective techniques, learners can meaningfully reduce the attack surface of their home network and make it more difficult for a **malicious** cybercriminal to launch a successful attack.



Figure 5.1.8 – Our devices are open to cyberattacks if they are not properly protected

Threats can be from viruses or from a specific person hacking into a system. A reliable antivirus software application is an important protective measure against known malicious threats. It can automatically detect, quarantine, and remove malware, such as viruses, worms, and ransomware.

### Regular software updates

Explain that regular software updates are one of the most effective steps learners can take to improve the overall cybersecurity position of their home networks and systems. Besides adding new features and functions, software updates often include critical patches and security fixes for newly discovered threats and weaknesses.

Remind learners that it is important to keep software updated, including their browser.



*Figure 5.1.9 – Antivirus software protects our computers from cyberattacks*

Most modern software applications (apps) will automatically check for newly released updates. If automated updates are not available, learners should consider purchasing a software program that identifies and centrally manages all installed software updates.



*Figure 5.1.10 – Make sure that all antivirus software is updated regularly*

### What are patches?

Patches are software and operating system (OS) updates that address security weaknesses within a program or product. Software suppliers may choose to release updates to fix performance faults, as well as to provide enhanced security features.

## Software updates

### Find software updates to install

When software updates become available, suppliers usually put them on their websites for users to download. Encourage learners to install updates as soon as possible to protect their computer, phone, or other digital device against attackers who could take advantage of system weaknesses. Attackers may target weaknesses for months or even years after updates are available.

Some devices have software that will automatically check for updates, and many suppliers offer users the option to receive updates automatically. If automatic options are available, you can take advantage of them. If they are not available, check your supplier's websites for updates regularly.

**It is essential to remind learners that they are not allowed to download and/or install software on a computer that belongs to the school or an employer. This is because the device does not belong to them.** You can decide whether you would like the learners to make any changes. If you are not the primary decision maker, then wait for guidance from the network administrator.

Learners may, however, make changes to their own devices. Explain that they should only download software updates from trusted supplier websites. They must not trust a link in an email message – attackers have used email messages to direct users to websites hosting malicious files disguised as legitimate updates. Users should also distrust email messages that claim to have a software update file attached – these attachments may contain **malware**.

If possible, learners should only apply automatic updates from trusted network locations (e.g., home, work) and avoid updating software (automatically or manually) while connected to public networks (e.g., airport, hotel, coffee shop). If updates must be installed over a public network, encourage them to use a **Virtual Private Network** connection to a trusted network and apply updates.

### Manual and automatic updates

Users can install updates manually or elect for their software programs to update automatically.

Manual updates require the user or administrator to visit the supplier's website to download and install software files.



Figure 5.1.11 – Software updates can be applied automatically with the correct settings

Automatic updates require user or administrator consent when installing or configuring the software. Once a user consents to automatic updates, software updates are **pushed** to the user's system automatically.

### Best practices for software updates

Share these guidelines about software updates with learners:

- Enable automatic software updates whenever possible. This will ensure that software updates are installed as quickly as possible.
- Do not use unsupported EOL software.
- Always visit supplier sites directly rather than clicking on advertisements or email links.
- Avoid software updates while using public networks.
- New weaknesses are continually emerging, but the best defence against attackers exploiting patched weaknesses is simple: keep your software up to date. This is the most effective measure a user can take to protect their computer, phone, and other digital devices.



Figure 5.1.12 – Follow the best practice guidelines to protect all devices

## **End-of-life software**

Suppliers will discontinue support for a software program when they launch a new version of the software. When updates are discontinued for a software program, it is known as end-of-life (EOL) software. Explain that continued use of EOL software is a risk to a user's system that can allow an attacker to exploit security weaknesses. The use of unsupported software can also cause software compatibility issues, as well as decreased system performance and productivity.



*Figure 5.1.13 – Computers with end-of-life software cannot receive updates and a vulnerable to hackers*

## **Remove unnecessary services and software**

Encourage learners to disable all unnecessary services to reduce the chance of attack on their network and devices, including their router. Unused or unwanted services and software can create security holes on a device's system. This is mainly true with new computer systems on which suppliers will often pre-install trial software and applications that users may not find useful.

Remind learners that they should never remove any software from a device that does not belong to them.

## **Adjust factory-default configurations on software and hardware**

Many software and hardware products come 'out of the box' with very general factory-default settings intended to make them user-friendly. These default settings are not aimed at security, leaving them open to ways that an attacker can exploit. Users should take steps to harden the default settings to reduce weaknesses and protect against intrusions. Again, remind learners that this can only be done on a device that they own. They should not change any configuration settings on a computer that is in a classroom or office setting and is not their personal device.

## Activity 5.1.1: List the top antivirus programs

1. Learners do a Google search to find the top four antivirus programs in the world.
2. They should compare what they promise and the prices.
3. Learners should also compare the above to a free antivirus program. Do they offer all the services free?
4. Ask learners to say which they would choose if/when they had their own device?
5. They should check which antivirus software is installed on the device you are using.

## Activity 5.1.2: Check for EOL software

1. Learners should investigate how to check for end-of-life software.
2. Ask learners if they know of a sentence (or error message/warning) that a program may use that would indicate that it is end-of-life if a user tries to update software?

## Increasing security

### Run up-to-date antivirus software

Remind learners that running an up-to-date antivirus program is essential.

### Install a network firewall

If you are teaching in a classroom setting, tell learners whether the computers have installed a firewall. Explain that a firewall is a type of program that blocks malicious traffic from entering the network and warns users of any dangerous activity.

When properly set up, a firewall can also serve as a barrier for internal threats, preventing unwanted or malicious software from reaching out to the internet. Most wireless routers come with a configurable, built-in network firewall that includes additional features.

Keep in mind that some firewall features, including the firewall itself, may be turned off by default. Explain that ensuring that the firewall is on, and that all the settings are properly configured, will strengthen the network security of your network. Once again, remind

learners that they may not change any firewall settings on a device they do not own, unless they have your express permission, or that of the network administrator or another authority.



### Take note:

Explain that the internet service provider (ISP) may be able to help a user determine whether their firewall is correctly set up for that user's equipment and needs.

### Activity 5.1.3: Check that a firewall is installed

1. Show learners how to check online to find the firewall settings on their specific device. They are usually in the control panel, or easily searchable using 'firewall' from the Windows search bar. Remind learners that navigation and app placement can vary on different systems and software, so it is always good to check online for a specific device/ operating system if they are unsure.
2. Once learners know where to look, they should determine whether their firewall is on.

### Activity 5.1.4: Different levels of firewall protection

1. Learners use Google or another search engine to research what the different levels of firewalls are.
2. They find out how many basic levels there are.
3. They explain (in simple terms) what these do.
4. Learners put this information together in a table.

### Regularly back up your data

Impress upon learners the importance of making regular backup copies of all valuable information on their devices and storing it using either external media or a cloud-based service. They can also consider using a backup application, which can simplify and automate the process. Encourage them to encrypt their backup to protect the privacy of their information. Data backups are important to lessen the impact if that data is lost, corrupted, infected, or stolen.



*Figure 5.1.14 – An external hard drive is a popular backup choice to hackers*

### **Increase wireless security**

Increasing the security of a wireless service may require consulting the router's instruction manual or contacting the relevant ISP for specific instructions on how to change a particular setting.

Share these tips with the learners:

- Use the strongest encryption protocol available.
- Ask to find out whether the router's default administrator password has been changed – the default password is the password that the Wi-Fi router came with.
- Turn the network off when not in use. While it may be impractical to turn the Wi-Fi signal off and on frequently, consider disabling it during travel or extended periods when it is not in use. Additionally, many routers offer the option to configure a wireless schedule that will automatically disable the Wi-Fi at specified times. When the Wi-Fi is disabled, outside attackers can be prevented from being able to exploit the network.
- Disable Universal Plug and Play (UPnP) when not needed. UPnP is a handy feature that allows networked devices to discover and establish communication with each other on the network. However, though the UPnP feature eases initial network setup, it is also a security risk. Therefore, unless there is a specific need for UPnP, it should be disabled.

- Upgrade firmware. Check the router manufacturer's website to ensure the router is running the latest firmware version. Firmware updates enhance product performance, fix flaws, and address security vulnerabilities.
- Monitor for unknown device connections. The router manufacturer's website can be used to monitor for unauthorized devices joining or attempting to join a private network.

## Malicious code

Malicious code is unwanted files or programs that can cause harm to a computer or compromise data stored on a computer. Various classifications of malicious code include viruses, worms, and trojan horses.

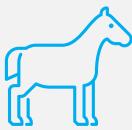
```

46 var js, id;
47 if (d.getElementById(id)) return;
48 js = d.createElement('script');
49 js.id = id;
50 js.src = "//connect.facebook.net/en_US/sdk.js#xfbml=1&version=v2.10";
51 fjs.parentNode.insertBefore(js, fjs);
52 }(document, 'script', 'facebook-jssdk'));
53 <div id="page" class="site">
54   <div id="skip-link screen-reader-text" href="#content"><?php esc_html_e( 'Skip to content', 'wpbakery' )?>
55   <header id="masthead" class="site-header" role="banner">
56     <div class="site-branding">
57       <div class="navBtn pull-left">
58         <?php if(is_home()) & $xpanel['homepage-style'] == 1) { ?>
59         <a href="#" id="openMenu"><i class="fa fa-bars fa-3x">/</i></a>
60       <?php } else { ?>
61         <a href="#" id="openMenu2"><i class="fa fa-bars fa-3x">/</i></a>
62       <?php } ?>
63       <div class="logo pull-left">
64         <a href=<?php echo esc_url(home_url()); ?>>
65           <img src=<?php echo $xpanel['logo']['url']; ?>>
66       </div>
67       <div class="search-box hidden-xs hidden-sm pull-left ml-10">
68         <?php get_search_form(); ?>
69       </div>
70       <div class="submit-btn hidden-xs hidden-sm pull-left ml-10">
71         <a href=<?php echo get_page_link($xpanel['submit-link']); ?> class="header-submit-btn">

```

Figure 5.1.15 – Some computer viruses release code that destroys the data on your computer

	<p><b>Viruses</b> can damage or destroy files on a computer system and are spread by sharing an already infected removable media, like a USB stick, external drive, or CD, opening malicious email attachments, and visiting malicious webpages.</p>
	<p><b>Worms</b> are a type of virus that copies itself from computer to computer. Its function is to use all your computer's resources, which can cause your computer to stop responding.</p>



**Trojan horses** are computer programs that hide a virus or a potentially damaging program. It is not uncommon that free software contains a trojan horse, making a user think they are using legitimate software when, instead, the program is performing malicious actions on the user's computer.



**Malicious data files** are non-executable files (such as a Microsoft Word document, an Adobe PDF, a ZIP file, or an image file) that exploits weaknesses in the software program used to open it. Attackers often use malicious data files to install malware on a victim's system, commonly distributing the files via email, social media, and websites.



Figure 5.1.16 – Never open an attachment from an unknown source

### How do you recover if you become a victim of malicious code?

Using antivirus software is the best way to defend your computer against malicious code. If you think your computer is infected, run your antivirus software program. Ideally, your antivirus program will identify any malicious code on your computer and isolate it, so that it no longer affects your system.

You should also consider these steps:

- **Minimize the damage**

Encourage learners with access to an information technology (IT) department to contact them immediately. The sooner they can investigate and “clean” the computer, the less likely it is to cause additional damage to the computers on the network. If learners are using a home computer or laptop, they should disconnect the computer from the internet immediately; this will prevent the attacker from accessing the system.

- **Remove the malicious code**

If the computer has antivirus software installed, updating the software, and performing a manual scan of the entire system is advisable. Explain to learners that they can purchase antivirus software online or at a computer store. If the software cannot locate and remove the infection, it may be necessary to reinstall the operating system, usually with a system restore disk. It is important to warn learners that reinstalling or restoring the operating system erases all the files and any additional software that is installed on the computer. After reinstalling the operating system and any other software, they can install all the appropriate patches to fix known weaknesses.

Explain to learners that threats in the digital space will continue to evolve. Although it is not possible to remove every hazard, by using caution, by installing and using antivirus software, and by following other simple security practices, users can reduce their risk and strengthen protections against malicious code.



Figure 5.1.17 – Take positive steps to recover from a cyberattack



Figure 5.1.18 – A qualified IT technician can help users to delete malicious code

## Activity 5.1.5: Recover from a cyberattack

1. Ask learners to describe what to do if their device has been attacked. Allow them to do research using Google and find out what practical steps they can take.
2. Learners write a short, bulleted list on each of these occurrences to make them aware of what to do should either of these happen:
  - a) A virus attack
  - b) A system hack

### Knowledge and skill checklist



I can frequently check the security configuration and systems of my devices and/or of the applications I use.

I know how to react if my computer is infected by a virus.

I can explain and apply data protection laws.

# 2

## Protecting personal data and privacy



	<b>Duration</b>	7.5 hours
	<b>Objectives</b>	<ul style="list-style-type: none"><li>• Explain and apply privacy policies.</li><li>• Explain and apply data protection laws.</li></ul>
	<b>Content</b>	<ul style="list-style-type: none"><li>• Protecting yourself online</li><li>• Guidelines for sharing personal information</li><li>• Reduce email threats</li></ul>
	<b>PowerPoint slides</b>	Use <a href="#">this link</a> to access the PowerPoint slides deck for this unit.
	<b>Lesson Plan Guide</b>	<ol style="list-style-type: none"><li>1 Protecting yourself online (90 minutes)</li><li>2 Guidelines for sharing personal information (90 minutes)</li><li>3 Reduce email threats (90 minutes)</li><li>4 Common indicators of phishing attempts (75 minutes)</li><li>5 How information is used (90 minutes)</li><li>6 Consolidation (15 minutes)</li><li>7 Knowledge and Skills Checklist</li></ol>

## Additional online resources

- Protect yourself online: <https://staysafeonline.org/online-safety-privacy-basics/5-easy-online-safety-tips/>
- Sharing personal information: <https://blog.gwi.com/trends/how-to-make-personal-information-sharing-work/>
- Reduce email threats: <https://www.sisainfosec.com/blogs/ways-to-reduce-rising-email-based-threats-and-uphold-better-data-security/>
- Indicators of phishing attempts:  
<https://inspiredelearning.com/blog/common-indicators-of-a-phishing-attempt/>
- Privacy policies: <https://www.privacypolicies.com/blog/what-is-privacy-policy/>
- Data protection laws:  
<https://www.dataguidance.com/notes/uganda-data-protection-overview>



## Teaching notes

### Protecting yourself online

#### How can you protect yourself?

##### Limit sharing personal information

Lead a discussion with learners about the importance of not **posting** information that would make them vulnerable, such as their address or information about their schedule or routine. Warn them to keep an eye on what their **connections** post; they should not tolerate a connection sharing more information than they would be comfortable with strangers knowing. Likewise, advise learners to be careful when posting information, including photos, about your connections.

### **The internet is a public resource**

Emphasize that learners should only post information they are comfortable with anyone seeing. This includes information and photos in their profile and in blogs and other forums. Remind them that, once they have posted information online, they cannot retract it. Even if they remove the information from a site, saved or cached versions may still exist on other people's machines.

### **Be wary of strangers**

The internet makes it easy for people to fake their identities and motives. Encourage learners to consider limiting the people who are allowed to contact them on these sites. If they interact with people they don't know, they should be cautious about the amount of information they reveal. Warn learners to exercise extreme caution when agreeing to meet a stranger in person.

### **Be skeptical**

Warn learners to never believe everything they read online. People may post false or misleading information about topics, including their own identities. This is not necessarily done with malicious intent; it could be unintentional, an exaggeration, or a joke.

Encourage learners to take the proper precautions and to try to confirm the truthfulness of any information before acting on it.

### **Evaluate settings**

Encourage learners to take advantage of a site's privacy settings. Explain that the default settings for some sites may allow anyone to see their profile, but they can customize their settings to restrict access to only certain people. There is still a risk that private information could be exposed despite these restrictions, so encourage learners not to post anything that they wouldn't want the public to see.

Sites may change their options from time to time, so learners should be checking their security and privacy settings regularly to make sure that they are still comfortable.



Figure 5.2.1 – Check your privacy settings and set them to a higher security level

### **Be wary of third-party applications**

Explain to learners that, while third-party applications may provide entertainment or functionality, they should be careful when deciding which applications to enable. Encourage learners to avoid applications that seem suspicious and to modify their settings to limit the amount of information the applications can access.

### **Check privacy policies**

Some sites may share information, such as email addresses or user preferences, with other companies. This may lead to an increase in spam. Also, it is important for users to try to locate the policy for handling referrals to make sure that they do not unintentionally sign up their friends for spam. Explain that some sites will continue to send email messages to anyone that has been referred to them until the person who was referred joins – this may not be because they wanted to join in the first place. Explain that it is discourteous to sign up a person for a mailing list or to refer them without their consent or approval.



Figure 5.2.2 –Remind learners that what they post is available to all unless they set privacy settings

### The threats that social networking sites present

Although many of these sites have age restrictions, children may misrepresent their ages so that they can join. Emphasize the importance of being aware of internet safety. Learners must be aware that not everyone is the age and the person they are pretending to be. Explain that learners should be careful in their online habits, to become safe and responsible internet users.



Figure 5.2.3 – There are many different levels of privacy setting for different applications and sites

## Guidelines for sharing personal information

### **View the internet as a novel, not a diary**

It is important for learners to understand just how public the internet is. Encourage them to ensure that they are comfortable with anyone seeing the information they put on blogs, social networking sites, and personal websites. Explain that they should write all their content with the expectation that it is available to the public and that people they have never met will find their page. Although some sites use passwords or other security restrictions to protect the information, these methods are not used for most websites. If learners want the information to be private or restricted to a small, select group of people, the internet is not the best place to share it.

### **Share a limited amount of personal information**

Explain that learners should not post information that could make them vulnerable, such as their address, phone number, email, or information about their schedule or routine. Explain that even sharing their email address may increase the amount of spam they receive (see Reducing Spam for more information). Learners may think that they are sharing harmless details about their lives, but even providing details about hobbies, their job, their family and friends, or their past may give attackers enough information to perform a successful social engineering attack (see Avoiding Social Engineering and Phishing Attacks and Staying Safe on Social Networking Sites for more information).

### **Realize that you cannot take it back**

By now, learners should be understanding that everything they publish online is available to other people and to search engines. Explain that they can change or remove information after something has been published, but it is possible that someone has already seen the original version. Even if they try to remove the page(s) or posts from the internet, someone may have saved a copy of the page or used excerpts in another source. Some search engines 'cache' copies of webpages; these cached copies may be available after a webpage has been deleted or altered. Some web browsers may also maintain a cache of the webpages a user has visited, so the original version may be stored in a temporary file on the user's computer. Think about these possible results before publishing information. Emphasise to learners again: once something is out there, they cannot guarantee that it can be completely removed.

Encourage learners to let common sense guide their decisions about what to post online as a general practice. Tell them that, before they publish something to the internet, they should determine what value it provides and consider the implications of having the information available to the public. Remind them that identity theft is an increasing problem, and the more information an attacker can gather about a person, the easier it is to pretend to be that person.

## **How anonymous are you?**

Explain to learners that they may think that they are anonymous as they browse websites, but pieces of information about them are always left behind. Explain that they can reduce the amount of information revealed about them by visiting legitimate sites, checking privacy policies, and providing as little personal information online as possible.

## **What information is collected?**

When a person visits a website, a certain amount of information is automatically sent to the site. This information may include the following:

- **IP address**

Each computer on the internet is assigned a specific, unique Internet Protocol (IP) address. Explain that a computer may have a static IP address or a dynamic IP address. If a person has a static IP address, it never changes. However, some ISPs own a block of addresses and assign an open one each time a person connects to the internet – this is a dynamic IP address. Show learners how they can check their computer's IP address any time by visiting [www.showmyip.com](http://www.showmyip.com).

- **Domain name**

Explain that the internet is divided into domains, and every user's account is associated with one of those domains. Show learners how they can identify the domain by looking at the end of the URL. Show them these examples: .edu indicates an educational institution, .gov indicates a government agency, .org refers to organization, and .com is for commercial use. Many countries also have specific domain names (Uganda is .co.ug). The list of active domain names is available from the Internet Assigned Numbers Authority (IANA).

- **Software details**

It may be possible for an organization to determine which browser, including the version, a user used to access its site. The organization may also be able to determine what operating system the visitor's computer is running.

- **Page visits**

Explain to learners that the information about which pages they visited, how long they stayed on a given page, and whether they came to the site from a search engine is often available to the organization operating the website.

If a website uses **cookies**, the organization may be able to collect even more information, such as the visitor's browsing patterns, which include other sites visited. Warn learners that, if the site they are visiting is malicious, files on their computer, as well as passwords stored in the temporary memory, may be at risk.

## Reduce email threats

Phishing emails continue to be one of the most common attack routes used for malware delivery and credential harvesting. A phishing email is an email that is pretending to be for a certain purpose, to get a response from the victim and their personal details. Phishing relies on the person making a mistake and answering the email or clicking on a link in the email.

To infect a system, the attacker must simply persuade a user to click on a link or open an attachment. Explain to learners that there are many indicators that they can use to identify a phishing email. The best defence against these attacks is to become an educated and cautious user and make sure they know how most phishing attacks might look or what they might ask for.



Figure 5.2.4 – Cybercrime is on the increase

Emphasize to learners that banks will never send an email with a link to update something on a person's account. Explain that they can also check emails like this for spelling mistakes or strange addresses – if they are unsure, they should not respond. Warn learners to not click on links from emails saying that they need a response if they are not 100% sure that the email is legitimate. Rather be safe than sorry!

----- Forwarded Message: -----  
From: "alerts@citibank.com" <ALERTS@CITIBANK.COM>  
To: recipient@email.com  
Subject: Security Alert: 06699  
Date: Thu, 29 May 2008 12:41:41 +0000

The Citi logo, featuring the word "citi" in blue with a red arch above it.

This is a Security Alert you requested to help you protect your account.  
Your account has been blocked.  
219 You have exceeded the number of three (3) failed login attempts.  
To unlock your account, please [your account](#)  
  
Thank you for your cooperation.  
**Sincerely Yours,**  
Letha Cox  
[Letha.Cox@citibank.com](mailto:Letha.Cox@citibank.com)

Figure 5.2.5 – Banks will never send emails with links to your account – the above is clearly from a person trying to access the receiver's details

## Avoiding social engineering and phishing attacks

Tell learners that they should not give sensitive information to others unless they are sure they are who they say they are, and that they should have access to the information.

### Social engineering attacks

In a social engineering attack, an attacker uses human interaction (social skills) to get information about an organization or its computer systems. An attacker may seem ordinary and respectable, possibly claiming to be a new employee, repair person, or researcher, and even offering IDs to support that identity. However, by asking questions, they may be able to get enough information to cause damage. If an attacker is not able to gather enough information from one source, they may contact another source within the same company and rely on the information from the first source to add to their credibility.

### Phishing attacks

Phishing is a form of social engineering. Phishing attacks use email or malicious websites to find out personal information by posing as a trustworthy organization. For example, an attacker may send email that seems to be from a well-known bank requesting account information, often suggesting that there is a problem. When users respond with the requested information, attackers can use it to gain access to the accounts.



Figure 5.2.6– Fake sites often copy the symbols used for real protection sites, such as the shield symbol

Phishing attacks may also appear to come from other types of organisations, such as charities. Attackers often take advantage of current events and certain times of the year, such as:

- natural disasters (e.g., Kasese floods, Bududa landslides)
- epidemics and health scares (e.g., Ebola, COVID-19)
- economic concerns (e.g., Ugandan Revenue Authority scams)
- major political elections
- holidays

Reiterate to learners that if they are unsure of the source of a message, they should not respond.



*Figure 5.2.7– Use caution when viewing sites or emails from people you do not know*

## Vishing attacks

Vishing is a similar concept to phishing, but it occurs over the phone – the person will call pretending to be from a certain company and may ask personal questions or ask the victim to call a certain number. Advanced vishing attacks could use Voice-over Internet Protocol (VoIP) solutions and broadcasting services. VoIP easily allows Caller ID to be hidden or faked, which can take advantage of the public's misplaced trust in the security of phone services, especially landline services. Landline communication cannot be intercepted without physical access to the line; however, this trait is not beneficial when communicating directly with a malicious actor.

## Smishing attacks

Smishing is a similar concept, but the person uses SMS, or text, messages. Text messages can contain links to such things as webpages, email addresses or phone numbers that when clicked may automatically open a browser window or email message or dial a number.

## Activity 5.2.1: Read a privacy policy

1. Ask learners to navigate to an online site (you may want to give them a specific site to visit, so that you can vet it first, e.g., a website for a publisher of school textbooks). The site should have a privacy policy. Ask learners to read some of the policy (they can scan through the beginning part to get the main point).
2. Ask the learners these questions and try to get a class discussion going:
  - a) What do you think the main point of a privacy policy is?
  - b) Why do companies include them on their websites?
  - c) Do you think the fact that a website has a privacy policy automatically makes it a safe site?

You can adapt your explanation, but learners should be aware of the following safety mechanisms. Firstly, they can compare the company's name with the web address. If they are a legitimate publishing company, the company name itself gives a sense of security, and they more than likely abide by their privacy policy.

Remind learners that for other sites that you may not be 100% comfortable with, they could copy a privacy policy from another site to help make them look legitimate. Remind them to never share personal information if they are unsure.

## Activity 5.2.2: Review privacy settings

1. Assist learners to find the privacy settings on their specific device (they are usually under 'Settings').
2. Learners read through the privacy settings and find out what each part means.

## Activity 5.2.3: Maximize privacy

1. Ask learners to Google a list of steps they can take to increase/maximize privacy on a computer.
2. In pairs, they discuss how each of these helps maintain a user's online privacy.

## Common indicators of phishing attempts

It is important for learners to understand how to recognize attempted phishing attacks. Share these tips with them.

<b>Suspicious sender's email address</b>	The sender's address may imitate a legitimate business. Cybercriminals often use an email address that is very similar to a reputable company by changing or leaving out a few characters.
<b>Generic greetings and signatures</b>	Both a generic greeting, like "Dear Valued Customer" or "Sir/Ma'am", or a lack of contact information in the signature block are strong indicators of a phishing email. A trusted organization will normally address the receiver by name and provide their contact information.
<b>Spoofed hyperlinks and websites</b>	Links that do not match the text that appears when hovering over them may be spoofed. Malicious websites may look identical to a legitimate site, but the URL may use a variation in spelling or a different domain (e.g., .com vs. .net). Additionally, cybercriminals may use a URL shortening service to hide the true destination of the link.
<b>Spelling and layout</b>	Poor grammar and sentence structure, misspellings, and inconsistent formatting are other indicators of a possible phishing attempt. Trustworthy institutions have dedicated staff that produce, verify, and proofread customer correspondence.
<b>Suspicious attachments</b>	An unsolicited email requesting a user download or for an attachment to be opened is a common delivery mechanism for malware. A cybercriminal may use a false sense of urgency or importance to help persuade a user to download or open an attachment without examining it first.

## Avoid being a victim

Share these guidelines with learners to help them to be more aware of possible suspicious behaviour or emails:

- Be suspicious of unsolicited phone calls, visits, or email messages from individuals asking about employees, friends, or other internal information. If an unknown person claims to be from a known organization, try to verify identity directly with the company.
- Do not provide personal information or information about an employer, school, or location of home.
- Do not put personal or financial information in email, and do not respond to emails asking for this information. This includes following links sent in email.
- Don't send sensitive information over the internet before checking a website's security. (See Protecting Your Privacy for more information.)
- Pay attention to the Uniform Resource Locator (URL) of a website. Look for URLs that begin with "https"—an indication that sites are secure—rather than "http".
- If you are making a payment, look for a closed padlock icon—a sign that information provided will be encrypted.
- If it is unclear whether an email request is legitimate, try to verify it by contacting the company directly. Do not use contact information provided on a website connected to the request; instead, check previous statements for contact information.
- Install and maintain antivirus software, firewalls, and email filters to reduce traffic.
- Take advantage of any anti-phishing features offered by the email client and web browser.
- Enforce multi-factor authentication (MFA).



*Figure 5.2.8 – Stop and use caution: suspicious emails should be deleted immediately*

## What can a victim do?

Discuss with learners what they can do if they believe they might have revealed sensitive information. First, they should report it to the appropriate people within the organization, including network administrators, so that they can be alert for any suspicious or unusual activity.

If learners believe their bank accounts may be compromised, they should contact their bank immediately. The bank will freeze or block any accounts that may have been compromised. Thereafter, it is important to watch for any unknown or suspicious charges to the account.

It is also critical to immediately change any passwords that might have been revealed. Most people use the same password for multiple resources, and so it will also become very important for them to change it for each account and to not use it in future.



*Figure 5.2.9 – Hackers can obtain your bank details online if you input these details on a non-secure site, or if you respond to an email and fill these details in*

## Social networking sites

Social networking sites, sometimes referred to as "friend-of-a-friend" sites, build on the concept of traditional social networks, where people are connected to new people through people they already know. The purpose of some networking sites may be purely social, allowing users to establish friendships or romantic relationships, while others may focus on establishing business connections.



*Figure 5.2.10– Networking sites mean that some personal information will be shared – use caution with posting personal information*

Although the features of social networking sites differ, they all allow users to provide personal information and offer some way of communicating (forums, chat rooms, email, instant messages) to connect with other users. On some sites, users can browse for people based on certain criteria, like the name of their high school, while other sites require that users be "introduced" to new people through a shared connection. Many of the sites have communities or subgroups that may be based on a particular interest.

## Security implications of social network sites

Social networking sites rely on connections and communication, so they encourage users to provide a certain amount of personal information. When deciding how much information to reveal, people may not exercise the same amount of caution as they would when meeting someone in person. This is because:

- the internet provides a sense of anonymity
- the lack of physical interaction provides a false sense of security
- they tailor the information for their friends to read, forgetting that others may see it
- they want to offer insights to impress potential friends or associates.



Figure 5.2.11– Some social media icons

While most people using these sites do not pose a threat, malicious people may be drawn to them because of the accessibility and amount of personal information that's available. The more information malicious people have about a user, the easier it is for them to take advantage of that user. Predators may form relationships online and then convince unsuspecting individuals to meet them in person. That could lead to a dangerous situation. The personal information can also be used to conduct a social engineering attack. Using information that users provide about their location, hobbies, interests, and friends, a malicious person could impersonate a trusted friend or convince the victim that they have the authority to access other personal or financial data.

Additionally, because of the popularity of these sites, attackers may use them to distribute malicious code. Sites that offer applications developed by third parties are particularly at risk. Attackers may be able to create customized applications that appear to be innocent, while infecting victims' computers or sharing their information without consent.

## The internet is public

The internet is an accessible, popular resource for communicating with others and conducting research. Remind learners that they may have a sense of anonymity while online, but they must remember that they are not anonymous, and it is easy to find out information about people.

Many people have become so familiar and comfortable with the internet that they adopt practices that make them vulnerable. For example, although people are typically wary of sharing personal information with strangers they meet on the street, they may not hesitate to post that same information online. Once it is online, it can be accessed by a world of strangers, and you have no idea what they might do with that information.



Figure 5.2.12 – Our devices connect us to many networks and services

## How information is used

Generally, organizations use the information that is gathered automatically for honest purposes, such as generating statistics about their sites. By analysing the statistics, the organizations can better understand the popularity of the site and which areas of content are being accessed the most. They may be able to use this information to modify the site to better support the behaviour of the people visiting it.

Another way to apply information gathered about users is marketing. If the site uses cookies to determine other sites or pages you have visited, it may use this information to advertise certain products. The products may be on the same site or may be offered by partner sites.

Remind learners that some sites may collect their information for malicious purposes. If attackers can access files, passwords, or personal information on a user's computer, they may be able to use this data to their advantage. The attackers may be able to steal someone's identity and use and abuse



Figure 5.2.13 – Cybercriminals obtain personal information about others online

this personal information for financial gain. Attackers may use this type of information once or twice, then sell or trade it to other people. They profit from the sale or trade and increasing the number of transactions makes it more difficult to trace any activity back to them. The attackers may also alter the security settings on a victim's computer so that they can access and use it for other malicious activity.

### **Are you exposing any other personal information?**

While using cookies may be one method for gathering information, the easiest way for attackers to get access to personal information is to ask for it. Remind learners that by representing a malicious site as a legitimate one, attackers may be able to convince them to give up their address, banking information, identity number, or other personal data.

#### **Activity 5.2.4: Data protection laws**

Remind learners that data protection is a set of strategies and processes that they can use to secure the privacy, availability, and integrity of their data. There are data protection laws applicable in different countries, which help protect citizens' privacy and data integrity.

1. Ask learners to Google data protection laws present in Uganda.
2. They should explain what these data protection laws are in simple terms by writing or typing a summary paragraph on what these laws mean to them.
3. Included in their report should be answers to these questions:
  - a) How would these laws be applied?
  - b) What if someone is in contravention of these laws?

#### **Knowledge and skill checklist**



I can explain and apply privacy policies.

I can explain and apply data protection laws.

# 3

## Protecting health, well-being and building digital resilience



	<b>Duration</b>	4.5 hours								
	<b>Objectives</b>	<ul style="list-style-type: none"><li>• Apply different approaches to minimizing health and well-being risks.</li><li>• Apply a wide variety of approaches to keeping myself and others safe.</li><li>• Take a leadership role, including with parents and with caregivers.</li><li>• Explain and apply cybercrime laws.</li></ul>								
	<b>Content</b>	<ul style="list-style-type: none"><li>• Negative effects of technology: what to know</li><li>• Cyberbullying</li></ul>								
	<b>PowerPoint slides</b>	Use <a href="#">this link</a> to access the PowerPoint slides deck for this unit.								
	<b>Lesson Plan Guide</b>	<table><tr><td>1</td><td>Negative effects of technology: what to know (120 minutes)</td></tr><tr><td>2</td><td>Cyberbullying (135 minutes)</td></tr><tr><td>3</td><td>Consolidation (15 minutes)</td></tr><tr><td>4</td><td>Knowledge and Skills Checklist</td></tr></table>	1	Negative effects of technology: what to know (120 minutes)	2	Cyberbullying (135 minutes)	3	Consolidation (15 minutes)	4	Knowledge and Skills Checklist
1	Negative effects of technology: what to know (120 minutes)									
2	Cyberbullying (135 minutes)									
3	Consolidation (15 minutes)									
4	Knowledge and Skills Checklist									



## Additional online resources

- Negative effects of technology:  
<https://www.kaspersky.com/resource-center/preemptive-safety/impacts-of-technology-on-health>
- Cyberbullying: <https://www.verywellfamily.com/what-are-the-effects-of-cyberbullying-460558>

## Teaching notes

### Negative effects of technology: what to know

People are more connected than ever, thanks in large part to rapid advancements in technology.

While some forms of technology may have made positive changes in the world, there is also evidence for the negative effects of technology and its overuse.

Social media and mobile devices may lead to psychological and physical issues, such as eyestrain and difficulty focusing on important tasks. They may also contribute to more serious health conditions, such as depression.

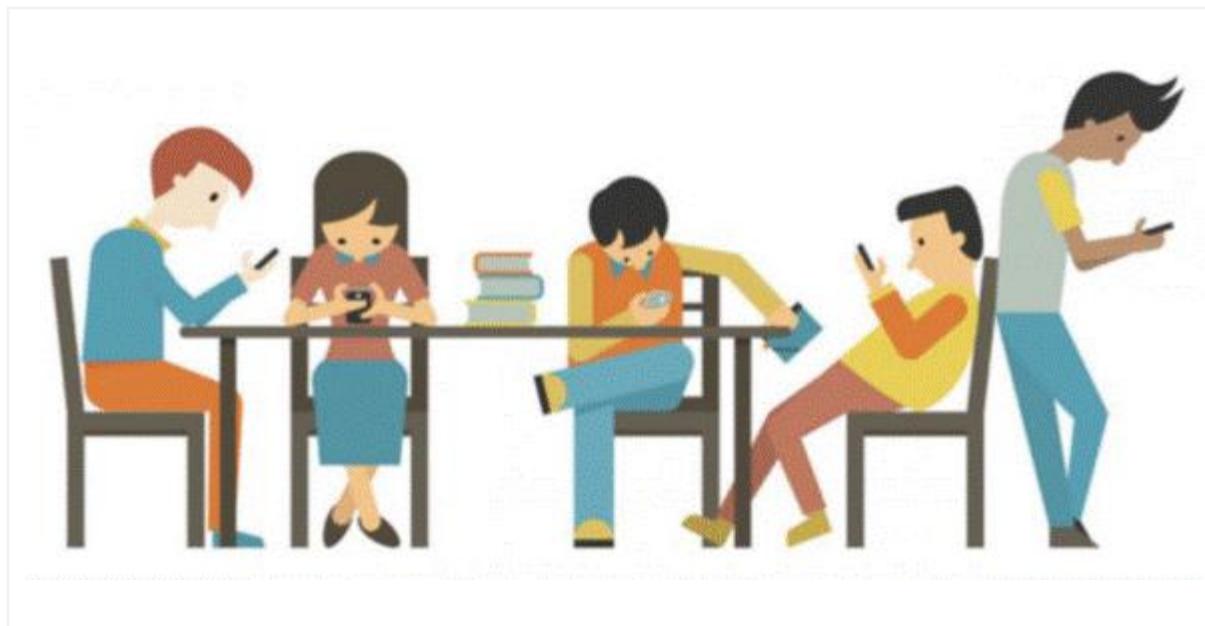


Figure 5.3.1 – Connected to the world but disconnected from each other

## **Physical health effects**

Technology use may also increase the risk of physical issues.

### **Eyestrain**

Technologies, such as handheld tablets, smartphones, and computers, can hold a person's attention for long periods. This may lead to eyestrain.



*Figure 5.3.2– Looking at screens for many hours can cause eyestrain*

Symptoms of digital eyestrain can include blurred vision and dry eyes. Eyestrain may also lead to pains in other areas of the body, such as the head, neck, or shoulders. Several technological factors may lead to eyestrain, such as:

- screen time
- screen glare
- screen brightness
- viewing too close or too far away
- poor sitting posture
- underlying vision issues.

Taking regular breaks away from the screen may reduce the likelihood of eyestrain. Anyone regularly experiencing these symptoms should see an optometrist.

### **The 20-20-20 rule for digital viewing**

When using any form of digital screen for longer periods of time, it is recommended to use the 20-20-20 rule. Explain to learners how to use this rule: after every 20 minutes of screen

time, take a 20-second break to look at something at least 20 metres away. Doing this may help reduce the strain on the eyes from staring at a screen for a continuous period.

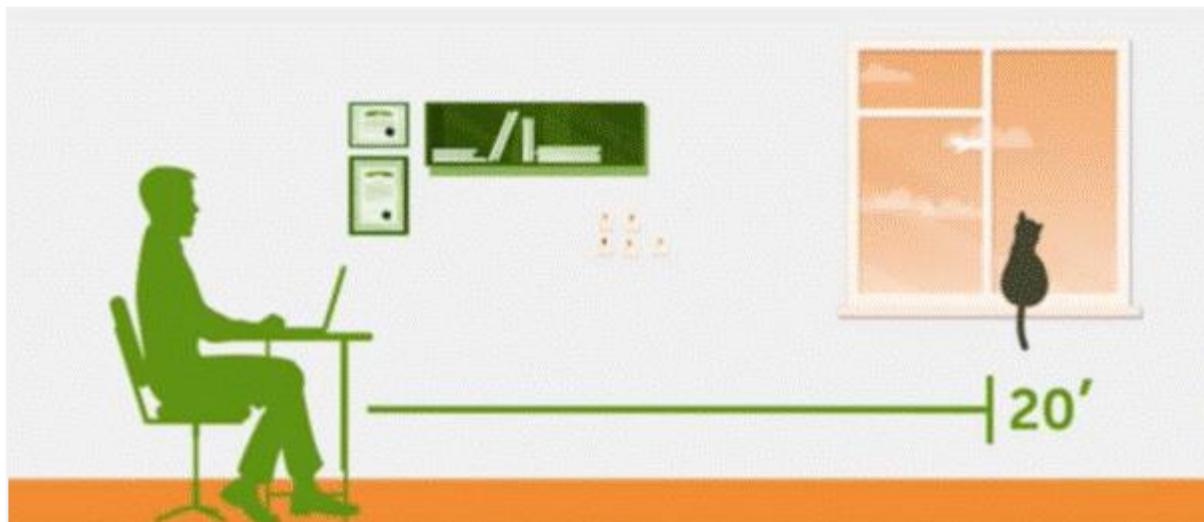


Figure 5.3.3 – The 20-20-20 rule

### Activity 5.3.1: Protect from eye strain

1. Provide learners with a text document that has two paragraphs: one in a very small font and one in a very long font. Discuss the difference between reading these two texts.
2. Learners select the text and change the font back to the smallest size available. Ask them to notice how they feel reading the text, and whether they have a feeling of eye strain or forcing the eye to read when reading a text with a very small size font.
3. Remind learners that spending long hours in front of a computer can cause eye strain. Show them this extension available for web browser to remind them of the 20-20-20 rule:  
<https://chrome.google.com/webstore/detail/eyecare-protect-your-visi/eeningnfkaonkonalpcicgemnnijhn>
4. Explain that they can also change the brightness of their screen if their eyes are feeling strained looking at the computer. Show them how to adjust to slightly dimmer if this is more comfortable for their eyes. Remind them that if they are using a shared computer, they should remember to adjust the brightness back once they have finished their session.

## Poor posture

The way many people use mobile devices and computers may also cause incorrect posture. Over time, this may lead to musculoskeletal issues. Often computer users have a “down and forward” position, meaning the person is hunched forward and looking down at the screen.

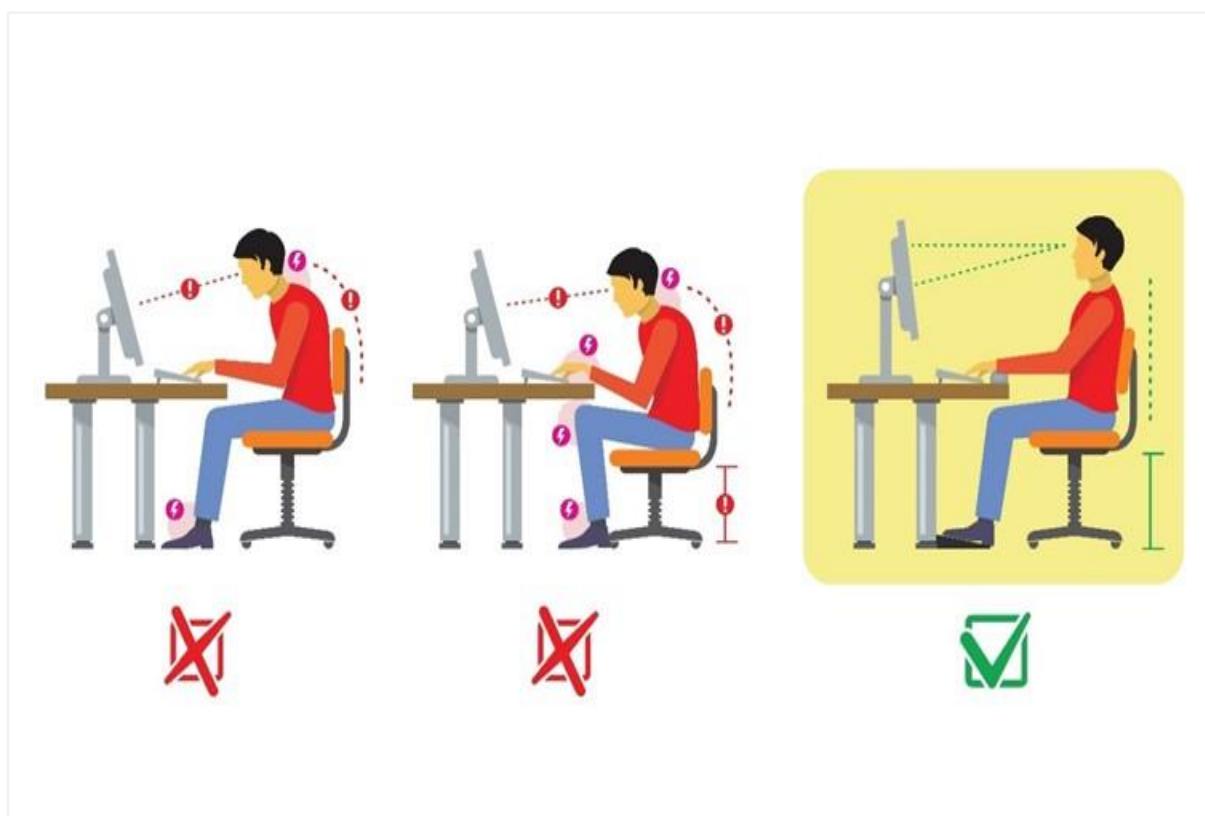


Figure 5.3.4 – Correct posture while working is vital for health

This can put an unnecessary amount of pressure on the neck and spine and can cause neck and shoulder pain or stiffness.

Correcting posture problems while using technology can lead to an overall improvement in posture and strength in the core, neck and back. Show learners how to sit correctly in front of a computer screen. Show them how it is also very important to face the computer/device directly – i.e., they should not sit at an angle or diagonal to the screen. A slight shift off-centre will not be felt initially, but can cause ongoing problems and pain, especially in the upper back.

Remind learners of the importance of regular breaks and movement to change positions. If a person finds themselves sitting in the same position for hours at a time, such as sitting at a desk while working, regularly standing, or stretching, helps reduce strain on the body. Also, taking short breaks, such as walking for a few minutes every hour, may also help keep the muscles loose and avoid tension and incorrect posture.

## Sleep problems

Using technology too close to bedtime may cause issues with sleep. This effect has to do with the fact that blue light, such as the light from cell phones, tablets and computers, stimulates the brain. This could make it harder to fall asleep or lead to a person feeling less alert the next day. To avoid the impact of blue light on the brain, people can stop using electronic devices that emit blue light in the hour or two before bedtime. Gentle activities to wind down with instead, such as reading a book, doing gentle stretches, or taking a bath, are alternatives.



Figure 5.3.5 – Good sleep is important

## Reduced physical activity

Using devices for long time periods leads to a less active lifestyle, which is known to have negative health effects, such as contributing to:

- obesity
- cardiovascular disease
- type 2 diabetes
- premature death.

Finding ways to take breaks from inactive technologies may help promote a more active lifestyle.

It is important to stand up and stretch or walk a little at regular intervals. There are also various stretches and leg lifts that can be done while sitting at a desk.

Research shows that active technologies, such as app notifications, emails, and wearable technologies that promote exercise may reduce short-term sedentary behaviour. This could help people set healthy patterns and become more physically active.

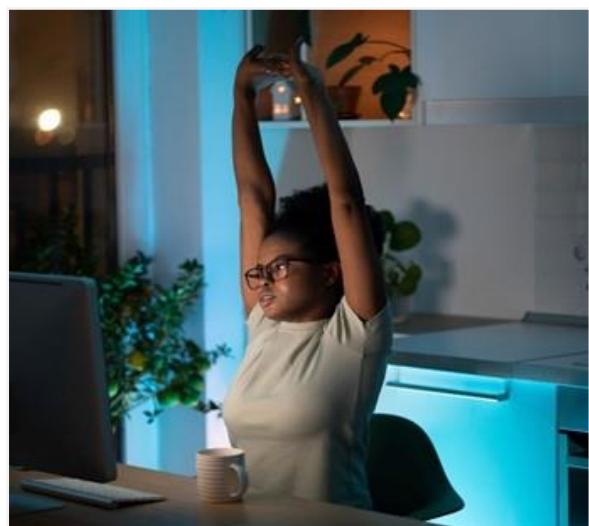
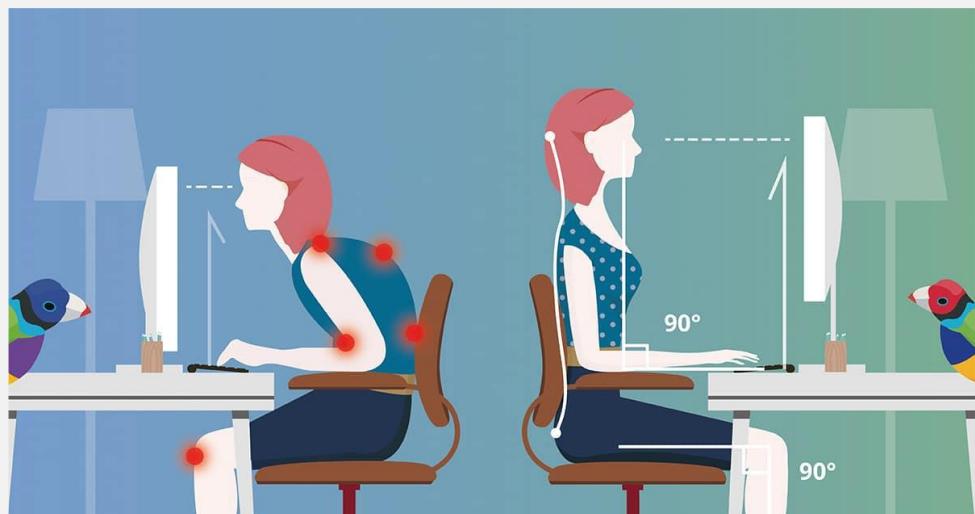


Figure 5.3.6 – Stretch regularly at your computer, and recheck your posture

## Activity 5.3.2: Sit in the correct position

### Posture:

1. Bring learners awareness to how they are sitting – is it more like the image on the left or the right below?



2. If they are hunched forward like the figure on the left, encourage them to straighten their spine and roll their shoulders down and back.
3. Remind learners to regularly ‘check in’ with their body position in front of the computer.

### Physical activity:

Show learners some of these simple stretches, which they can do while seated at the computer:

1. Cross your arms in front of you and place your hands on opposite shoulders. Gently rotate from the waist, first to one side (hold it there for a few seconds) and then the other. Repeat this several times, feeling a stretch in the lower back.
2. Shrug your shoulders upwards as high as you can go, and keep them there for a few seconds, then drop them down. Repeat this several times.
3. Turn your head to one side as far as it will go, keep it there a few seconds, then turn it the other way. Repeat this three times to each side.
4. Ask learners to Google stretches that can be done in front of a computer, and to add to the stretches that you have already shown them.

### **Eating and sleeping:**

Remind learners that there are many things that can affect health. Encourage them to not spend too much time online or with technology and end up snacking on unhealthy food or spending so much time online that they are not sleeping properly. Healthy eating, proper sleep, and getting exercise can help learners to be more balanced and better able to learn new information. They should also be aware that engaging with technology can become addictive.

1. Ask learners to Google signs and symptoms of internet or technology addiction and make some notes.
2. Encourage them to be aware of these signs so that they can manage their relationship with technology better.

## **Cyberbullying**

Cyberbullying is using technology to harass or bully someone else. Bullies used to be restricted to methods such as physical intimidation, but computers, cell phones, tablets, and other mobile devices offers them opportunities, such as email, instant messaging, web pages, and digital photos.

Forms of cyberbullying can range in severity from cruel or embarrassing rumours to threats, harassment, or stalking. It can affect any age group; however, teenagers and young adults are common victims, and cyberbullying is a growing problem in schools.



Figure 5.3.7 – Cyberbullying can take many forms

## **Why has cyberbullying become such a problem?**

The relative anonymity of the internet works for bullies because it increases the intimidation and makes tracing the activity more difficult. Some bullies find it easier to be more vicious because there is no personal contact. The internet and email can also increase the visibility of the activity. Information or pictures posted online or forwarded in mass emails can reach a larger audience faster than the usual methods, causing more damage to the victims. A large amount of personal information is available online, so bullies may be able to randomly choose their victims. Additionally, there may be potential for an escalation of the behaviour.

## **How can you protect yourself?**

Share with learners these tips for protecting themselves while maintaining a positive online presence:

- Learn good online habits. Learn the risks of technology and how to be responsible online. Reduce the risk of becoming cyberbullied by setting guidelines for and monitoring use of the internet and other electronic media (cell phones, tablets, etc.).
- Watch for warning signs in the language used online. Encourage learners to trust their instincts and to cut off contact as soon as they begin to feel uncomfortable with a situation.
- Limit availability of personal information. Limiting the number of people who have access to contact information or details about interests, habits, or employment reduces exposure to strangers. This may limit the risk of becoming a victim and may make it easier to identify a bully if that situation does arise.
- If the situation escalates to cyberbullying, learners should feel empowered to communicate this to someone who can help. It is better to talk about these situations, as often a victim of cyberbullying can feel isolated.
- Avoid escalating the situation. Responding with hostility is likely to provoke a bully and escalate the situation. Depending on the circumstances, consider ignoring the issue. Often, bullies thrive on the reaction of their victims. Other options include subtle actions. For example, you may be able to block the messages on social networking sites or stop unwanted emails by changing the email address. If you continue to get messages at the new email address, you may have a stronger case for legal action.
- Document the activity. Keep a record of any online activity (emails, web pages, instant messages, etc.), including relevant dates and times. In addition to archiving an electronic version, consider printing a copy.
- Report cyberbullying to the appropriate authorities. Many schools have instituted anti-bullying programs, so school officials may have established policies for dealing with activity that involves learners. If necessary, victims can contact their local law enforcement.

## **Psychological effects**

- Overuse or dependence on technology may have adverse psychological effects, including isolation. Technologies, such as social media, are designed to bring people together, yet they may have the opposite effect in some cases.
- Finding ways to reduce social media use, such as setting time limits for social apps, may help reduce feelings of isolation in some people.

## **Depression and anxiety**

- People who had more positive interactions and social support on these platforms appeared to have lower levels of depression and anxiety.
- People who perceived that they had more negative social interactions online and who were more prone to social comparison experienced higher levels of depression and anxiety.
- There does appear to be a link between social media and mental health, a significant determining factor is the types of interactions people feel they are having on these platforms.

### **Activity 5.3.3: Respond to cyberbullying**

Read learners this scenario:

You find out that your younger sister is being cyberbullied – someone is sending her mean and hurtful texts, and it has now escalated to posting messages about her on social media that her friendship group can see.

Now, discuss these questions as a class:

1. What advice do you give her?
2. List the steps and strategies you would take to help her.
3. You start to think about the other children her age in your area, and you know you could take on more of a leadership role.
4. What advice would you give them to help them avoid situations like this?
5. Could you set up some form of community support?

## Activity 5.3.4: Find out about cybercrime laws

1. Remind learners that cyberbullying is a form of cybercrime, and that there are laws to protect against this.
2. Ask learners search online and find out what the cybercrime laws are in your country.
3. Learners write a short paragraph on what cybercrime is.

### Knowledge and skill checklist

I can apply different approaches to minimizing health and well-being risks.



I can explain what cybercrime is and understand that there are laws against this.

# 4

## Protecting the environment



	<b>Duration</b>	4.5 hours
	<b>Objectives</b>	<ul style="list-style-type: none"><li>Have an informed stance on the impact of digital technologies on everyday life, online consumption, and the environment.</li></ul>
	<b>Content</b>	<ul style="list-style-type: none"><li>Proper disposal of electronic devices</li><li>Practical activities</li></ul>
	<b>PowerPoint slides</b>	Use <a href="#">this link</a> to access the PowerPoint slides deck for this unit.
	<b>Lesson Plan Guide</b>	<ol style="list-style-type: none"><li>1 Proper disposal of electronic devices (75 minutes)</li><li>2 Effective methods for removing data from devices (180 minutes)</li><li>3 Consolidation (15 minutes)</li><li>4 Knowledge and Skills Checklist</li></ol>

## Additional online resources



- Energy saving strategies: <https://www.energysage.com/energy-efficiency/101/ways-to-save-energy/>
- Proper disposal of electronic devices: <https://www.wikihow.com/Dispose-of-Electronics>
- Effective methods for removing data from devices: <https://kb.mit.edu/confluence/display/istcontrib/Removing+Sensitive+Data>

## Teaching notes

### Proper disposal of electronic devices

Computers and other electronic devices contain different metals, plastics, raw materials, and chemicals, and need to be disposed of correctly: they cannot just be thrown into normal waste for landfill.

Types of electronic devices include:

- Computers, smartphones, and tablets: electronic devices that can automatically store and process data; most contain a central processing unit and memory and use an operating system that runs programs and applications.
- Digital media: these electronic devices create, store, and play digital content. Digital media devices include items like digital cameras and media players.
- External hardware and peripheral devices: hardware devices that provide input and output for computers, such as printers, monitors, and external hard drives; these devices contain permanently stored digital characters.
- Gaming consoles: electronic, digital, or computer devices that output a video signal or visual image to display a video game.



Figure 5.4.1 – Old disused tablets



Figure 5.4.2– Electronic devices like computers, laptops and tablets contain computer chips made from various metals

### Safely disposing of out-of-date electronic devices

Electronic waste (sometimes called e-waste) is a term used to describe electronics that are nearing the end of their useful life and are discarded, donated, or recycled. Although donating and recycling electronic devices conserves natural resources, you may still choose to dispose of e-waste by contacting a business that specialises in e-waste disposal and requesting a designated e-waste drop off location. Be aware that although there are many options for disposal, it is your responsibility to ensure that the chosen location is reputable and certified.



Figure 5.4.3 – A box of out-of-date electronic devices ready for an e-waste disposal company



Figure 5.4.4 – E-waste should be disposed of correctly

## Activity 5.4.1: Lessen your environmental impact

1. Learners should list four ways (related to technology) they can lessen their impact on the environment.
2. Ask learners to consider a printer and the paper that the printer uses. How can they get rid of old technological products, such as an old printer? Ask them if it is safe to dispose of these in landfill? Then, ask them to compare this to the paper itself – how can you get rid of old and used paper and whether any of these products are biodegradable?
3. Discuss whether the learners think it is important to get rid of batteries in a specific way. Learners should be able to give good reasons for their opinion.

## Activity 5.4.2: Do a presentation

1. Ask learners to research some of the damage that not disposing of electronic equipment (including batteries) correctly can do to the environment.
2. They should put their findings together in a short presentation. Encourage the learners to focus on different aspects, such as water supply, soil, danger to children and animals, etc.

## Effective methods for removing data from devices

By now, learners have realized that there are multiple safety and security concerns that accompany the use of technology – both hardware and software. They should understand that, before either donating or putting into e-waste old computer equipment, they should have removed any sensitive information from this equipment. Computers, smartphones, and cameras allow people to keep a great deal of information at their fingertips, but when people then dispose of, donate, or recycle a device, they may accidentally disclose sensitive information, which could be exploited by cybercriminals.

There are a variety of methods for permanently erasing data from a device (this is also called sanitizing). Because methods of sanitization vary according to device, it is important to use the method that applies to that device: learners can look up this information online.

Explain to learners that they should back up their data (if they still want it) before sanitizing their device. They can save their data to another device or a second location (e.g., an external hard drive or the cloud) to preserve it even once they have gotten rid of their old device. Options for digital storage include cloud data services and removable flash drives or removable hard drives.

These methods of clearing data and sanitising computers is only to be done on **old hardware that will be given away or handed to e-waste** companies. Emphasize also that these should only be used on devices that learners own. Remind them to **never delete program files, change settings, or reset a device to factory settings if** it is a device they are using in a school, work, or other communal setting.

Removing data from a device can be one method of sanitization. When files are deleted from a device—although the files may appear to have been removed—data remains on the media even after a delete or format command is executed. Therefore, this should not be the sole deletion method that is relied on. Even if the trash is emptied, the deleted files are still on the device and can be retrieved. Permanent data deletion requires several steps.

With the above in mind, explain these methods of data sanitization to learners per device type:

- **Computers:** Use a disk cleaning software designed to permanently remove the data stored on a computer hard drive to prevent the possibility of recovery.
- **Secure erase:** This is a set of commands in the firmware of most computer hard drives. Selecting a program that runs the secure erase command set will erase the data by overwriting all areas of the hard drive.
- **Disk wiping:** This is a utility that erases sensitive information on hard drives and securely wipes flash drives and secure digital cards.
- **Smartphones and tablets:** Ensure that all data is removed from a device by performing a ‘hard reset’. This will return the device to its original factory settings. Each device has a different hard reset procedure, but most smartphones and tablets can be reset through their settings. In addition, the memory card, and the subscriber identity module card, if your device has one, can be physically removed.
- **Digital cameras, media players, and gaming consoles:** Perform a standard factory reset (i.e., a hard reset) and physically remove the hard drive or memory card.



Figure 5.4.5 – Memory stick: an external storage device

- **Office equipment (e.g., copiers, printers, fax machines, multifunction devices):** Remove any memory cards from the equipment. Perform a full manufacture reset to restore the equipment to its factory default.

### Activity 5.4.3: Tabulate data sanitization steps

1. Ask learners to search for three basic steps they could take to make sure all the data is removed from an old computer, laptop, or tablet.
2. Learners should list these in a short table.

#### Knowledge and skill checklist



<input type="checkbox"/>	<input type="checkbox"/>
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I know that old electronic devices must be disposed of correctly, as they can be harmful to the environment.

<input type="checkbox"/>	<input type="checkbox"/>
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I understand some of the harmful effects these electronic devices can have.

## Module 5 assessment guidelines

Assist learners to set up where needed. Ensure that they know what they need to do and what is expected of them.



### Materials needed

- Laptop or tablet with an internet connection
- Paper and pen.

#### **Unit 1: Protecting devices**

1. Learners demonstrate that they can go to the security configuration settings on their device.
2. Learners write down which settings they would change or modify to improve the device's security settings.
3. Learners write down what to do if their device is infected by a virus.

#### **Unit 2: Protecting personal data and privacy**

1. Show learners how to find Instagram's privacy policy.
2. Learners read it and write down how Instagram uses the information it collects about its users.
3. Learners write down how to contact Instagram with questions or complaints relating to privacy.
4. Learners complete the privacy check-up on Instagram.

#### **Unit 3: Protecting health and well-being and building digital resilience**

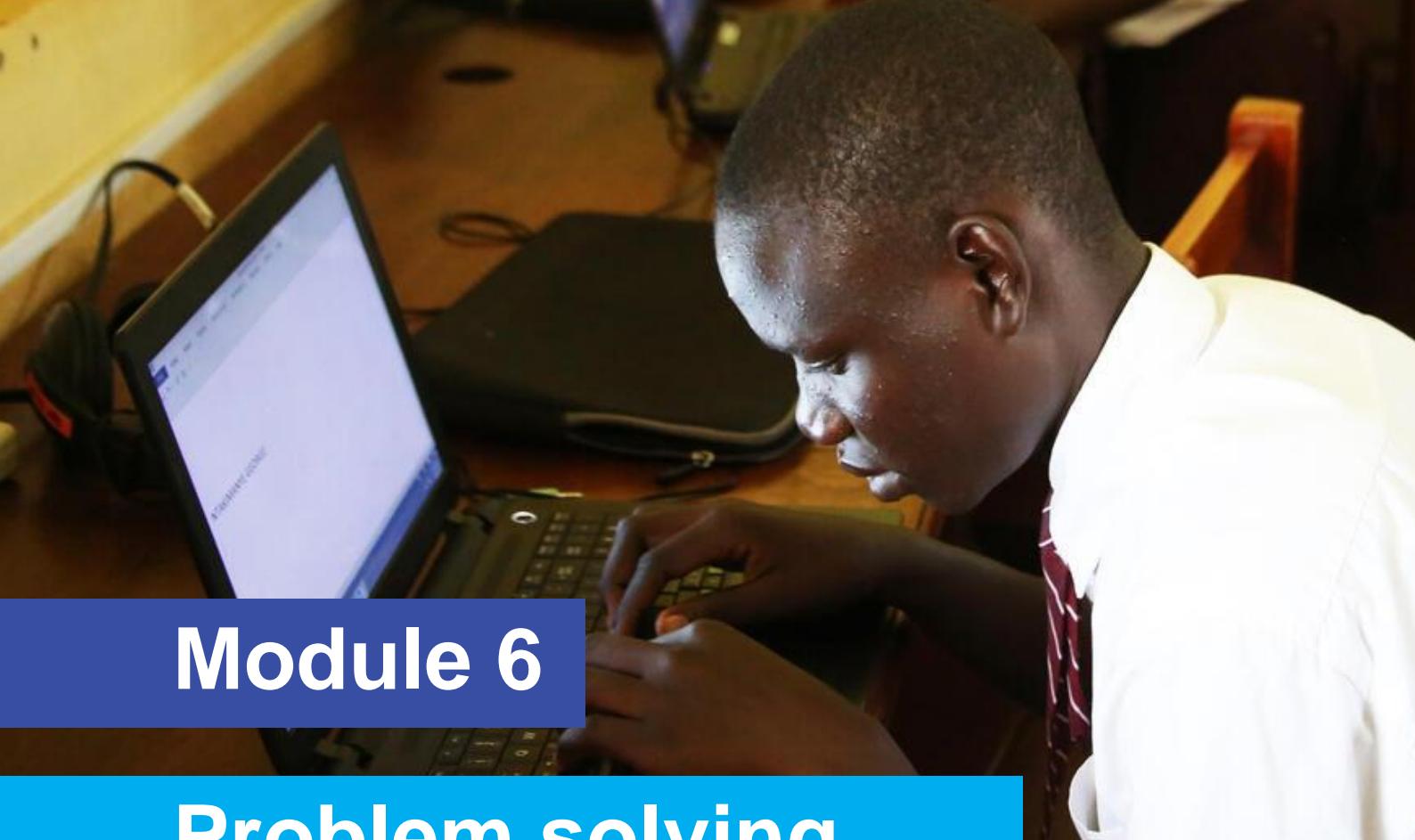
1. Read this story to the group: *Robinah works from home. She works on her laptop at the table where her family shares meals. She starts work at 07:30 and ends at 18:00. She only takes one 30-minute break during the day.*
2. Learners write down how Robinah can change her routine and environment to minimize the risks to her health.
3. Read this story to the group: *Enock and Nancy are having an argument. Enock is accusing Nancy of stealing his book. Enock puts a nasty post about Nancy online. All*

#### **Unit 4: Protecting the environment**

*Enock's friends begin to send ugly messages to Nancy. Nancy is too scared to go to class.*

4. Learners write down why this is an example of illegal behaviour.
5. Learners write down what you would say to Nancy's parents, caregivers, or teachers to help her.

1. Read this message to the group (or email it to the group):  
*"Hi, friend! I want a new tablet. I know mine still working fine. But I really want to impress my friends. How do I safely get rid of the old tablet?"*
2. Learners write down what they would say to their friend to explain what they think about her choice and the effect it will have on the environment.



## Module 6

# Problem solving

This module will introduce learners to identifying and solving the most common hardware and software problems.

In this module, you will teach learners about solving problems that affect their experience using their device. As these lessons will most likely take place in a computer classroom at a school or community centre, we strongly advise that **no learner be allowed to make changes to the settings on any device** as this may compromise the integrity of the device or the cybersecurity of the computer classroom.

Please note that practical activities described in each unit might require the support of an experienced facilitator. Although the information presented in the manual is written in a way that is easy to understand, some actions may require the support of experienced people.

This module includes the following units:

<b>Unit 1</b>	Solving technical problems
<b>Unit 2</b>	Identifying needs and technological responses
<b>Unit 3</b>	Creatively using digital technologies
<b>Unit 4</b>	Identifying digital competence gaps

## Learning outcomes

Learners should be able to:



- Identify technical problems when operating devices and using digital environments and solve them (from troubleshooting to solving more complex problems).
- Assess needs and to identify, evaluate, select, and use digital tools and possible technological responses and to solve them.
- Adjust and customize digital environments to personal needs (e.g., accessibility).
- Use digital tools and technologies to create knowledge and to innovate processes and products.
- Engage individually and collectively in cognitive processing to understand and resolve conceptual problems and problem situations in digital environments.
- Understand where one's own digital competence needs to be improved or updated.
- Be able to support others with their digital competence development.
- Seek opportunities for self-development and to keep up to date with the digital evolution.

## Resources



- Training manual
- Computer with internet access
- Flipchart papers
- Markers



## Suggested teaching methods

- Presentation by facilitator
- Group exercise / Discussion / Debate
- Working in pairs / Small groups
- Presentation by learners
- Media selection



## New terminology to explain

These are terms that learners may not be familiar with. They should be explained within the context that they may be used.

**booting** starting

**cache** is a temporary storage area where website data is stored

**computer chip** also called a chip; an integrated circuit or small wafer of semiconductor material embedded with integrated circuitry

**cookies** small files used by web servers to save browsing information, allowing websites to remember your device, browser preferences, and associated online activity

**network administrator** IT expert(s) who manages an organization's computer network; this person (or group of people) maintains all devices, updates software, maintains network and device security, and identifies and solves problems as they arise

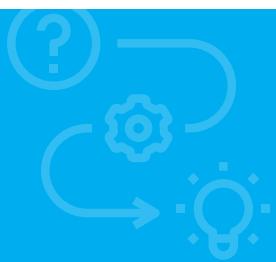
**operating system** a powerful and usually extensive program that controls and manages the hardware and other software on a computer; all computers and computer-like devices require operating systems, including laptops, tablets, desktop/personal computers (PCs), smartphones, and routers

**reboot** restart

<b>SD card</b>	memory card found in a smartphone
<b>temporary internet file</b>	a folder used by Microsoft <sup>©</sup> Windows for storing browser caches; the directory is widely used by all installed web browsers, for saving the contents of webpages or websites visited by the user; helps to speed up the loading of pages from frequently visited sites and is also used for offline browsing
<b>troubleshoot</b>	solve a problem or determine a problem to an issue; often involves a process of elimination, where a technician follows a set of steps to determine or solve a problem

# 1

## Solving technical problems



	<b>Duration</b>	7 hours								
	<b>Objectives</b>	<ul style="list-style-type: none"><li>Solve almost all problems that arise when using digital technology.</li></ul>								
	<b>Content</b>	<ul style="list-style-type: none"><li>Computers</li><li>Most common technical problems</li></ul>								
	<b>PowerPoint slides</b>	Use <a href="#">this link</a> to access the PowerPoint slides deck for this unit.  <table><tr><td>1</td><td>Computers (180 minutes)</td></tr><tr><td>2</td><td>Most common technical problems (225 minutes)</td></tr><tr><td>3</td><td>Consolidation (15 minutes)</td></tr><tr><td>4</td><td>Knowledge and Skills Checklist</td></tr></table>	1	Computers (180 minutes)	2	Most common technical problems (225 minutes)	3	Consolidation (15 minutes)	4	Knowledge and Skills Checklist
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3	Consolidation (15 minutes)									
4	Knowledge and Skills Checklist									
	<b>Lesson Plan Guide</b>									

## Additional online resources

- Microsoft support – <https://support.microsoft.com/en-us>
- Samsung support – <https://www.samsung.com/us/support/mobile/tablets/>
- Solve routine computer problems – <https://ezinearticles.com/?Routine-Computer-Issues-and-Solutions&id=3446243>
- Solve routine tablet problems – <https://www.lfatabletpresses.com/articles/common-tablet-problems-solutions>
- Solving technical problems Identifying needs and technological responses – <https://slidetodoc.com/solving-technical-problems-identifying-needs-and-technological-responses/>
- Why Software Updates Are So Important – <https://www.mcafee.com/blogs/consumer/consumer-threat-reports/software-updates-important/>
- Best cache cleaner apps: <https://fossbytes.com/best-android-cleaner-apps/>



## Teaching notes

### Computers

In this unit, learners will be introduced to the process of identifying and solving the most common hardware and software problems.

#### Hardware vs software

Before you discuss the different types of computers, it is important that learners understand the two things all computers have in common: hardware and software.

- **Hardware** is any part of a computer that has a physical structure, such as the keyboard or mouse. It also includes all the computer's internal parts.
- **Software** is any set of instructions that tells the hardware what to do and how to do it. Examples of software include web browsers, games, and word processors.

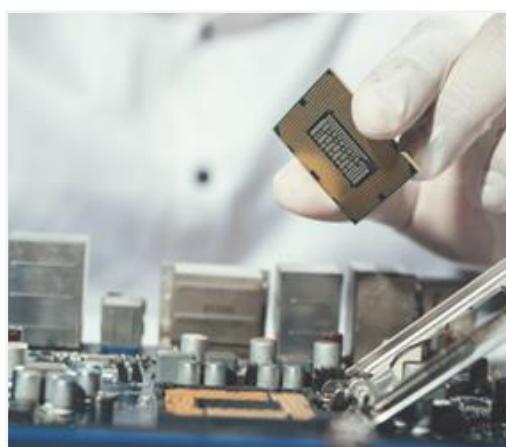


Figure 6.1.1 – Hardware

## Operating systems (OS)

An **operating system** is the most important software running on a computer. It manages the computer's memory and processes, as well as all the other software and the hardware. It also allows the user to communicate with the computer without knowing how to speak the computer's language. Without an operating system, a computer is useless.



Figure 6.1.2– Examples of operating systems for laptops and desktops: Windows, Linux, macOS.



Figure 6.1.3 – Examples of operating systems for tablets and smartphones: Google Android, Apple iOS.

## Applications (Apps)

Learners may have heard the terms 'program', 'application' or 'app', but they may not fully understand what these terms mean. Simply put, an application is a type of software that allows you to perform specific tasks.

Applications for desktop or laptop computers are sometimes called desktop applications, while those for mobile devices are called mobile apps.

## Different types of computers

Ask learners what they think of when they hear the term ‘computer’. They are likely to say that they think of a personal computer, such as a desktop or laptop. However, computers come in many shapes and sizes, and they perform many different functions in our daily lives.

Most modern machinery contains **computer chips** – these range from motor vehicles to washing machines. Electric devices are basically specialized computers, even though people do not always think of them that way. Give the learners a few common examples, such as these:



Figure 6.1.4 – A laptop

### Tablet computers or tablets

These handheld computers are more portable than laptops. Instead of a keyboard and mouse, tablets use a touch-sensitive screen for typing and navigation. The iPad or Samsung Galaxy are examples of tablets. Some of the more expensive tablets include a separate keyboard.



Figure 6.1.5 – A Samsung Galaxy Tablet

### Smartphones

Many smartphones can be used to complete most of the same functions as computers, including browsing the internet and playing games. For many people, a smartphone can serve as a laptop, digital music player, and digital camera in one device.



Figure 6.1.6 – A smartphone

## Activity 6.1.1: Update a smartphone

1. Learners find the settings icon on their smartphone. The settings button looks like this:



2. Search through the settings menu and find how to access updates.
3. Have a look at the updates and see if anything is showing it needs to be updated.
4. Remind learners not to update anything on a device that is not theirs without permission. If any software needs to be updated, they must notify you or the network administrator. However, they can update their own smartphones if they want to. Remind learners of the importance of having the latest updates installed. Also, remind them to update only when they are on Wi-Fi or have a lot of data.

## Activity 6.1.2: Open editing programs on a smartphone

1. Learners should check whether there are any text or photo editing apps downloaded onto their smartphones. If there are, they can use these for the next part of the activity.
2. If learners do not have relevant apps installed, guide them in terms of acceptable apps to download. If it is their own device, they can choose which apps to install.
3. There are several text editing apps that work on a smartphone, such as Microsoft Word, Jotter Pad, and so on. Learners open their text editor and create a document, then change something in the document, such as font size.
4. Learners open a photograph in their photo editor program and make a change to the photograph. Photo editing programs on smartphones come with a large variety of options – they could put a funny face or hat onto their photograph, change it to greyscale, or make the colours bolder and brighter. Allow learners to choose their own way of editing the photograph.

## Most common technical problems

Reassure learners that most technical problems experienced by a laptop or computer are minor and can be solved without having to contact a technician. Explain that you will present the most common of these problems in this section, including how they can solve them.

### The computer won't start

A computer that suddenly shuts off or has difficulty starting up could have a failing power supply (the cable and plug). Check that the computer is plugged into the power point properly and the switch is switched on. If that does not work, try using a different power supply. If that still does not work, test the power plug (in the wall) itself with another working device to confirm whether there is adequate power. If the computer still won't start, it may be necessary to call a technician.



Figure 6.1.7 – Power supply

### The screen is blank

If the computer is on but the screen is blank, there may be an issue with the connection between the computer and the screen. First, check to see if the monitor is plugged into a power point and that the connection between the monitor and computer hard drive is secure. If the problem is on a laptop (i.e., the laptop's screen is blank), then you may need to ask a technician to help you.

### Abnormally functioning operating system or software

If the operating system or other software does not work properly, try restarting the computer: switch it off, wait a few minutes, then switch it back on. Once it is back on it is also a good idea to run a virus scan. To avoid this, reliable anti-virus software should be installed on the device. (Remind learners that they are not to uninstall or install any software on a device that they do not own, especially a device in a school or community computer centre.)

### Windows won't boot

If you are having troubles **booting** Microsoft© Windows, then it may need to be reinstalled using the Windows recovery disk. This can only be done by the owner of the device. If the device is in a school or community computer centre, the **network administrator** will do this.

### The screen is frozen

When your computer freezes, you may have no other option than to **reboot** and risk losing any unsaved work. Freezes can be a sign of insufficient **ram**, registry conflicts, corrupt or missing files, or spyware. Sometimes, when too many things are open at once, the computer can freeze. Press and hold the power button until the computer turns off, then restart it.

Once it is on, try running a computer cleanup tool that will delete temporary and unnecessary files. Encourage learners to ask for help if this happens when they are using a computer owned by the school or community centre. This is because it is important to use the tool that the computer has for this; learners should never delete files without permission. Additionally, they may not delete or run a device clean up if they do not own the device.

### A program on the computer is frozen

Press the ‘Ctrl’ ‘Alt’ and ‘Del’ buttons at the same time – a pop-up will appear on the screen. From there, go to the Task Manager, and look for the program that is giving the problem.

Look at the list of programs that are open and click on the one that is frozen (Task Manager will have a note that says, ‘This program is not responding’, so you will know which one it is). Task Manager will shut this program down and leave the others open. At this point, it would be a good idea to save work that is open in other programs and restart the computer using the Shut Down menu.

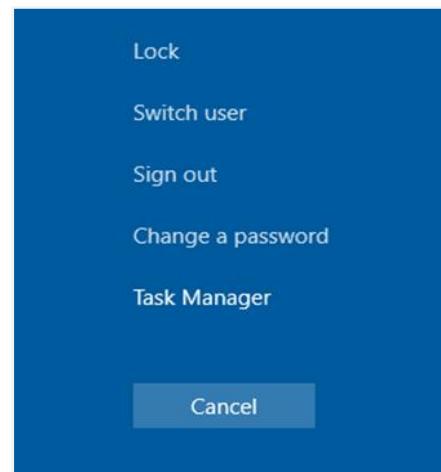


Figure 6.1.8 – Select Task Manager and shut down the problematic program

### Dropped internet connections

Dropped internet connections can be very frustrating. Often the problem is simple and may be caused by a bad cable or phone line, which is easy to fix. More serious problems include viruses, a bad network card or modem, or a problem with the driver.

The location of your modem plays a significant role to your Wi-Fi coverage and is a key factor for a stable Wi-Fi connection. For better Wi-Fi coverage, your modem should be placed in a central location within the house or office. Alternatively, placing your modem central to where the internet is most often used is a good choice.

<b>Ensure you are placing your modem:</b>	<ul style="list-style-type: none"><li>✓ out in the open</li><li>✓ raised off the ground.</li></ul>
<b>Avoid placing your modem:</b>	<ul style="list-style-type: none"><li>✗ in basements</li><li>✗ in cabinets</li><li>✗ behind other objects.</li></ul>
<b>To avoid interference, try to keep your modem away from:</b>	<ul style="list-style-type: none"><li>✗ household appliances</li><li>✗ metal objects</li><li>✗ electrical equipment.</li></ul>

### Activity 6.1.3: Restart a router

1. Show learners two ways to check the internet connection on the computer: using the icon on the task bar and using the network settings in the settings menu.
2. Next, learners disconnect from Wi-Fi. Then, they open a browser to check that there is no internet and reconnect to Wi-Fi.
3. A simple restart of a modem can fix many Wi-Fi or connection issues.

Explain that they are now going to restart the router. They should ideally do this as a group, so that each person doesn't have to switch the router on and off. Encourage learners to make sure they see exactly what is done if they are not the person switching it off.

4. The router should have a reset button that can simply be turned on and off. Once it is switched off, they check the network settings on your computer – the Wi-Fi network name will not be listed there. They wait 30 seconds, then switch the router back on.
5. After the router is switched back on, they confirm that the device is picking up the Wi-Fi signal again, and that they can access the internet.
6. Discuss with the learners that restarting wireless devices may be the solution to many common problems, including lags or loss of internet access.

### Activity 6.1.4: Control-Alt-Delete

When a program is frozen, and it is necessary to shut that program down, the way to do it is to press Ctrl+Alt+Del at the same time. Pressing these three buttons together opens the task manager, which can then be used to select the program that must be closed. Remind learners that if a program is frozen and they had to shut it down in this way, it means something went wrong. Therefore, it is best to restart the computer.

1. Ask learners to open an MS Word document and an Excel spreadsheet. Then, they press the 'Ctrl' 'Alt' and 'Del' buttons. The Task Manager will open.
2. They can choose either MS Word or MS Excel, and close that program using the task manager.

## **Computer is slow**

If your computer is slower than normal, the problem can often be fixed simply by deleting unwanted files. External hard drives are great storage solutions and will help a computer run faster. Encourage learners to only open files they are using – having many open files can slow down a computer. Remind them that, if they are sharing a device, they cannot delete files that they have not created.



Figure 6.1.9 – An external hard drive

## **Strange noises**

A lot of noise coming from a computer is generally a sign of either hardware malfunction or a noisy fan. Hard drives often make noise just before they fail, so it is a good idea to back up information just in case, and fans are very easy to replace. Get a professional computer technician to replace the fan.

## **Computer overheating**

If a computer case has a poor cooling system, then the computer's parts may generate too much heat while operating. To avoid a computer burning itself out, turn it off and let it rest if it is getting too hot. This may mean the fan is not working properly, which needs to be checked by a professional.

## **Slow internet**

To improve internet browser performance, it is important to clear **cookies** and **internet temporary files** often. Encourage learners to ask the Network Administrator to assist them with this task, as it is a task commonly assigned to them.

## **Smartphone is running slowly**

This is the most common smartphone problem, which occurs more often as the phone gets older and the number of saved photos, videos, and files increases. It may also happen if a person has too many unnecessary apps installed that use the device's ram.

Encourage learners to delete unnecessary apps and files from their smartphones. Also show them how to clean up **cache** data by using a diagnostic app. If they still face this issue, restore the smartphone to factory settings. But remind learners that, when they do this, they will lose all their personal data and photos stored on the phone. It is, therefore, essential to first back them up to another device.

## Poor battery life

Common problems are battery draining, slow charging or charging failure.

The first step is to find out if any apps are draining too much battery. Show learners how to check this in ‘Settings’. Here, they will see that some apps they don’t need are using lots of battery power. They can remove those apps. Enable the battery saving mode, turn off location, and dim the brightness to save battery power.



Figure 6.1.10 – Some apps use a lot of battery power to run

The batteries of older devices often stop working and, unfortunately, it is mostly more expensive to replace the battery than to purchase a new device.

## Storage space

If the storage space on your smartphone or tablet is running out, too much of the storage may be filled with photos and videos. Encourage learners to pay attention to the storage capacity of a device when they first start to use it.

To free up storage space, delete the cache first. Apps like cache cleaner allows users to clean the cache for a specific app. Apps that are not needed should be deleted to save space. Cloud storage is also a good solution and can be used to save documents, photos, and other media, freeing up the space on the device.

## Phone or app crashes

This happens when there is a bug in an app, or if the phone is running out of space.

To prevent this from happening, it is best to avoid using multiple apps at the same time. It is also possible to [troubleshoot](#) the phone by restarting the device and removing the battery for five minutes (if it has a removable battery). As a last resort, restore it to factory settings (but remind learners that they will lose the personal information, messages, and photos on their phone if they do this).

## Smartphone overheating

Excess usage of a smartphone can cause it to overheat. Demanding apps, like gaming apps, increase the temperature of a phone, which can affect the performance of the battery.

Encourage learners not to use their phone while it is charging. They should also avoid



Figure 6.1.11 – Do not use your smartphone while it is charging

using apps that use high CPU. If all precautions are taken and the phone still overheats, it may be a manufacturer defect.

### Problems connecting with Bluetooth, Wi-Fi, cellular network

This is a temporary problem that can easily be solved. Keep the phone on airplane mode for 30 to 60 seconds and try to reconnect it. If that does not work, repair, or change the settings of Bluetooth and Wi-Fi again. Show learners how to navigate and click 'forget network', then let the phone find networks again. They will have to re-enter the password, so they should only 'forget network' if they remember what the password is!

### Apps not downloading

The main cause of this problem is a corrupt cache. The cache will need to be cleared. It is better to delete the history of Google Play Store. Encourage the learners to use the latest version of Google Play Store. If there is still an issue, they should clear data, and cache on Google Play services.



Figure 6.1.12 –  
The Google Play  
Store App icon

### Synchronization (sync) issue

The sync problem is often resolved automatically after some time. If not, remove the Google account and add it again. Learners need to ensure that their internet connection is not limited and is working properly. They should often check for system updates and update if required.

### MicroSD card not working on your smartphone

The **SD card** may have bad read/write errors, or the smartphone is not recognizing the SD card after formatting. The first step is to check the capacity of the memory card. Restart the phone in recovery mode and select wipe cache in Android. This will clear out the SD card and format it, so it is best suited for storage on a phone.



Figure 6.1.13 – An  
SD card

### Cracked screen or immersion in water

To avoid such incidents, encourage learners to use a good screen protector. They may be expensive, but it is a worthy investment to help avoid screen cracks. Remind learners of basic computer and device etiquette. For example, do not drink liquids right in front of a tablet or computer. Also, it is important to place the smartphone in a pocket so that it doesn't drop into a basin of water or the toilet.



Figure 6.1.14 – Do not drink liquids when  
using a laptop, tablet, or smartphone

## Activity 6.1.5: Uninstall unwanted apps

1. Sometimes apps are downloaded onto devices and then hardly used. Ask learners to decide if there are apps on their tablet or smartphone that they no longer want or use. (Remind learners that they cannot delete an app from a device that they do not own.)
2. Ask learners to Google how to uninstall these from your device.
3. If it is their own device, allow them to experiment with how to uninstall an app. Usually you can drag it and then delete it from the device or hold your finger on it and it will give an ‘uninstall’ option.
4. If they are not sure about permanently deleting an app but they don’t want it to take up battery life, they can turn certain apps off via Settings.

## Activity 6.1.6: Clear cache

1. Cache files are temporary files. Explain that most devices keep a record of users’ internet activities, and they keep data from those websites so that a site that is visited frequently loads faster. However, too many of these temporary files take up space and slow a computer down.
2. Clearing the computer’s cache can speed up the working of a computer and help it to run more smoothly.
3. Help learners to clear the cache files on their computer. The exact method of doing this varies with different models of computer and with different operating systems, so they may need to first Google how to do this with the type of computer and operating system they are using.

## Activity 6.1.7: Run a battery usage diagnostic

1. Show learners how to use the settings on their computer to find out which apps are using the most battery power.
2. They should make a list of the top five that use the most battery power.

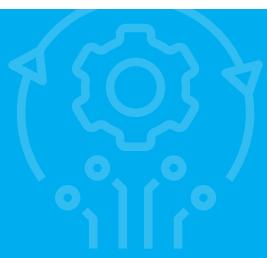
### Knowledge and skill checklist



I can solve almost all problems that arise when using digital technology.

# 2

## Identifying needs and technological responses



	<b>Duration</b>	7 hours
	<b>Objectives</b>	<ul style="list-style-type: none"><li>Can choose the right tool, device, application, software, or service to solve (non-technical) problems.</li></ul>
	<b>Content</b>	<ul style="list-style-type: none"><li>Identifying needs and technological responses</li></ul>
	<b>PowerPoint slides</b>	Use <a href="#">this link</a> to access the PowerPoint slides deck for this unit.
	<b>Lesson Plan Guide</b>	<ol style="list-style-type: none"><li>Identifying needs and technological responses (405 minutes)</li><li>Consolidation (15 minutes)</li><li>Knowledge and Skills Checklist</li></ol>

## Additional online resources



- Troubleshooting Microsoft 10: <https://support.microsoft.com/en-us/windows/windows-update-troubleshooter-19bc41ca-ad72-ae67-af3c-89ce169755dd>
- Why Is a File Extension Important? – <https://www.techwalla.com/articles/why-is-a-file-extension-important>
- Solving technical problems Identifying needs and technological responses – <https://slidetodoc.com/solving-technical-problems-identifying-needs-and-technological-responses/>
- Why Software Updates Are So Important – <https://www.mcafee.com/blogs/consumer/consumer-threat-reports/software-updates-important/>

## Teaching notes

### Identifying needs and technological responses

The first step in solving any computing problem is to find out which component is not working correctly. Sometimes it is due to something simple, such as the audio not working, or a faulty screen, mouse, or keyboard. Or it may be a more complex problem, such as a computer that will not start or that suddenly reboots itself.

Explain to learners that there are many different things that could cause a problem with a computer. No matter what's causing the issue, troubleshooting will always be a process of trial and error – in some cases, the user may need to use several different approaches before finding a solution; other problems may be easy to fix.

### Write down your steps

Encourage learners to write down each step they take once they start troubleshooting. This way, they will be able to remember exactly what they have done and can avoid repeating the same mistakes. It can also be useful if they ask others for help because it will be much easier for the technician to know exactly what has already been tried.

### Take notes about error messages

It can also be important to write down information when a computer gives an error message. Encourage learners to write down as much information as possible in this circumstance.

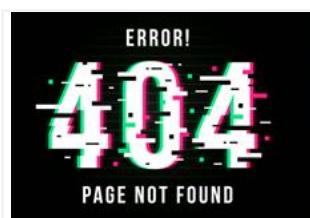


Figure 6.2.1 – A internet common error message

They may be able to use this information later to find out if other people are having the same error. They can also Google the error message for an explanation of that particular error message.

### Always check the cables

An easy first step for anyone to follow if they are having trouble with a specific piece of computer hardware, such as a monitor or keyboard, is to check all related cables to make sure they are properly connected.

### Restart the computer

When all else fails, restarting the computer is a good thing to try. This can solve a lot of basic issues.

### Using the process of elimination

Recommend using a process of elimination if learners are experiencing issues with their computer. Using a process of elimination means making a list of things that could be causing the problem and then testing them one by one to eliminate them. This can take a long time, but it is usually very accurate because it narrows down the cause of the problem, and therefore the possible solutions.

### Video tutorials

It is possible to find workarounds for some common issues through thousands of video tutorials on YouTube or from online sources that provide step-by-step instructions on computer troubleshooting. It is as simple as typing in the problem and seeing which sites or videos will help the most.

Video tutorials are often useful guides on how to solve a specific problem. Learners can pause the video as often as they like, or replay parts, to make sure they understand the steps taken in the video.

Video tutorials may combine charts, slides, photos, graphics, narration, screenshots, on-screen captions, music, and live video. This allows learners who prefer to learn in various ways to gain information in a method more suited to them.

**For example**, if a learner wants to install a printer, they can type on a search engine “printer installation tutorial”. They will look at the options presented and click on one that looks the simplest and follow step-by-step the information about printer installation. If the site is not suitable, they can find a different site. Encourage the learners to ensure they include the name (and if possible, the model number) of their printer to get the most relevant video.



Figure 6.2.2 –  
YouTube has  
many useful  
step-by-step  
videos



Figure 6.2.3– The  
printer needs to be set  
up correctly



Figure 6.2.4 – an example of a video tutorial

## Online sources

There are many websites that can provide learners with information on computer troubleshooting and tech support. Encourage learners to use online search engines to help them solve problems. All they need to do is to type some key words relating to their problem into their web browser and see which results are the most relevant. They can also type in the exact question or problem and see the results. It is also important to include the exact device (and model, if possible) for the most accurate results. For example: “Samsung IF403 printer not printing”.

If they are interested in technology issues and find a good site related to this, encourage them to bookmark it. There may even be an option to subscribe, which would mean they will receive emails with news and updates to that site.

## Wireless technology

Wireless technology provides the ability to communicate between two or more devices over distances without the use of wires or cables of any sort. Some of these terms may be familiar to learners and are all examples of “wireless”: radio and television broadcasting, radar communication, cellular communication, global position systems (GPS), Wi-Fi, Bluetooth, and radio frequency identification.

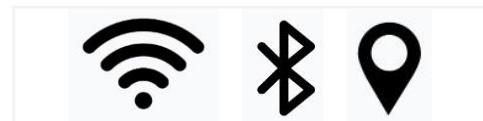


Figure 6.2.5 – Wi-Fi, GPS location, and Bluetooth icons

## Examples of software

### File extensions

File extensions are a way of labelling the names of files so a user (and the user's computer) can keep track of what they contain. The last part of the file name is used to indicate the **type** of file, so the computer can open the correct program when you want to use the file.

Windows uses file extensions to determine how it opens different types of files. When a user double-clicks on a file to open it, Windows will open it with the application associated with that file's extension. The Windows system configuration keeps a list of applications and their file extensions. These are called "default programs". If a particular file extension is registered with a program, Windows will start that program whenever the user elects to open a file with that extension. Only one application, however, can be registered as the default program for each file extension. To use a program other than the default to open a file, right-click the file and choose "Open with".



Figure 6.2.6 – File extension abbreviations

### Update software

Software updates are important because they include critical patches to fix issues that have been found with earlier versions of that software. They can also improve the stability of your software and remove outdated features. All these updates are aimed at making the user experience better.



Figure 6.2.7 – Software updates improve the user experience

## Antivirus install

Antivirus software helps protect a computer against computer viruses and cybercriminals. Antivirus software looks at data, web pages, files, software, and applications and tries to block or remove any viruses as quickly as possible.



Figure 6.2.8 – Anti-virus software is often represented by a shield

## Display settings

A computer has several display settings that allow a user to customize their viewing experience based on their activity. The display settings are adjustable according to what they are using your computer for and the type of monitor they have.

### Activity 6.2.1: Run a diagnostic

**Note:** Learners should not make permanent changes to the settings of any device or delete any files off devices belonging to a school or community computer centre.

Explain that a tablet can start having issues when less than 10% of storage is free. If learners are running low on storage, there are steps they can take to free up space.

1. Help learners to find out how to view the storage information on your device to see how much free space is left.
2. They should make a list of the apps/folders that take up the most space and decide if they are worth keeping.
3. Unwanted photographs, files or videos can take up a lot of space – these can be deleted if no longer wanted. (Note: Learners can only do this if it is their device.) If these items are wanted but are not regularly used, they

can be backed up to a storage device such as a memory stick or portable hard drive, and then deleted from the main device.

4. Clearing out ‘trash’ and temporary files will also clear up space.

### Activity 6.2.2: Find a video tutorial

1. Ask learners to search for a video tutorial that focuses on one of the issues listed in this unit and watch how to solve the problem.
2. They should make notes on the video and be able to explain how to solve it to others in the class.

### Activity 6.2.3: Troubleshoot

1. It is important to remind learners that they should not make permanent changes to the settings of any device, or update or delete files off devices belonging to a school or community computer centre.
2. Help them go to Settings of the webcam. Show them how to run a diagnostic to check whether it is working properly.
3. Then, ask them to run a diagnostic to check whether the microphone is working properly.

### Knowledge and skill checklist



I can choose the right tool, device, application, software, or service to solve (non-technical) problems.

# 3

## Creatively using digital technologies



	<b>Duration</b>	6 hours
	<b>Objectives</b>	<ul style="list-style-type: none"><li>• Aware of new technological developments.</li><li>• Understand how new tools work.</li></ul>
	<b>Content</b>	<ul style="list-style-type: none"><li>• Digital creativity</li></ul>
	<b>PowerPoint slides</b>	Use <a href="#">this link</a> to access the PowerPoint slides deck for this unit.
	<b>Lesson Plan Guide</b>	<ol style="list-style-type: none"><li>1 Digital creativity (120 minutes)</li><li>2 Digital creativity tools (225 minutes)</li><li>3 Consolidation (15 minutes)</li><li>4 Knowledge and Skills Checklist</li></ol>

## Additional online resources



- 6 ways to stay on top of emerging technology trends –  
<https://medium.com/beyond/6-ways-to-stay-on-top-of-emerging-technology-trends-ca6a7b27bc20>
- 16 Ways to Stay Up to Date With Digital Marketing Trends in 2019: Our Guide to Tips and Resources –  
<https://www.imaginaire.co.uk/16-ways-to-stay-up-to-date-with-digital-marketing-trends-in-2019-our-guide-to-tips-and-resources>
- The Skills Gap Analysis – A Full Guide –  
<https://www.digitalrtech.com/skills-gap-analysis>
- 8 Ways to Boost Your Creativity With Technology –  
<https://www.opencolleges.edu.au/informed/features/8-ways-boost-creativity-technology>

## Teaching notes

### Digital creativity

Creativity is quickly becoming one of the most highly valued traits of the 21st century. A survey found that 60% of CEOs believe creativity is the most important leadership quality today.

Digital creativity is a new, dynamic, interdisciplinary and rapidly growing field.

People's understanding of digital creativity changes as new things are developed, and it has different meanings for different types of businesses, in education and in informal learning.

New hardware and software is allowing young people to engage with the world, often playfully and experimentally, in ways which they could not have done even ten years ago. Digital creativity is astonishingly fast and is more than the sum of digital + creativity.

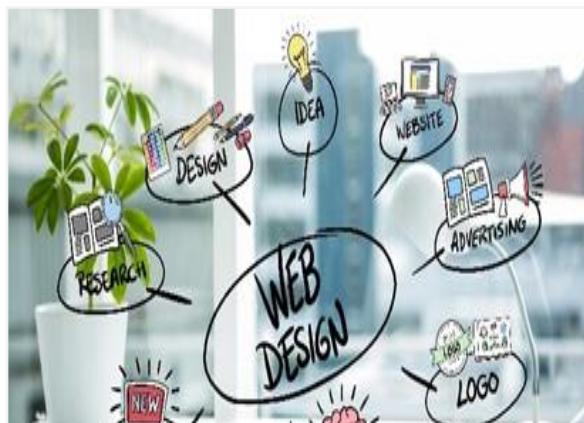


Figure 6.3.1 – digital creativity means different things

## Examples of digital creativity

New hardware and software are allowing young people to engage with the world, often playfully and experimentally, in ways which they could not have done even ten years ago. Digital creativity is astonishingly fast and is more than the sum of digital + creativity.

### Text processing

In computing, this term refers to automating the creation or manipulation of electronic text. The term processing refers to automated (or mechanized) processing, instead of the same changes done manually.

### Email

Email is a system of sending written messages electronically from one computer to another. Email is an abbreviation of "electronic mail".



Figure 6.3.2 – This email icon is used across most devices

### Media editing

Editing is the process of selecting and preparing written, photographic, visual, audio, or video material to deliver a message or information. This includes everything from editing and correcting text all the way to editing videos, photographs, and multimedia productions.

### Designing presentations

Presentation designers craft ideas, stories, words, and images into a set of slides that are arranged to tell a story and persuade an audience.



Figure 6.3.3 – PowerPoint is a popular software used to create presentations

### Social media

Social media is a technology that helps the sharing of ideas, thoughts, and information through the building of virtual networks and communities. Social media is internet-based and gives users quick communication of content. Some examples of social media are YouTube, WhatsApp, Facebook, TikTok, Snapchat, LinkedIn, Twitter, Instagram and Pinterest.

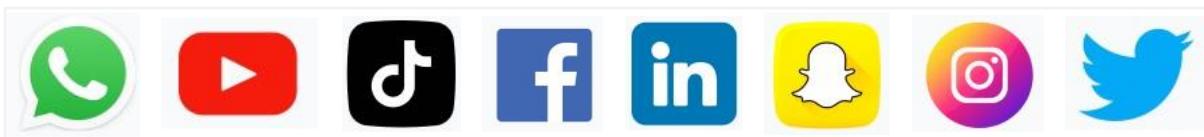


Figure 6.3.4 – Popular social media icons

## Data visualization

Data visualization is the graphical representation of information and data. By using visual elements like charts, graphs, and maps, data visualization tools provide an accessible way to see and understand trends, outliers, and patterns in data.



Figure 6.3.5 – Visual data is easier to understand

### Activity 6.3.1: Create an Excel spreadsheet

1. Learners to open MS Excel and create a new blank workbook.
2. Explain that learners are going to create a workbook (spreadsheet) that lists a selection of their friends' or classmates' birthdays.
3. They add the day, month, and year to different columns.
4. Look up on a calendar and then insert the day of the week their birthday is on this year.
5. They could also calculate each person's age and then fill it in.
6. They add some different colour backgrounds to some of the rows/columns in their workbook to give it a creative look.
7. They can add any additional information or creative elements of their choosing to their workbook.
8. If possible, the learners' devices should be connected a printer. They check these settings and check their document in a print preview.
9. They then make any adjustments (such as margin sizes), choose the number of copies they want (you should guide them), and then print their document.

## Digital creativity tools

### Text editing app

A text editor is a type of computer program that edits plain text. Text editors have operating systems and software packages and can be used to change files. Most text editing apps offer a range of templates from invitations, newsletters, CVs, to business documents. Users can edit the template and produce a very professional-looking document without spending hours designing and styling from scratch.



Figure 6.3.6 – Well-edited written pieces are easier to understand

### Photo editing app

Smartphones, tablets, and laptops have image editing apps that can be used to crop and touch up photos, as well as organize them into albums and slideshows. These apps do not have as many filters and features as a more professional image editor, such as Adobe's Photoshop or Corel's Paint Shop Pro, but they work well and are simple enough for amateur photo and video enthusiasts.



Figure 6.3.7 – Editing a photo using professional software is more complex

### Calendars

A digital calendar allows users to see recurring events, and to schedule new events. Computers, tablets, and smartphones all have calendar apps that can be linked to the user's email.



Figure 6.3.8 – Smartphones have digital calendars as standard software

### Social media apps

Social media apps are applications that can either be downloaded and stored on a phone or tablet or streamed through an internet browser. Social media apps generally involve messaging, photo sharing, and interactive content. As mentioned earlier, examples include YouTube, WhatsApp, Facebook, TikTok, Snapchat, LinkedIn, Twitter, Instagram, and Pinterest.

## Activity 6.3.2: Research, then design a presentation using PowerPoint

1. Ask learners to choose a topic to (briefly) research – for example, crops grown in Uganda, the state of health in Uganda, or the different land use areas of Uganda.
2. They will find out some basic information on your chosen topic, including information you can make into a graph, such as a pie chart.
3. They open PowerPoint and click on New, and then select one of the templates shown. They should choose a template that they think matches the ‘look and feel’ they want to create with the information they have, and that allows them to present their data.
4. Learners create a presentation of at least five slides. One of these slides must include a graph, such as a pie chart.
5. Encourage learners to use very little text and make the font large and colourful. They should also include images or other visual aids. Encourage the learners to be creative and find the best way to get their point across in a short time using few words and some key images or graphics.
6. Allow learners to present to the class.

## Activity 6.3.3: Create a social media post

1. Learners should open Facebook and go to their page. If they do not have a Facebook account, help them how to create one using their email address and a strong password.
2. They should post a message on their page, from the top of the News Feed, or from on their page itself.
3. Learners will add text to their post. Show them how to tap the text field, then type in the text for their post.
4. Learners can also tap a coloured circle along the middle of the screen to set a background for their post. Point out that they can only add colour to posts with 130 characters or fewer.
5. Show learners how to upload a photo by tapping Photo near the middle of the post screen, then selecting a photo to upload. They tap Done when they are happy with the photo they have added to their post.

6. Show learners how to use the Feeling/Activity/Sticker functions. These allow users to add an emotion, activity, or emoji. Tell learners that they can add this if they wish to, or they may choose to skip this step.
7. Show them how to tag people in their posts or photos. Tagging people allows users to add a person to this post. Doing so puts the post on their page as well. Users can choose to do this if they already have a friend on Facebook and if they want the photo to show on their friend's page.

### Knowledge and skill checklist



I am aware of new technological developments.

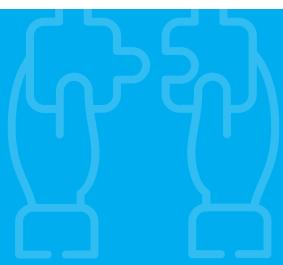
<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------

I understand how new tools work.

<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------

# 4

## Identifying digital competence gaps

**Duration**

5 hours

**Objectives**

- Frequently update digital skills.

**Content**

- The digital skills gap

**PowerPoint slides**

Use [this link](#) to access the PowerPoint slides deck for this unit.

**Lesson Plan Guide**

1 The digital skills gap (285 minutes)

2 Consolidation (15 minutes)

3 Knowledge and Skills Checklist

## Additional online resources

- Top 10 digital trends:  
<https://www.forbes.com/sites/danielnewman/2021/10/13/top-10-digital-transformation-trends-for-2022/>
- Digital Marketing Trends:  
<https://digitalmarketinginstitute.com/blog/the-next-big-digital-marketing-trends>
- Digital skills: <https://www.rand.org/blog/rand-review/2022/03/the-digital-skills-gap-what-workers-need-for-the-jobs.html>
- 8 Ways to boost your creativity with technology –  
<https://www.opencolleges.edu.au/informed/features/8-ways-boost-creativity-technology>



## Teaching notes

### The digital skills gap

Digital technologies are used in many sectors, such as farming, healthcare, transport, education, retail, automatics, energy, shipping, logistics, teaching, and the information and communications technology industry. The demand for information and communications technology specialists is growing fast. In the future, 9 out of 10 jobs will require digital skills.

In this unit, learners will find out what improvements they will have to make to acquire or improve the skills and competencies needed to perform as well as possible in their (future) roles in the workplace. Eventually, this will also have a positive impact on their daily lives.

### Invest in education

There are many internet sites with brilliant courses on many different digital topics. Encourage learners to look for something in the area they want to learn more about. Advise learners to always check out the reviews before buying a course and consider the duration of the courses they are interested in (i.e., how long it will take to do). Some courses can be done in a day, whereas others will take more time. There are many free courses available on the internet, as well as many free video tutorials on a variety of subjects.

### Hit subscribe

Learners can subscribe to interesting or useful articles that they come across a useful article to receive future newsletters. This is worth it when the content really stands out because, chances are, future articles will be just as helpful.

Remind learners to do this selectively, as the last thing they want is an inbox filled with hundreds of emails that they will never be able to get through. By filtering out the best content, they will know that when an email lands in their inbox, it is worth reading.

## Join groups

Communities, forums, and online groups can be a great way for learners to stay up to date with what they find interesting. Groups can help them to learn from others and share their experience in ongoing conversations. Encourage learners to exercise some caution, as some groups can contain a lot of spam and irrelevant information.

Encourage learners to search Facebook and LinkedIn for groups that interest them. Remind them that the more specific they are, the more relevant the conversations and posts will be.



Figure 6.4.2 – Online communities, forums and social media groups help people stay in touch with what interests them

## Get on board with Google Alerts

This useful tool is a great way of staying up to date with trends and tips. Users simply let Google know the keywords they would like to be told about when they appear in search results, and they will be alerted with an email.

## Head to YouTube

There is a video on just about anything on YouTube! Often, a problem can be easily solved in minutes when the right video is found.



Figure 6.4.1 – Subscribing to sites with information on technology helps a person stay informed

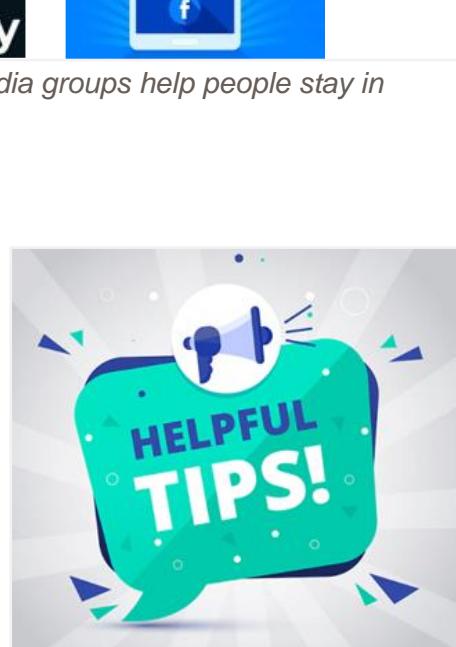


Figure 6.4.3 – You can be alerted to changes to updates

## Use hashtags (#)

This is a great way to search recent trends, news, and updates in any field. Show learners how to go to Twitter or LinkedIn and search a few hashtags. Show learners how they will be able to move quickly to the top content under that hashtag and read the latest content. Explain that when you come across someone who shares regular updates in your interests, they are probably worth following.



*Figure 6.4.4 – Hashtags are used before a relevant keyword or phrase to categorize tweets and help them show more easily in a search*

### Activity 6.4.1: What is my digital skills gap?

1. Tell learners to identify one of the digital skills gaps they would like to work on and learn more about – this could be learning how to design various documents or digital images, how to create and edit videos, or learning tips for how to sell or market work online, for example.
2. Tell them that they are going to use the digital skill gap they have chosen for the next activity.

### Activity 6.4.2: Follow someone on Instagram

1. Direct learners to Instagram and either sign into your account or create an Instagram account.
2. Encourage them to search for someone who shares posts of the subject they want to learn more about.
3. They will look at a few different options until they find the one you like best, and that they think they could learn from and “Follow” this person.
4. Explain how following someone means that their posts will appear on the user’s feed, so a user can easily find new information that they post.
5. Learners may choose to follow several people that all post information about their chosen topic.

### Activity 6.4.3: Join a discussion forum

Joining a discussion forum is an excellent way to learn about something new and to keep up to date with changes in that topic.

1. Encourage learners to Google “discussion forum” and the topic they are interested in.
2. They read through some of the posts and make sure that this is the right forum for them. If not, keep looking until they find one that they are comfortable with and they feel will help them to keep informed about the subject they have chosen.
3. Once they have found the right forum, they may have to fill out an online form to join the forum.
4. When they feel you can contribute something meaningful to the forum, they can make a post (write a message on the forum). Remind learners to post something meaningful and on-topic, i.e., they should not post comments like “I agree”.

#### Knowledge and skill checklist

I frequently update my digital skills.



## Module 6 assessment guidelines

Assist learners to set up where needed. Ensure that they know what they need to do and what is expected of them.



### Materials needed

- Laptop or tablet with an internet connection
- Paper and pen.

#### **Unit 1: Solving technical problems**

1. Read this WhatsApp message to the class: "Hi friend! Please could you help me? The Bluetooth won't connect, and my Twitter app keeps crashing I don't know what to do."
2. Learners write down what their friend can do to fix both of her problems.

#### **Unit 2: Identifying needs and technological responses**

1. Read this story to the group: "Aisha is very forgetful. She is often late to appointments and sometimes does not show up at all. Everyone is getting very annoyed with Aisha. She has used a diary before, but she usually forgets to look at it."
2. Learners find a reliable and effective app on the app store that could solve Aisha's problem.
3. Learners write a list of instructions for Aisha to follow when using the app.

#### **Unit 3: Creatively using digital technologies**

1. Read this story to the class: "A class wants to go on an outing to the Uganda Museum in Kampala. They find out that it is expensive. The class decide that they will need to raise funds to pay for their outing. They plan to create adverts to post online to ask people to donate money for their outing."
2. Learners research which digital tools would work best to create an advertisement.

**Unit 4: Identifying digital competence gaps**

3. Tell them the criteria:
  - a) It must be a tool with which they are not yet familiar.
  - b) It must be free and available online.
  - c) Learners use the digital tool they chose to create an advertisement for the class.
  - d) They post the advert online.
  - e) Assess the advertisements.

1. Learners write down a list of the digital skills they have not yet learnt about but would like to.
2. Learners write down how they plan to learn these digital skills.

## Notes:

## Notes:



The Digital Skills Facilitator Training Guide and Learner Handout is a product of UNICEF and the Uganda Ministry of Education and Sports with generous support from the Netherlands Ministry of Foreign Affairs. The Guide and Handout is developed to enhance the acquisition of digital skills and literacy under an initiative involving UNICEF, UNHCR, ILO, and the Ministry of Education and Sports.



The Republic of Uganda