

**ICS 106: INFORMATION  
LITERACY FOR THE DIGITAL AGE**

**(2 Credits)**

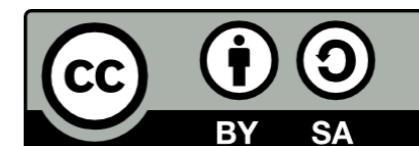


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# From the Vice Chancellor

**C**ourseware development for instructional use by the Centre for Open and Distance Learning (CODL) has been achieved through the dedication of authors and the team involved in quality assurance based on the core values of the University of Ilorin. The availability, relevance and use of the courseware cannot be timelier than now that the whole world has to bring online education to the front burner. A necessary equipping for addressing some of the weaknesses of regular classroom teaching and learning has thus been achieved in this effort.

This basic course material is available in different electronic modes to ease access and use for the students. They are available on the University's website for download to students and others who have interest in learning from the contents. This is UNILORIN CODL's way of extending knowledge and promoting skills acquisition as open source to those who are interested. As expected, graduates of the University of Ilorin are equipped with requisite skills and competencies for excellence in life. That same expectation applies to all users of these learning materials.

Needless to say, that availability and delivery of the courseware to achieve expected CODL goals are of essence. Ultimate attention is paid to quality and excellence in these complementary processes of teaching and learning. Students are confident that they have the best available to them in every sense.

It is hoped that students will make the best use of these valuable course materials.

**Professor S. A. Abdulkareem**  
**Vice Chancellor**

## Foreword

Courseware remains the nerve centre of Open and Distance Learning. Whereas some institutions and tutors depend entirely on Open Educational Resources (OER), CODL at the University of Ilorin considers it necessary to develop its own materials. Rich as OERs are and widely as they are deployed for supporting online education, adding to them in content and quality by individuals and institutions guarantees progress. Doing it in-house as we have done at the University of Ilorin has brought the best out of the Course Development Team across Faculties in the University. Credit must be given to the team for prompt completion and delivery of assigned tasks in spite of their very busy schedules.

The development of the courseware is similar in many ways to the experience of a pregnant woman eagerly looking forward to the D-day when she will put to bed. It is customary that families waiting for the arrival of a new baby usually do so with high hopes. This is the apt description of the eagerness of the University of Ilorin in seeing that the centre for open and distance learning [CODL] takes off.

The Vice-Chancellor, Prof. Sulyman Age Abdulkareem, deserves every accolade for committing huge financial and material resources to the centre. This commitment, no doubt, boosted the efforts of the team. Careful attention to quality standards, ODL compliance and UNILORIN CODL House Style brought the best out from the course development team. Responses to quality assurance with respect to writing, subject matter content, language and instructional design by authors, reviewers, editors and designers, though painstaking, have yielded the course materials now made available primarily to CODL students as open resources.

Aiming at a parity of standards and esteem with regular university programmes is usually an expectation from students on open and distance education programmes. The reason being that stakeholders hold the view that graduates of face-to-face teaching and learning are superior to those exposed to online education. CODL has the dual-mode mandate. This implies a combination of face-to-face with open and distance education. It is in the light of this that our centre has developed its courseware to combine the strength of both modes to bring out the best from the students. CODL students, other categories of students of the University of Ilorin and similar institutions will find the courseware to be their most dependable companion for the acquisition of knowledge, skills and competences in their respective courses and programmes.

Activities, assessments, assignments, exercises, reports, discussions and projects amongst others at various points in the courseware are targeted at achieving the objectives of teaching and learning. The courseware is interactive and directly points the attention of students and users to key issues helpful to their particular learning. Students' understanding has been viewed as a necessary ingredient at every point. Each course has also been broken into modules and their component units in sequential order.

At this juncture, I must commend past directors of this great centre for their painstaking efforts at ensuring that it sees the light of the day. Prof. M. O. Yusuf, Prof. A. A. Fajonyomi and Prof. H. O. Owolabi shall always be remembered for doing their best during their respective tenures. May God continually be pleased with them, Aameen.

**Bashiru, A. Ompidan**  
Director, CODL

## Introduction

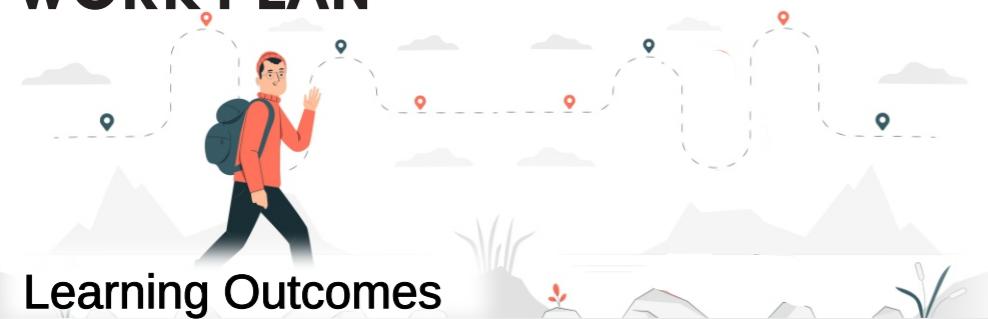
Let me welcome you to this course, ICS 106. Believe me it is going to be an interesting, enlighten and educative one. This is ICS 106 course, Information Literacy for the Digital Age. It is an indispensable course to be dedicatedly studied by any student willing to be relevant in the field of Information Technology and the present world at large. Therefore, it remains a building block course to other courses in Computer Science. It is a second-semester course available to all students studying to be awarded a Bachelor of Science (B.Sc.) degree in Computer Science at the University. It is a 2-credit unit course per week. It is designed to offer the students fundamental concepts surrounding the basic principles of computing; use of designated computer software; demonstration of integrated creative, technical, and computer skills; and use of Internet and World Wide Web (WWW) as academic research tools. All the mentioned concepts among others would enhance the students, after successful completion of this course, to independently demonstrate the social, political, legal, and cultural impacts of the digital age.

## Course Goal

The goal of this course is to expose you to the generation and execution of digitized information in the dynamic digital age. This would aid you to competently compete with the students of the developed nations.



# WORK PLAN



## Learning Outcomes

Certain objectives have been set out to ensure that the course achieves its aims.

By the end of this course you should be able to:

- explain Computer and Information Literacy Skills;
- describe ICT and Other Literacies of the Information Age;
- explain the concepts of Internet and Web;
- explain the concept of Information Retrieval;
- demonstrate an understanding of Recall and Precision Ratios to Assess Relevance of Search Results;



### Related Course

ICS 101 – Information Communication and Society  
ICS 209 – Information Storage and Retrieval



### Required For

ICS 209 – Information Storage and Retrieval  
ICS 315 – Information Products and Services  
ICS 317 – Information Resources Management

- describe the concept of Plagiarism and the legal implications;
- describe Referencing and all the underlying concepts;
- explain Presentation Skills and Time Management.



## Course Guide

### Module 1

#### COMPUTER AND INFORMATION LITERACY SKILLS

- Unit 1** -Information Literacy and Information Literacy Skills  
**Unit 2** - Understanding the Computer System

### Module 2

#### ICT AND OTHER LITERACIES OF THE INFORMATION AGE

- Unit 1** - Digital Literacy, acquisition and use of Digital Literacy skills  
**Unit 2** - ICT in the Digital Age

### Module 5

#### USING RECALL AND PRECISION RATIOS TO ASSESS RELEVANCE OF SEARCH RESULTS

- Unit 1** - Recall and Precision ratios  
**Unit 2** - Relevance, Accuracy, and Ranking

### Module 6

#### PLAGIARISM

- Unit 1** - Common Types of Plagiarism  
**Unit 2** - How to Recognize, Detect and Avoid Plagiarism  
**Unit 3** Consequences and Legal implication of Plagiarism  
**Unit 4** - Protection of Intellectual Property Rights and Copyright in the Digital Age

### Module 3

#### INTERNET AND WEB

- Unit 1** - Facilities and Resources, uses, Benefits and Dangers of Internet  
**Unit 2** - Search Engines  
**Unit 3** - Web Searching Strategies and Techniques  
**Unit 4** - Evaluating Information from the Web

### Module 4

#### INFORMATION RETRIEVAL

- Unit 1** - Basic concepts of Information Retrieval  
**Unit 2** - Components of an Information Retrieval System

### Module 7

#### REFERENCING

- Unit 1** - Types of information sources referenced  
**Unit 2** - Aspects of referencing  
**Unit 3** - Reference styles and elements  
**Unit 4** - Difference between reference list and bibliography

### Module 8

#### PRESENTATION AND TIME MANAGEMENT

- Unit 1** - Concept of Time  
**Unit 2** - Time Management Strategies  
**Unit 3** - Presentation Skills

## Course Requirements

### Requirements for success

The CODL Programme is designed for learners who are absent from the lecturer in time and space. Therefore, you should refer to your Student Handbook, available on the website and in hard copy form, to get information on the procedure of distance/e-learning. You can contact the CODL helpdesk which is available 24/7 for every of your enquiry.

Visit CODL virtual classroom on <http://codllms.unilorin.edu.ng>. Then, log in with your credentials and click on ICS 106. Download and read through the unit of instruction for each week before the scheduled time of interaction with the course tutor/facilitator. You should also download and watch the relevant video and listen to the podcast so that you will understand and follow the course facilitator.

At the scheduled time, you are expected to log in to the classroom for interaction.

Self-assessment component of the courseware is available as exercises to help you learn and master the content you have gone through.

You are to answer the Tutor Marked Assignment (TMA) for each unit and submit for assessment.

 Summary	 Tutor Marked Assignment	 Self Assessment
 Web Resources	 Downloadable Resources	 Discuss with Colleagues
 References	 Further Reading	 Self Exploration

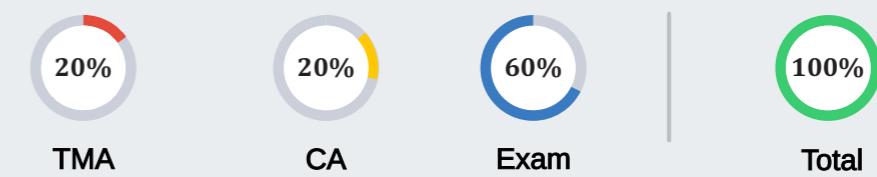
## Embedded Support Devices

### Support menus for guide and references

Throughout your interaction with this course material, you will notice some set of icons used for easier navigation of this course materials. We advise that you familiarize yourself with each of these icons as they will help you in no small ways in achieving success and easy completion of this course. Find in the table below, the complete icon set and their meaning.

 Introduction	 Learning Outcomes	 Main Content
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## Grading and Assessment





**Module 1**

# Computer and Information Literacy Skills

## Units

**Unit 1** -Information Literacy and Information Literacy Skills

**Unit 2** - Understanding the Computer System



## UNIT 1

# INFORMATION LITERACY AND INFORMATION LITERACY SKILLS



### Introduction

In this unit we will discuss about information literacy and skills, and the unit discusses the big six model. In this unit, you will learn the meaning of an information literate person, the skills needed to be information literate and steps taken to seek and evaluate information resources.



### Learning Outcomes

#### At the end of this unit, you should be able to:

- ① define Information Literacy
- ② describe the Skills of an Information Literate person
- ③ state Information Sources
- ④ state attributes of an information literate person
- ⑤ use the “Big Six Model” to investigate a research topic

## Main Content

### Information Literacy



**L**et us start with something you which you might never come across talking of information literacy and that is the American Library Association (ALA, 1989) definition of Information Literacy as “an information literate, as a person that can recognize when information is needed and have the ability to locate, evaluate and use effectively the needed information”. The concept of information literacy cannot be undermined in any information environment. It is common to all disciplines and all learning environments such as colleges and Institutions of learning.

Information literacy forms the basis for lifelong learning from infancy to adulthood (ACRL, 2000). In another sense, Information literacy enables one to master content and assume greater control over learning (ACRL, 2000). Information literacy skills are essentially necessary for the effective use of information resources. The digital age has brought about rapid explosion in the information being produced daily. It has also created diversity of information sources and technologies available for accessing and using the information. The explosion and diversity also contribute to the complexity of the environments and contexts for information use. Information sources include personal and community resources, libraries, organisations, print media, Internet, CD-ROMs, databases, etc., and each source often has its own peculiar technologies for accessing and using information from it. Take for instance the Internet which provides access to massive stocks of information on different digital media owned and provided by different organizations and people. But the information might be correct, fake or fraudulent.

Thus, individuals are often in a dilemma regarding how to get and use good quality information in their education, work or personal lives due to such reasons as too much available information, inadequate knowledge of where to find good information sources, and lack of requisite skills to use suitable technologies (e.g. Internet search engines) to look for the information.



### Information Literacy Skills



I want to let you know that ANZIL (2004) and Doyle (1994) identified literacy skills as skills needed through one's lifetime. These skills are required for searching and seeking for information and most essentially to evaluate relevant sources of information and communicate effectively. Some relevant skills include: Prospecting; interpreting and creating new ideas. of an information literate person as the following:

Recognizes the need for information; Recognizes that accurate and complete information is the basis for intelligent decision making; Identify potential sources of information; Develops successful search strategies; Accesses sources of information, including computer based and other technologies; Evaluates information; Organizes information into practical application; Integrates new information into existing body of knowledge; Uses information for critical thinking and problem solving; Understand economic, legal, social, political and cultural issues in the use of information; Access and use information ethically and legally; Use information and knowledge for participative citizenship and social responsibility; Experience information literacy as part of independent learning and lifelong learning activities.



### Models of Information Skills



It might interest you to know that Eisenberg and Berkowitz (2001) developed one of the widely used models of information skills called the “Big Six Model”. This model defines how you being an information literate student can approach research. These are: defining your research problem; develop information seeking strategies; seeking and evaluating information resources; organizing and structuring your information; communicating the result of your research; and evaluating your work and the process. The model says you need to follow the under listed steps to investigate a research topic. Each step involves asking and working carefully, conscientiously and systematically to provide answers to the questions listed under it, as follows:



*Step 1: Define your research problem*

- What is the problem area?
- What information do I need?
- What relevant sources do I require?
- What information do I need to for this research?

*Step 2: Develop your information Seeking Strategies*

- How can I find the information I need?
- What are the best possible sources?
- Which databases are relevant?
- Which type of source will make me solve my information need problems?

*Step 3: Select and evaluate information resources*

- Have I critically analysed my sources?
- Have I examine my sources of information for relevance, currency, accuracy credibility, appropriateness and bias.

*Step 4: Organize and restructure your information*

- Have I organized my information so that it makes sense to me?

*Step 5: Communicate the result of your research*

- Who are my target audiences?
- How can I most effectively share this information with these audiences?
- Which would be the best format for communicating the results of my research?
- What do I need to do to add value to my presentation?

- Is the information complete and accurate?
- Is my work readable and free from errors?

*Step 6: Evaluate your work and the process*

- Did I follow the guidelines for research?
- Did I explore the full scope of available resources and select the best?
- Did I exhaust all available resources either in electronic or print?
- Did I avoid plagiarizing any of my sources?

**Summary**

In this unit, you have learnt that:

- An information literate person is who can recognize when information is needed and have the ability to locate, evaluate and use effectively the needed information.
- Certain attributes are ascribed to an information literate person.
- Big six model defines how information literate student would approach research.

**Self-Assessment Questions**

- 1 What is Information literacy?
- 2 How do you recognise an Information literate person?
- 3 State any five Information Sources.
- 4 State any five attributes of an Information literate person.
- 5 State and explain steps use to investigate a research topic.





## Tutor Marked Assessment

- A. List the attributes associated with information literate person.
- B. State any three information literacy skills needed for research purpose.
- C. How do we achieve information literacy in a community?
- D. State the factors identified in the Big Six Model.



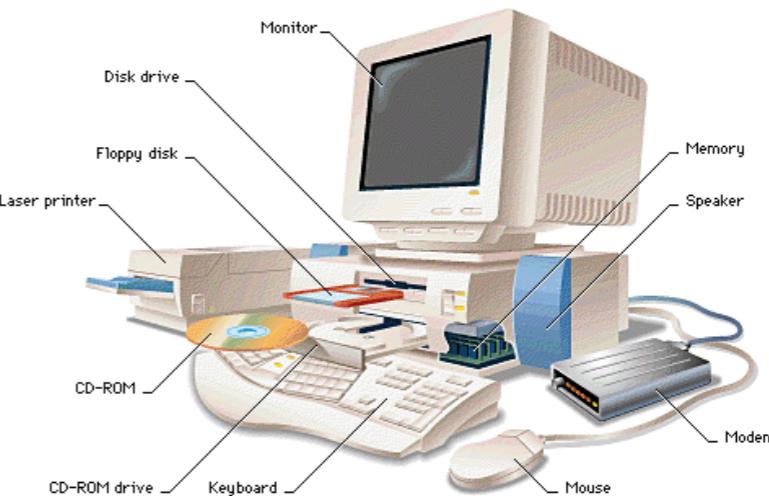
## References

- Afolayan, T. O. (2019). Understanding information literacy. Information literacy for the digital age. Balogun, N.A. Tiamiyu, M. Ahlan, A. R. Department of Information and Communication Science, University of Ilorin. pp 1-4. (Extract)



## Further Reading

- American Library Association. Presidential Committee on Information Literacy (1989). Final Report. Chicago: American Library Association. Available at: <http://www.ala.org/ala/acrl/acrlpubs/whitepapers/presidential.htm>
- ANZIL (2004) Australian and New Zealand Information Literacy Framework: Principles, Standards and Practice. 2nd ed. Editor: Alan Bundy. Adelaide, Australian and New Zealand Institute for Information Literacy, Accessed Febuary 12, 2017. Available at: <http://www.caul.edu.au/info-literacy/InfoLiteracyFramework.pdf>
- The Association of College and Research Libraries (2000). Information Literacy Competency Standards for Higher Education. Chicago, IL: The Association of College and Research Libraries. <http://www.ala.org/ala/mgrps/divs/acrl/standards/standards.pdf> Accessed on Febuary 12, 2017.



## UNIT 2

# UNDERSTANDING THE COMPUTER SYSTEM

### Introduction

This unit covers the components useful for computing knowledge i.e. it shows components and use of a computer system. In this unit, you are introduced to the components that made up a computer system and those components that are useful for data input.

### Learning Outcomes

#### At the end of this unit, you should be able to:

- 1 Define computer system.
- 2 Recognise different parts of a computer system.
- 3 Describe the function of different devices of a Computer system.
- 4 Differentiate between the external devices that are essential to a computer system.

## Main Content

### Computer System

 | 1 min



 SAQ 1

**I**t is of basis that you already know the definition of computer system but to refresh your memory. In a layman's definition, computer is an electronic machine that performs high-speed mathematical or logical operations to facilitate storing and processing of information.

### Parts of a Computer System

 | 7 mins



SAQ 2,3,4

It shouldn't be new to you by now that a computer system consists of two main parts: hardware and software. The hardware comprise of the physical parts, which you can see and touch. On the other hand, software refers to sets of instructions, or programs issued to the computer.

The hardware of a computer system can be divided into input and output devices. Input devices enable information to be captured into the computer. Examples of input devices are listed below.

#### Input Devices

Keyboard

Mouse

Joystick

Digitizing Tablet

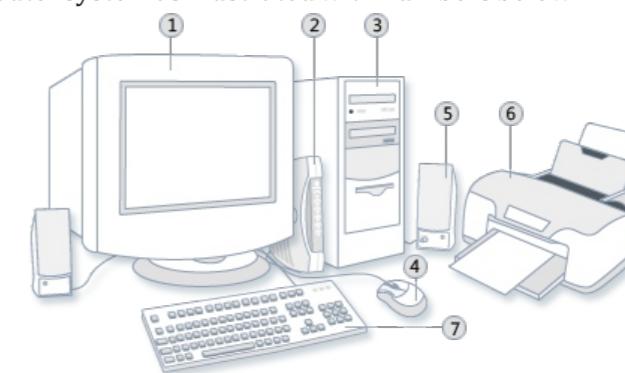
Light pen



#### Output Devices

I should let you know that output devices are devices that displays processed data by the computer to the user in different formats. Output devices produce data in different forms including audio, visual and hard copy. Examples include monitor, printer, projector, CD's, DVD and floppy disks, speakerphones.

I have helped you with the pictorial representation of the various parts of a computer system as illustrated with numbers below.

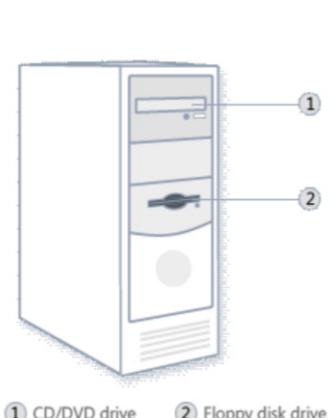


- |           |               |           |            |
|-----------|---------------|-----------|------------|
| ① Monitor | ③ System unit | ⑤ Speaker | ⑦ Keyboard |
| ② Modem   | ④ Mouse       | ⑥ Printer |            |

Figure 1: Parts of a Desktop computer system

### System unit

You should note this important point that the system unit is the core of a computer system. The said 'system unit' above is made up of some components such as Central processing unit (CPU), or microprocessor, which acts as the "brain" of your computer. Another component you should know of is random access memory (RAM), which temporarily stores information that the CPU uses while the computer is on. The information stored in RAM is erased when the computer is turned off.

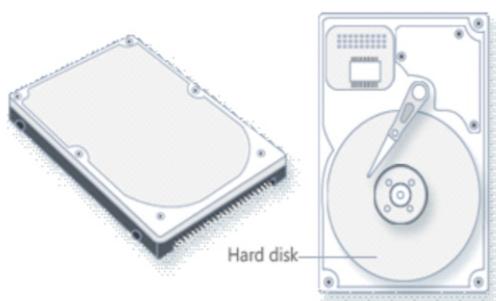


① CD/DVD drive    ② Floppy disk drive

Almost all the parts of a computer system are connected to the system unit using cables. The cables plug into specific ports (openings), typically at the back of the system unit. Hardware parts that are not parts of the system unit is sometimes called a peripheral device or device.

### Hard disk drive

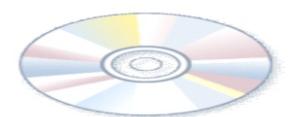
What hard disk drive is used for basically is to store information on a hard disk, a rigid platter or stack of platters with a magnetic surface. The reason for this is because hard disks can hold massive amounts of information and they usually serve as the computer's primary means of storage. The hard disk drive is located inside the system unit.



Hard disk

### CD and DVD drives

The CD or DVD drives are usually located on the front of the system unit. A CD drive can read (retrieve) data from a CD, and can also write (record) data onto CDs. You can also use a CD drive to play music CDs on your computer.



It is also worthy to include that DVD drives are more advanced in nature and it combines the work of a CD drives and reads DVDs. If you have a DVD drive, you can watch movies on your computer. Many DVD drives can record data onto blank DVDs. You can as well back up important files to CDs or DVDs so that in case of data loss, it can be retrieved easily and at a faster rate.

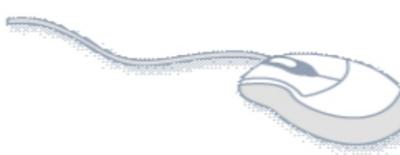
### Floppy disk drive

Floppy disk drives store information on floppy disks, also called floppies or diskettes. Compared to CDs and DVDs, floppy disks can store only a small amount of data. You can retrieve information more slowly and can be easily damaged if not handled carefully. Nowadays, floppy disk drives are less popular than they used to be, although some computers still include them.



### Mouse

Majority of you are really familiar with this as it is one of the most popular component of a computer system. A mouse is a small device used to point to and select items on your computer screen. It might amaze you but the mouse is usually designed to look like an actual mouse. It's small, oblong, and connected to the system unit by a long wire that resembles a tail. However, there are wireless mouse.



A mouse usually has two buttons: a primary button (usually the left button) and a secondary button. Many mice have a wheel between the two buttons, which allows you to scroll smoothly on the mouse pad.

A mouse enables you to select an item, by pointing to the item and then clicking (press and release). Pointing and clicking with your mouse is the main way to accomplish task on your computer.

### Keyboard

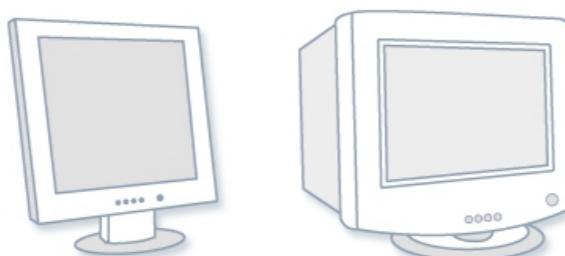
A keyboard enables you to type-text into your computer. It can perform many of the tasks you can perform with a mouse. The keyboard has keys for letters and numbers and also special keys. The keyboard houses different kinds of keys. These keys are indicated below:

- The function keys are found on the top row, perform different functions depending on where they are used.
- The numeric keys are located on the right side of the keyboards, allows one to enter numbers quickly.
- The navigation keys, such as the arrow keys, allow one to move freely on your computer whether on a document or web page.



### Monitor

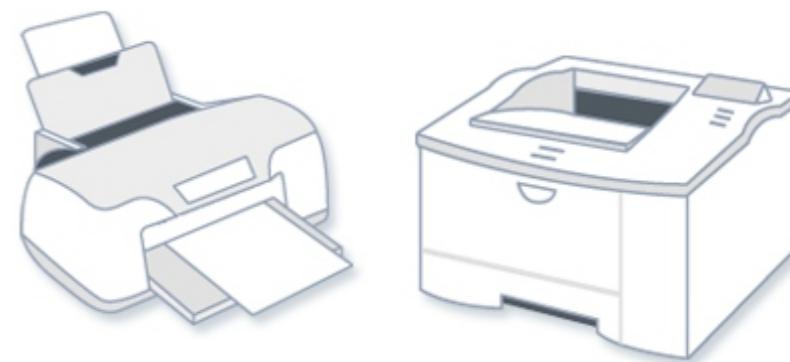
Realistically, if a computer system is to be placed in front of you in the dark and you are asked to identify one of its components, there is a credible chance that you might identify the monitor first because of its structure and size. A monitor displays information in visual form, using text and graphics. The portion of the monitor that displays the information is called the screen. There are two basic types of monitors: CRT (Cathode Ray Tube) monitors and LCD (Liquid Crystal Display) monitors. Both types produce sharp images, but LCD monitors have an advantage of being much thinner and lighter. CRT monitors, however, are generally more affordable.



LCD monitor (left); CRT monitor (right)

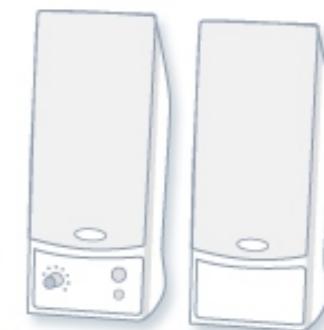
### Printer

A printer is an output device that transfers data from a computer onto paper. Let me put you through two main types of printers we have: inkjet printers and laser printers. Inkjet printers are the most popular printers in most homes. They can print in black and white or in full color and can produce high-quality output. Laser printers are faster and can sustain heavy use.



### Speakers

Speakers are output devices that are used to play sound. They are most times built into the system unit or connected with cables. Speakers allow you to listen to music and hear audibly sound effects from your computer. Many of you are definitely familiar with this as well.



### Modem

Modem is a small device that enables you to connect your computer to the Internet. A modem sends and receives computer information over a telephone line or high-speed cable. Modems are sometimes built into the system unit, but higher-speed modems are usually inserted into the computer.

As we have discussed above, as an information literate student you need to familiarize yourself with the parts of a computer system, being a major tool in processing information and accomplishing other tasks. Therefore, relevant information skills will suffice in the effective use of the computer system and other ICT tools. In conclusion, the information world is getting more complex and more sophisticated on a day to day basis. Therefore, you should be ever ready to join the bandwagon of people who are equipped with requisite skills to search, evaluate and use myriad resources in this information age.





## Summary

In this unit, you have learnt that:

- Input devices are used for data entry into the computer system for normal computation and can range from keyboard that could be attached to a laptop to detached and mouse that is connected wired or wireless.
- Output devices are meant for you to bring out a processed data or information and sometimes by means of display.
- System unit is seen as a component that encompasses other components.
- The different types of storage devices are highlighted such as floppy disk, hard disk and CD Rom.



## Self-Assessment Questions



- 1 What is a computer system?
- 2 Describe any three components of computer system.
- 3 How does output device function and differentiate the functionality from secondary storage?
- 4 State differences between floppy disk and Compact CD drive.



## Tutor Marked Assessment

- i. List the input devices you know.
- ii. How does System-unit operate the output devices?
- iii. How do we differentiate between the input and output device?



## References

- Afolayan, T. O. (2019). Understanding information literacy. Information literacy for the digital age. Balogun, N.A. Tiamiyu, M. Ahlan, A. R. Department of Information and Communication Science, University of Ilorin. pp 5-14. (Extract)



## Further Reading

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**Module 2**

# **ICT and Other Literacies of the Information Age**

## **Units**

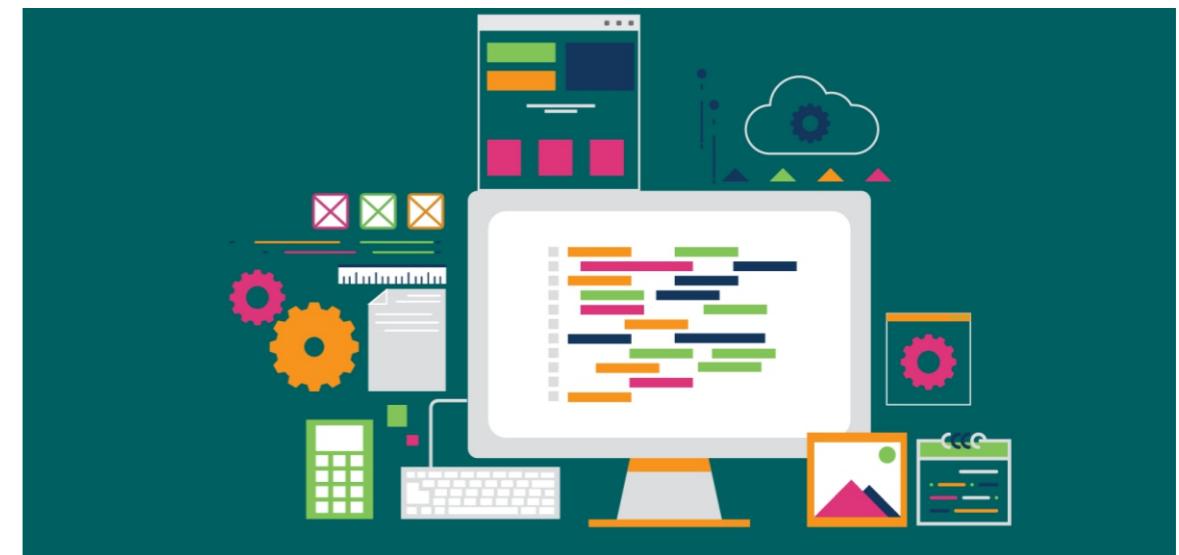
**Unit 1** - Digital Literacy, acquisition and use of  
Digital Literacy skills

**Unit 2** - ICT in the Digital Age



Picture: Girl wearing grey shirt using macbook on wooden table

Photo: unsplash.com



## UNIT 1

# DIGITAL LITERACY, ACQUISITION AND USE OF DIGITAL LITERACY SKILLS



### Introduction

This unit covers the digital literacy, acquisition and use of Digital Literacy skills. In this unit, you are expected to learn skills which is expected of a person, before referring to he or she as digital literate, who know appropriateness of technology and its usage, multi-literacy and the digital citizens.



#### At the end of this unit, you should be able to:

- 1 define digital literacy
- 2 identify methods used for acquisition of knowledge using digital literacy skill
- 3 differentiate between the types of literacies
- 4 recognise a digital citizen
- 5 describe REP according to Digital citizens

## Main Content

### Digital Literacy

 | 1 min



SAQ 1

Cornell University defined 'Digital Literacy' as the ability to find, evaluate, utilize, share, and create content using information technologies and the internet. These skills include:

- knowledge of the basic principles, purposes and uses of computing devices and computer networks
- knowledge of how to use technology to obtain and construct new meaning in ways that are appropriate to your needs
- understanding of the various societal issues associated with digital technologies and their uses
- ability to engage in online communication transactions for education, work, leisure and local, national and global citizenship
- ability to find, evaluate and use information effectively
- ability to use technology to produce and share information and ideas in society for the development of self and society
- ability to apply critical thinking to problem solving and decision making tasks in educational, at work and home, and in leisure
- ability to use lifelong learning skills to keep pace with the rapidly evolving technologies of the digital society.

You can acquire these skills through appropriate education, training and digital life experiences that push individuals to think and communicate in a variety of ways through a multitude of technologies and media.

### Promoting the acquisition and use of digital literacy skills

 | 2 mins



SAQ 4

It is not a fable but a fact that today most of you have more knowledge about technology than even your teachers, but yet most of you have not had instruction on how and when to use technology appropriately to enhance your learning or to showcase your learning when amidst your peers and in the society. Here are some instances which will educate you more on how you can promote your digital literacy and how you can integrate it in when learning:

- Promoting use of web browsers, search engines, email, wiki, blogs etc. in teaching and learning.
- Using image, video and animation software such as PowerPoint, Photoshop, Adobe Flash and other software for learning or to showcase learning.
- Improving skills for evaluating online resources and information for accuracy, relevance, currency, trustworthiness, etc.
- Using mostly online classes or blending online and regular classes to enhance learning.
- Improving skills in the selection of appropriate media to deliver content in classes or for students to showcase their learning to their teachers and peers.
- Using and allowing students to use interactive whiteboard in classroom presentations and learning activities on daily or regular basis.
- Encouraging students to experiment with technology to showcase their learning and innovative ideas.
- Using Web resources (websites, video, music) to enhance students' learning.
- Teachers and students creating online content to be utilized in and out of the classroom.

You should know that literacy skills have always been important even in centuries past, people communicated via hand written letters. These soon

turned into telegraph messages. From there humanity advanced to the voice telephone, computers, Internet, and then unto text messaging through mobile phones. Then came the smartphone revolution, which put small powerful computers in peoples' hands. Today's technological options for communication are now very diverse, you now learn technology just like you learn spoken languages, by observing, and doing initially by imitation and then innovatively. So, it is not uncommon today for a three-year old child to have some basic knowledge regarding how to get on to the computer and start a computer game.

It now took centuries for you to be taught how to evaluate, apply, analyse and synthesize knowledge. Today, the way you are able to learn, and showcase and apply your learning has surpassed the limitations of physical classrooms, chalk boards, handwritten notebooks, print textbooks, and printed poster and shoe box presentations. Now, technological development helps in providing you with immense and diverse resources you need in learning, showcasing and applying these skills. You can now easily use the Internet to find text sources, videos, podcasts and presentations related to anything you want to learn about.

The big questions however are:

- Can your generation of students be able to sift good ideas from all the information they encounter through use of the emerging technologies?
- Can you create new good ideas from the differentiated good and bad ideas?
- Would your new ideas lead to great innovations and discoveries that help humans understand their place in the world and make life easier for all?

Accordingly, you should consider digital literacy to involve more than just technology use skills, and should be as well considered to include a wide variety of ethical, social, and reflective practices that are embedded in work, learning, leisure, and daily life.



SAQ 4

## Multi-Literacies of the Digital Age



We use the term "multi-literacies" to often describe the various aptitudes and abilities that are needed for us to use, understand and create digital media. Thus, under the "digital literacy umbrella" are a wide range of interrelated skills that traditionally fall under such literacy concepts as media literacy, technology literacy, information literacy, visual literacy, communication literacy and social literacies (Jenkins et al, 2006). We will now discuss briefly on this.

**Media literacy:** With its expanded notion of 'text' that includes images, audio and digital media, media literacy is closely associated with digital literacy. Media literacy reflects our ability to access, analyse, evaluate and produce media through understanding and appreciation of:

- the art, meaning and messaging of various forms of media texts
- the impact and influence of mass media and popular culture
- how media texts are constructed and why they are produced
- how media can be used to communicate our own ideas effectively

**Technology literacy:** This ranges from basic computer skills to more complex tasks like editing a digital film or writing computer code. You have to be careful, though, not to confuse proficiency with knowledge and understanding: a tech-ed-up teen with superb technology skills may still trust much of the information he/she finds online, copy straight off the Web for school projects, and not give a thought to the privacy implications of his/her online activities. Digital literacy involves both skills and a set of good online habits that include reflection, critical awareness and responsibility.

**Information literacy:** This includes your ability to assess what information is needed, to know how to find it online and how to critically evaluate and apply it. Originally developed for library use, this literacy translates well into the digital era where users are surrounded by an ocean of unfiltered online information of varying nature and quality, and knowing how to think critically about different available sources and content is essential.

**Visual literacy:** At its most basic, visual literacy reflects our ability to understand and produce visual messages, whether through objects, actions or symbols. Elements of visual literacy include abilities to read and interpret road signs as pedestrian or vehicle, or understand symbols on home appliances, or to read and understand a map or a chart. Visual literacy is essential to learning and communication in modern society.

**Communication literacy:** These competencies form the foundation for thinking, organizing and connecting with others in a networked society. You need to know how to integrate information in different formats from multiple sources such as text, numeric data, music, video, online databases and other media to create their own content (Jenkins et al, 2006), and how to use multiple sources to disseminate and share knowledge.

**Social literacy:** Social competencies are also needed for full participation in digital society, which media scholar Henry Jenkins describes as a “participatory culture” that is developed through collaboration and networking.

Jenkins et al (2006) also identify a series of “new literacies” that are built upon and reinforce these social skills, as follow:

**Play** – the ability to experiment with your surroundings as a form of problem-solving

**Performance** – the ability to adopt alternative identities for the purpose of improvisation and discovery

**Simulation** – the ability to interpret and construct dynamic models of real-world processes

**Appropriation** – the ability to meaningfully sample and remix media content

**Multitasking** – the ability to scan your environment and shift focus as needed to salient details

**Distributed Cognition** – the ability to interact meaningfully with tools that expand mental capacities

**Collective Intelligence** – the ability to pool knowledge and compare notes with others toward a common goal

**Judgment** – the ability to evaluate the reliability and credibility of different information sources

**Transmedia Navigation** – the ability to follow the flow of stories and information across multiple platforms (understanding a storyline that's told both on a TV show and a website, for instance, or following a news story through various different outlets)

**Networking** – the ability to search for, synthesize, and disseminate information

**Negotiation** – the ability to travel across diverse communities, discerning and respecting multiple perspectives, and grasping and following alternative norms.

## Digital Citizenship



4 mins



You should also add to your already gained knowledge that Digital Citizenship Institute (2017) highlights digital literacy as the only aspect of being a digital citizen. We can now define digital citizenship as appropriate, responsible behavior by an individual with regard to technology use in the online and social communities wherein he live, at the local, national and global levels. Digital citizenship is conceptualized as encompassing the following nine main aspects or themes:

1. Digital Access
2. Digital Commerce
3. Digital Communication
4. Digital Literacy
5. Digital Etiquette
6. Digital Law
7. Digital Rights & Responsibilities
8. Digital Health & Wellness
9. Digital Security (self-protection)

**1. Digital Access** (*Full electronic participation in society*): Being a technology user you need to be aware that not everyone has the same opportunities when it comes to technology. Working toward equal digital rights and supporting electronic access is the starting point of Digital Citizenship. Digital exclusion

makes it difficult to grow as a society increasingly using these tools. Helping to provide and expand access to technology should be goal of all digital citizens. You need to keep in mind that some may have limited access, so other resources may need to be provided. To become productive citizens, we need to be committed to make sure that no one is denied digital access.

**2. Digital Commerce** (*Electronic buying and selling of goods*): You need to understand that a large share of market economy is being done electronically. Legitimate and legal exchanges are occurring, but the buyer or seller needs to be aware of the issues associated with it. The mainstream availability of Internet purchases of toys, clothing, cars, food, etc. has become commonplace to many users. At the same time, an equal amount of goods and services which are in conflict with the laws or morals of some countries are surfacing (which might include activities such as illegal downloading, pornography, and gambling). Users need to learn about how to be effective consumers in a new digital economy.

**3. Digital Communication** (*Electronic exchange of information*): One of the significant changes within the digital revolution is our ability to communicate with other people. In the 19th century, forms of communication were limited. In the 21st century, communication options have exploded to offer a wide variety of choices (e.g., e-mail, cellular phones, instant messaging). The expanding digital communication options have changed everything because people are able to keep in constant communication with anyone else. Now everyone has the opportunity to communicate and collaborate with anyone from anywhere and anytime. Unfortunately, many of you have not been taught how to make appropriate decisions when faced with so many different digital communication options.

**4. Digital Literacy** (*Process of teaching and learning about technology and the use of technology*): While schools have made great progress in the area of technology infusion, much remains to be done. A renewed focus must be made on what technologies must be taught as well as how it should be used. New technologies are finding their way into the work place but not yet being used in most schools (e.g., videoconferencing, online sharing spaces such as wikis). In addition, workers in many different occupations need immediate information

(just-in-time information). This process requires sophisticated searching and processing skills (i.e., information literacy). The digital beginner must be taught how to learn in a digital society. In other words, you must be taught to learn anything, anytime, anywhere. Business, military, and medicine are excellent examples of how technology is being used differently in the 21st century. As new technologies emerge, you need to learn how to use that technology quickly and appropriately. Digital Citizenship involves educating people in a new way—these individuals need a high degree of information literacy skills.

**5. Digital Etiquette** (*Electronic standards of conduct or procedure*): As technology users you should often see this area as one of the most pressing problems when dealing with Digital Citizenship. We recognize inappropriate behaviour when we see it, but before people use technology they do not learn digital etiquette (i.e., appropriate conduct). Many people feel uncomfortable talking to others about their digital etiquette. Often rules and regulations are created or the technology is simply banned to stop inappropriate use. It is not enough to create rules and policy, we must teach everyone to become responsible digital citizens in this new society.

digital citizens in this new society.

**6. Digital Law** (*Electronic responsibility for actions and deeds*): It might interest you that what did digital world has to do with law so I will explain, digital law deals with the ethics of technology within a society. Unethical use manifests itself in form of theft and/or crime. Ethical use manifests itself in the form of abiding by the laws of society. You need to understand that stealing or causing damage to other people's work, identity, or property online is a crime. There are certain rules of society that you need to be aware of in an ethical society. These laws apply to you or anyone who works or plays online. Hacking into others information, downloading illegal music, plagiarizing, creating destructive worms, viruses or creating Trojan Horses, sending spam, or stealing anyone's identity or property is unethical.

**7. Digital Rights & Responsibilities** (*Freedoms available to everyone in a digital world*): Just as in the American Constitution where there is a Bill of Rights, there is a basic set of rights extended to every digital citizen. Being a

digital citizen you should have the right to privacy, free speech, etc. Your basic digital rights must be addressed, discussed, and understood in the digital world. With these rights also come responsibilities as well. You must help define how the technology is to be used in an appropriate manner. In a digital society these two areas must work together for everyone to be productive.

**8. Digital Health & Wellness** (*Physical and psychological well-being in a digital technology world*): I should inform as well that eye safety, repetitive stress syndrome, and sound ergonomic practices are issues that need to be addressed in a new technological world. Beyond the physical issues are those of the psychological issues that are becoming more prevalent such as Internet addiction. You need to know that there are inherent dangers of technology. Digital Citizenship includes a culture where you are taught as technology users how to protect yourselves through education and training.

**9. Digital Security** (*self-protection*) (*Electronic precautions to guarantee safety*): I want to know that in any society, there are individuals who steal, deface, or disrupt other people. The same is true for the digital community. It is not enough to put your trust in other members in the community for your own safety. In our own homes, we put locks on our doors and fire alarms in our houses to provide some level of protection. The same must be true for the digital security. We need to have virus protection, backups of data, and surge control of our equipment. As responsible citizens, we must protect our information from outside forces that might cause disruption or harm.

## Respect, Educate and Protect (REP)



| 1 min



SAQ 5

As we discussed above the elements of digital citizenship have also been organized under the principles of Respect, Educate and Protect (REPs) (Digital Citizenship Institute, 2017). Almost everyone understands that to keep a healthy body it is beneficial to be active, and one way is to begin a workout routine. Often during workouts you go through several repetitions, or reps, to strengthen muscles. With the increase in technology in the hands of everyone, especially kids, parents are in the need of a new workout, and new REPs, comprising the following components and dimensions:

### Respect Your Self, Respect Others

Etiquette

Access

Law

### Educate Your Self, Connect with Others

Literacy

Communication

Commerce

### Protect Your Self, Protect Others

Rights and Responsibility

Safety (Security)

Health and Welfare

You should also take notice that there are two aspects to each component of the REPs, One aspect concerns your relationship to technology. This aspect is represented by respect yourself, educate yourself and protect yourself. The other aspect concerns your responsibility to others in digital communities and society – i.e. respect others, connect with others, protect others. The principles of respect, educate and protect each include elements to help parents and children discuss the issues and ideas that are happening or are possible with respect to technology (Digital Citizenship Institute, 2017).



## Summary

In this unit, you have learnt that:

- a digital literate to be that person who can find, evaluate, utilize, share, and create content using information technologies and the Internet
- a digital literacy is the abilities of a digital literate person
- digital citizen is that person who is either in a local or global domain, use technology wisely and appropriately in order to achieve a goal
- that a digital citizen has 9 main themes
- multi-literacy skill to be abilities needed by individuals to create digital media



## Self-Assessment Questions



- 1 Who is a digital citizen?
- 2 What is digital literacy?
- 3 How does a digital literate person behave?
- 4 State any five methods used for acquisition of knowledge by digital citizen.
- 5 Explain the term 'REP'.



## Tutor Marked Assessment

I. List the multi-literacy skills needed by individuals

II. List the theme that a digital citizen is conceptualized to have as part of knowledge.



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## UNIT 2

# ICT IN THE DIGITAL AGE



### Introduction

In this unit we are going to discuss how the information and communication technology is used in the present contemporary world. In this unit, you will learn about the digital age and its significance, relationship between ICT and the digital age, ICT in some sector and problems caused due to ICT use.



**At the end of this unit, you should be able to:**

- ① Conceptualise digital age
- ② Highlights significance of digital age.
- ③ Describe ICT influence on different sectors in the society
- ④ Note those problems related to use of ICT

## Main Content

### Digital Literacy



**L**et me educate you that Tech Target Network (2005) defined ICT (i.e. Information and Communications Technology) as an umbrella term that includes any communication device or application, and encompassing radio, television, cellular phones, computer and network hardware and software, satellite systems and so on, as well as the various services and applications associated with them, such as videoconferencing and distance learning. ICT is often used interchangeably with IT (i.e. Information Technology). The term "Technology" is a broader term than ICT, can be referred to as the use of tools, gadgets and resources that help us in controlling and adapting to our environment (Importance of Technology, 2017). It comprises of anything that can be developed to make human life or activities more efficient and easier. ICT is one of the most important categories of technology (Noor-Ul-Amin, n.d.).

Do you know that the rate of development that is occurring nowadays was unprecedented in past decades. Unlike in the past where it took us days or weeks to get a message across to our loved ones living in another town, state or country, information can now be transferred easily and rapidly within seconds or minutes through phone calls, text messages, emails, audios and videos to people anywhere on our planet. This development is as a result of information technology that is now dominating the entire world and changing the lifestyle of people. Information technologies are now making what might have seemed impossible before to be possible now. Information technology has brought us about a new era called "digital age", that is so significant and worthy of notice in the history of the world.

I should tell you that the period started from about the 1970s and has been described with several names such as 'information age', 'computer age', 'technology age', 'new media age', and the currently most popular 'digital age'. We call this process digitization. The digitization of information increases the power of computing and digital storage, information availability, access and dissemination, improves the communication spectrum exponentially, and



| 2 mins

allows an ever-growing amount of information to be distributed quickly and widely (Margaret and Linda, 2014; Tech Computing, 2016).

I should let you know as well that Margaret and Linda (2014) said many computer historians believe that the beginning of the digital age can be traced back to the work of the American mathematician called Claude E. Shannon, who was a researcher at Bell Laboratories at that time. The author published a landmark paper at the age of 32 and proposed that information can be quantitatively encoded, processed and transmitted as a series of ones and zeroes (later known as binary digits or bits) without error in any information media such as a telephone, radio and television.

### Significance of the Digital Age



Do most of you even know the significant of digital age? Digital age is so significant to the extent that it is now a common belief that anything could be possible with technology. However, what makes the period so significant is the technology which has been propeller of growth in every aspect of human life. The digital technology has changed the way we live, communicate, work, educate, and socialize with one another. The rate at which information is spread and consumed is now so high thereby making the development, diffusion and acceptability of new innovations to be also very rapid. The high points of the digital age include the development of faster microprocessors, cheaper high-capacity digital storage devices, and satellites, microwave masts and fiber optic cables to enable faster, global telecommunications, which have accelerated the transmission and processing of information across the world.

Now we are more connected than ever before with electronics and technology which allow information to be moved at the same time from one point to another . Despite the enormous developments already witnessed, Catinat (2015) claimed that with the way the world is evolving, the huge potential of digital age still remains untapped.



| 2 mins

## Uses of ICT in Digital Age



With all we have discussed so far, you should have been noticing bit by bit why and how ICT is so vital in our respective lives. Life was so difficult some centuries back, as communication was so slow and computer use was not seen as necessity, but rather as luxury that can only be acquired by the rich. The arrival of the Internet (and its services such as World Wide Web and email), telecommunications and other related technologies actually liberated human society and brought about a new computing paradigm, which redefined who can and should be enabled to use computers for what purposes. The new paradigm led to the development of slim, light weight and portable laptops with user-friendly and exciting graphical interfaces, which gives more people more access to information and enables them to use computers to work anywhere at any time (UK Essays, 2015). Do you know according to a United Nations report (1999) as reported by Noor-ul-amin (n.d) highlighted ICTs covers the following areas:

- Internet service provision
- Telecommunications equipment and services
- Information technology equipment and services
- Media and broadcasting
- Libraries and documentation centers
- Commercial information providers
- Network-based information services
- Other related information and communication activities.

It is imperative you know that ICT determines the way we communicate, teach, learn and live. In order to be relevant and adapt to the digital age, one must be acquainted with the use of ICT. For example, with ICT tools we can communicate in real-time with one another in different countries using technologies such as instant messaging, Voice over IP (VoIP), and virtual

meetings can be held with partners across the globe through video conferencing, thereby creating a new business environment. As users of social networking websites like Facebook, Twitter, and Instagram across the world we can now stay connected or remain in contact and communicate on a regular basis. The so-called 'Global Village', was created as a result of the availability of modern information and communication technologies, which allows people to communicate across the world as if they were living next door (Tech Term, 2010).

## Influence of ICT in Human Societies



This has to do with how ICT change and influence Human society. Human society comprises people who share a common lifestyle and organization (Yelnick,2017). In this section we will discuss some of the important areas in which ICT has influenced the lifestyle and the organization of human society.

- ICT in Education
- Education-supporting ICT
- Teaching in the digital age
- Learning in the digital age
- Benefits of ICT in Education

## ICT in Health Services



You should also know that the World Health Organization (WHO) regards health care as one the fundamental human right of any human being (WHO, 2015). It is one of the essential necessities of life. ICT has great influence or role in ensuring access to and improvement of good health delivery. The use of information and communication technology and the Internet to access health information and medical research in health services ensure that health care providers (doctors, nurses and other health practitioners) get the most useful

information required to guide them in making appropriate decisions about a patient's illness and treatment. The use of ICT tools to provide better access and management of health care services is sometimes referred to as eHealth. It improves means of gathering, storing and communication of health records (Reference, 2017).

You should take this as an instance, some diseases or ailments can be easily diagnosed and treated with the use of useful information from the internet by doctors and by people themselves. Hospital prescription trends can be accessed via e-Health record systems in order to ensure correct and proper drug prescription. Robots and intelligent machines are now used in some countries to complement and enhance surgical operations (Jaiprakash, Jaiprakash and Crawford, 2016). Doctors can collaborate with colleagues globally via Internet and other technologies in the diagnosis and treatment of ailments or diseases such as malaria, fever, cancer, HIV/AIDS, Ebola virus, etc.

#### **(a)ICT areas of application in Health Services**

Let me broaden your knowledge with this as well that Ministry of Health & Family Welfare Government of India identified four broad areas where ICT can be employed in health services, which are education, research, referral, and management of data.

1) **Health Education and Training:** This is when ICT is used to support the delivery of high quality of health education to doctors, nurses, pharmacists, etc.

2) **Health Records Management:** This involves application of ICT to manage patient records in electronic form, known as Electronic Medical Records (EMR). Proper management and use of EMR in hospitals helps them to capture, store, access, use, protect and network patient-related thereby making health care in hospitals more error free and more cost-effective.

3) **Hospital Management System:** This involves application of computers to assist in the various activities performed in hospitals, such as creating and using patient health records, doctors' diagnosis and prescription processes, in-patient care in hospital wards, etc.

4) **Health Research:** This has to do with application of ICT to improve medical research, in the areas of research data collection, management, analysis and mining

#### **(b)Benefits of ICT in Health services**

The use of e-Health technologies has enormous benefits such as:

- It improves access to health services
- It increases quality and efficiency of health care
- It reduces operating costs of clinical services
- It causes reduction in administrative costs
- It enables more effective and efficient health research
- It encourages new innovations in health services
- It brings about improvement in patient security and data protection

## **ICT in Business**



Do you want to know how ICT has helped in respective business? I will advise you to keep following diligently. Business is an important activity performed in the human society, ICT as a tool with wide spectrum has changed the face of doing business among people. Its application to business environment has a lot of benefits in terms of improvement in the production of quality goods and services, lowering expenses and enhancement of communication between business partners. Its primary goal is to improve efficiency and productivity in the business activities. Most business outlets are now involved in e-commerce and make their presence known through websites and adverts on the Internet. With this, people can transact businesses online without any physical interaction. ICT is used in several industries in different ways and there are many ICT tools that can be employed.

### (a)ICT Tools used in Business

Some of the ICT tools used in business include;

- Computers and laptops
- Smartphones and tablets
- Application programs (such as Microsoft Office productivity packages)
- Local Area Networks and Intranets
- Internet and Web resources and services
- E-mail systems
- Websites and organizational portals
- Social networks, such as Facebook for advertising products and services
- Videoconferencing
- Security equipment (such as surveillance camera and face recognition machines)
- Remote sensing technologies
- Robots
- Drones

### (b)ICT Tools used in Business

ICT can be applied in businesses for different reasons such as:

- Decision-making
- Spreading messages to employees
- Record-keeping
- Reliable communication
- Enhance collaboration

- Improve productivity

### ©Benefits of ICT in Business

Now, you can see the benefits of ICT can be found in every area of life. However, its benefits to businesses cannot be overemphasized. Ever since its inception, it has been a source of value addition, competitive edge or advantage, sustainability to businesses and improve working environment. Below is some of the benefit a business stands to gain with the integration of ICT tools:

- It improves customer service delivery
- It improves organization's responsiveness to new developments
- It improves organization's overall performance
- It gives competitive advantage to organizations
- It brings about sustainability in business
- It improves accountability

## ICT in Government



This is surreal funny, I know many of you will be awed about what ICT has to do with Government which will bring you about the question of how does ICT connects with the president, senate president or any member of Government organization...I will help you solve your curiosity. Governance refers to how the citizens of a country choose from among themselves to become leaders and governments and how the leaders and members relate and interact with the citizens. A government has several responsibilities to the citizens, including: ensure security of lives and property; to improve the economic and socio-political lives of citizens; to provide social amenities; to facilitate peaceful processes to change members of government (e.g. through elections); to ensure fairness, integrity and accountability in its activities; etc.

Governance requires ready access to and exchange of information about the economic and social affairs of the citizens and about the relationships of the

country with other countries, and such information must be acquired and applied with optimum efficiency in order to serve the interest of the citizens. ICT as a tool for improving efficiency in every aspect of human life has key roles to play in ensuring better governance across the world. In the digital age, new technologies, innovations and information emerge rapidly, and governments have no other option than to strive to be proactive or at least keep pace.

The security and socio-economic wellbeing of nations and their peoples can be enhanced through ICT to collect, collate and use data in such activities as counting and registering citizens, monitoring and regulating economic transactions and social and political activities, conducting elections, planning educational and health facilities and services, and so on. For instance, ICT can be used to make elections more transparent and the results widely accepted. The economies of individual nations can be more properly monitored, predicted and managed using ICT, and accountability in use of public funds will be easier to determine by both the government and citizens. Overall, ICT enhances interaction between government and citizens and improves government transparency (Ogbomo, n.d.). ICT has also made collaboration between nations stronger by encouraging information sharing and transfer of cultures.

## ICT-related Problems in the Digital Age

 | 2 mins

An old adage says 'everything that is an advantage is a disadvantage'. Despite the enormous benefits associated with the digital age, there are also challenges, among which are:

- Information Overload
- Plagiarism
- Pornography and other Sexual Addictions
- Social isolation
- Privacy and Security Threats

- Digital Divides



## Summary

In this unit, you have learnt that:

- Digital age is the new technological era where things are done with the aid of a computer or/and the internet
- Digital age has helped the rate at which humans socialise outside their immediate environment
- Digital age has brought about faster development
- ICT has become beneficial to humans and ways of doing things for efficiency and effectiveness
- Upon all the benefits of ICT, it can be misused and have worse negative effects on humans



## Self-Assessment Questions

- 1 How could you explain digital age in your own terms?
- 2 What are the significance of digital age?
- 3 How ICT affects health and educational sector?
- 4 What are the mischievous activities that ICT are employed?



## Tutor Marked Assessment

I. List the attributes associated with ICT in health sector.

II. State any three problems related to ICT use.

III. How do we achieve ICT usefulness in a community?

IV. State the influence of ICT in the digital age.



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**Module 3**

# Internet and Web

## Units

**Unit 1** -Facilities and Resources, uses, Benefits and Dangers of Internet

**Unit 2** - Search Engines

**Unit 3** -Web Searching Strategies and Techniques

**Unit 4** -Evaluating Information from the Web



## UNIT 1

# FACILITIES AND RESOURCES, USES, BENEFITS AND DANGERS OF INTERNET



### Introduction

This unit you will learn about the internet, use of internet, facilities and resources of the internet, benefits, role, perception and personality traits in internet use. In this unit, you will learn what makes up the internet, what facilities aid the use of internet, the usefulness of the internet, the danger it poses for wrong usage and influence of individual personality traits on the usage of internet.



#### At the end of this unit, you should be able to:

- ① Define internet and use of internet.
- ② Know the internet facilities and resources.
- ③ Describe the benefits of internet.
- ④ Identify the dangers that internet may pose to users.
- ⑤ Identify the influence of personality traits on internet use.



## Main Content

### Introduction

| 1 min

You should bear in mind that individuals and organizations in all sectors of human activity, including in business, education, banking, and the public sector are increasingly dependent on new technologies to perform their activities and enhance their communication and interrelationships toward achieving their various goals. These goals may be personal development, greater effectiveness and efficiencies, better products or services, or higher profits. At the same time there are growing concerns regarding the dangers of underuse, overuse or misuse of these technologies in the digital era. Therefore, in order to be able to use the new technologies to create desirable values for themselves and society, people need to adequately understand, and appropriately use and adapt the benefits the technologies offer, and also understand and protect themselves from the associated dangers.

### The Internet

| 1 min



SAQ 1

Let me educate you about what the internet entails. The Internet refers to the worldwide network of communications between network computers and servers which originated in a much smaller network known as APRANET, which was created by the United States Department of Defense in the 1960s. This first network was intended for social interactions among researchers in different research institutions based on the ideas in a series of writings by Licklider of MIT in 1962 on the "Galactic Network" concept (Licklider and Clark, 1962). Subsequently, in 1967, Roberts published his ideas for the computer network known as "ARPANET" (Roberts, 1967). ARPANET later developed into the Internet, which was brought online in 1969 by interconnecting different computer networks in different locations, such that the interconnected networks can interact with one another and share resources.

Do you now know that the internet is now the largest network of interconnected computers that allow users to exchange information using multiple channels of communication. These networked computers communicate with one another in order to disseminate and process information. The networks and the information they processed became public and useful to other individuals when various easy-to-use software, known as Internet browsers, were developed for commercial use to access the Internet (Jerry and Alan, 2007). MOSAIC was one of the earliest of such browsers, after which came Netscape, and Internet Explorer. Internet Explorer was provided by Microsoft freely installed for new personal computers. Internet Explorer had a good graphic user interface (GUI) and this boosted the widespread use of the Internet. However, other software such as Mozilla and Google Chrome had helped to make Internet more accessible, more usable, and more enjoyable to use in recent times.

### Internet Facilities and Resources

| 2 mins



SAQ 4

I should let you know as well that Internet facilities can be classified into the following two categories:

- Facilities that enable the provision of the Internet as an information super highway: These facilities comprise hardware, software and protocols. The hardware include: computer systems and mobile devices, which serve as either computer servers or clients; telecommunication network infrastructure such as satellites, masts, routers and switches, which enable worldwide communications; Local Area Network (LAN) cables, which interconnect computers within and between buildings. Software that support and are used for operating the Internet include various computer and network operating systems, as well as software that enable people to access and browse the Internet, such as web browsers, among which are Internet Explorer, Mozilla and Google Chrome. Protocols are standards and rules that are used to control how computers and software exchange information among themselves over the communication hardware links between them. There are many such protocols, including the Transmission Protocol and Internet Protocol (TP/IP).

- Facilities provided by the various services that can be accessed and used through the Internet: Among these facilities and services are the World Wide Web (also known as WWW or Web), File Transfer and download, e-mail, mailing lists, newsgroups, chat rooms, and social networks such as Facebook, Twitter, You Tube, instant messaging such as WhatsApp and Yahoo Messenger, web search and surfing through search engines such as Google and Yahoo, online news, online games, free images, video and audio, access to web and organizational portals (Balogun, 2012).

## Uses of the Internet

 | 2 mins



As we discuss earlier that 'everything that has an advantage surely has a disadvantage', vice versa. Internet usage had become more interesting and sophisticated in the digital age, and is now very important to individuals for their personal purposes or in their work as employees of organizations. People and organizations now can hardly perform their activities well without the use of Internet. Some of the most common activities performed on the Internet include browsing, messaging, downloading, purchasing, entertainment, access to health and medical information, shopping and social networking (Thompson, 2001; Thompson and Vivien, 1997; Tim et al., 2007). Individuals use these activities to stay in touch with friends and family, access entertainment and news, surf the web for information and play online games.

Access to and use of organizational portals is also one of the major activities enabled by the Internet. You as a students and staff in educational institutions, and employees in other organizations make use of their organizational portals to access information or perform work related communication and transactions. The use of the internet has also changed organisations into more productive and pleasurable workplaces. An important aspect of Internet use in organizations is the deployment and use of web portals by organizations to facilitate their internal and external communication and work processes, which then ride on the Internet. An organizational web portal is a website developed and deployed by an organization to provide access to information and services of the organization to its various stakeholders such as employees, suppliers and customers. The graphical user interface of the portal is usually organized for easy search and access (Milestone, 2009).

- Facilities provided by the various services that can be accessed and used through the Internet: Among these facilities and services are the World Wide Web (also known as WWW or Web), File Transfer and download, e-mail, mailing lists, newsgroups, chat rooms, and social networks such as Facebook, Twitter, You Tube, instant messaging such as WhatsApp and Yahoo Messenger, web search and surfing through search engines such as Google and Yahoo, online news, online games, free images, video and audio, access to web and organizational portals (Balogun, 2012).

## Benefits of the Internet

 | 20 secs



In this part of the chapter, you will learn some of the numerous benefits that can be derived from using the internet. These benefits includes: social interaction, education, work related uses, skill acquisition and improvement, and leisure.

*Social interaction; Education; Work; Skill improvement; Leisure;*

## Dangers on the Internet

 | 1 min



Kindly bear it in mind that the internet also have some certain challenges which includes: inadequate access to the Internet due to poor Internet connectivity, especially by many people in developing countries; continuous overuse of the Internet by some referred to as Internet addition; and misuse of the Internet for unethical and criminal activities which leads to fear of internet technology. Some of these challenges tend to limit the strong positive perception that people have for the technology. This part of the chapter highlights some of the dangers of the Internet challenges, including internet addiction, false information, immoral exposure, cyber bullying and cyber fraud.

*Addiction; False information; Immoral exposure;*

## Role of Perceptions, Demographics and Personality Traits in Internet Use

 | 1 min



You should know that the way we use the internet often differ from each another. Juznic et al. (2006) highlights the different and often unequal levels of access to and use of internet among different categories of people, such as between the 'have' (the rich) and the 'have not' (the poor), which often lead to being able to 'use' or 'use not'. This results in what is known as "social digital divide". The divide refers to persistent long term differences in the levels and effectiveness of usage of digital technologies such as computers, smart phones and Internet resources and services, between people who are rich versus poor, young versus old, are well educated versus not well educated, or live in urban

versus or rural areas.

Research among people have revealed that various factors that can influence and explain such differences in the rate access and use of the Internet. Among these are:

- **Different perceptions of people about the Internet:** Researchers have found out that Internet use is often influenced by the perceptions of different people about the Internet, such as perceived ease of use, perceived enjoyment, perceived usefulness, perceived risk, and so on.

revolution, they had retired from service, and most of them that know how to use internet were taught by a family member or a friend.

**Educational Level:** Educational level is often not part of the main constructs and is measured as demographic characteristics or control variables in data analysis (Igbara et al., 1995).

- **Influence of the demographic variables of people.** Among the important demographic variables are gender, age and education level.

**Gender:** Thompson and Vivien (1997) found male individuals accepting internet faster than their female counterparts. This signifies male being more active and face challenges than female. The study found male individuals with more experience using PCs and for a longer period of time every day than the females. No significant gender difference in terms of usage experience in messaging and browsing activities on the internet use was found however, significant differences was found in terms of downloading and purchasing activities. Male use internet to obtain information and get free resources such as software and product support compared to females. Because male individuals could be more active and faces challenges, they tend to be more technically inclined and more versatile compared to female. According to Elder et al (1987) (cited by Thompson, 2001) female individuals are more likely to experience technostress (physical and emotional burnout caused by inability to adapt to new technology) in using PCs compared to males.

**Age:** According to Juznic et al., internet use decreases with the age, though citizens considered to be 65 and above by Tim et al. (2007) still believe they

can learn ICT and make it useful, and are willing to spend time and effort to learn. Internet is believed to be a resource for senior citizens to educate themselves and communicate with people outside their environment, through internet chat rooms or by assisting grandchildren with school assignment and home-work study. A 'generation divide' was observed between younger and older generation of individuals, where it appears that senior citizens are not making adequate use of the internet, this could be as a result from lack of technical know-how and usage by senior citizens either at school or later on in their line of work, and during technological But in a recent research conducted by Thompson (2001) he use educational level as part of his variables in other to examine internet usage in Singapore and suggest that higher educational level is likely to have positive relationship with internet usage and may result in greater knowledge about computers, thereby facilitating internet usage. According to Juznic et al. (2006), in their study, senior citizens with higher education are more likely to use internet. Further education could influence senior citizens, and individuals who further their studies are found to be active in the society, use internet more than other senior citizens. Interest in further education play an important role by encouraging and introducing the use of internet to senior citizens who are outdated in the area of technology although learn to improve themselves so as to keep up to date and have healthy life through communication among peers and having themselves entertained without any assistance.

- **Influence of personality traits of people:** Personality of individuals sometimes explain why and how different individuals use of the Web (Lomax et al., n.d.), Ahlan and Balogun, 2013). For instance, extrovert individuals might be more convinced of the benefits of the Internet than introverts. Openness individuals might also likely use the internet for information sharing more than secretive individuals (Ahlan and Balogun, 2013).



## Summary

In this unit, you have learnt that:

- The internet is the interconnection of networks and computers that also connect different networks
- Usefulness and benefits of the internet could include education, health, leisure, socialization and governance.
- Facilities and resources of the internet could include mast, routers, twitter, search engines
- Anger of the internet could include exposure to immoral activities, false information
- There could be other influence that shape the use of internet such as



## Self-Assessment Questions



- 1 Explain the concept of internet?
- 2 Describe the usefulness of internet.
- 3 Discuss the benefits and dangers posed by internet.
- 4 What are the resources and facilities that aids internet connectivity?
- 5 How does human personality traits influence internet use?



## Tutor Marked Assessment

I. List the resources of internet.

II. State any five facilities of internet.

III. Mention personality traits that can influence the use of internet.

IV. Describe five areas that internet could be useful.



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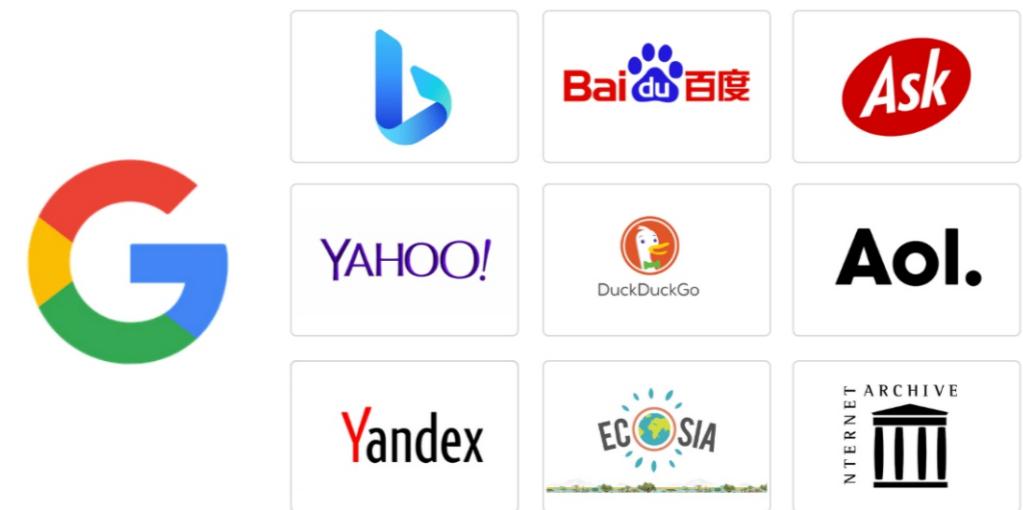
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## UNIT 2

# SEARCH ENGINES



### Introduction

In this unit, you will learn about search engines, web browser, functions of search engine, importance of search engines, architecture and types of web-based search engines. In this unit, you will learn about the operation of a search engine, how search engines serve as pathfinders, search engines designed for different purposes, similarity between web browser and search engines, and the types of search engines.



#### At the end of this unit, you should be able to:

- ① define search engine.
- ② differentiate between search engine and web browser.
- ③ describe the skills involved in searching the web.
- ④ identify the types of web-based search engines.
- ⑤ describe importance of search engines.



## Main Content

### Search engines



| 2 mins

I know some of you are definitely familiar with search engines and you know what it is all about but let me broaden your knowledge more. In general, a search engine is a software program or tool designed to accept and use keywords specified by users to query a database or catalogue for web pages or documents that contain all or some of the keywords, and then returns a list of documents ranked based on the proportion of the keywords they contain. Thus, search engines serve as gateways and pathfinders to the diverse, massive and constantly growing and changing resources on the Web, including websites, web pages, documents, information, software tools, services and transactions. Search engines are gateways because they find and index web pages and resources on the Web, just like as a library's OPAC catalogue contains information about what materials the library has. Search engines are also pathfinders because they can be used to locate where web pages and other resources are on the Web. Search engines predate the Internet era; however, the term became popular with the advent of the information superhighway web browsers such as Mosaic and Netscape in the early years of the Internet.

Search engines focus on: (a) locating and identifying, and then indexing and storing in their own databases information about resources on the Web, including web pages, documents, software tools, services, other databases, etc.; (b) searching to retrieve information on the resources from their databases when users request them to do so; (c) linking the users to where the resources actually are on the Web. Search engines are not peculiar to the Internet only and are also employed in software and applications designed for desktops, mobile devices, and particular organizations. Typical examples of search engines that are used in some work and technology environments are presented in Table 1.

**Table 1: Search Engines designed for different purposes and use environments**

Type	Name	URL
Web Search Engines	Google	<a href="http://www.google.com">http://www.google.com</a>
	Bing	<a href="http://www.bing.com">http://www.bing.com</a>

Type	Name	URL
Web Search Engines	Google	<a href="http://www.google.com">http://www.google.com</a>
	Bing	<a href="http://www.bing.com">http://www.bing.com</a>
Enterprise Search Engines	Swifttype Enterprise Search	<a href="https://www.swifttype.com">https://www.swifttype.com</a>
	Google Enterprise Search	<a href="https://www.google.com/search">https://www.google.com/search</a>
Desktop Search Engines	Locate32	<a href="https://www.locate32.cogit.net">https://www.locate32.cogit.net</a>
	Copernic Desktop	<a href="https://www.copernic.com">https://www.copernic.com</a>
Open Source Search Engines	Lucene	<a href="https://www.lucene.apache.org">https://www.lucene.apache.org</a>
	Galcao	<a href="http://www.search-engines-book.com">http://www.search-engines-book.com</a>

You should note the different types of search engines listed in Table 1 have different design goals. Web search engines are designed to constantly crawl through several exabytes of data of the various web resources to locate, identify and index them, and provide responses to several millions of queries from various parts of the world in microseconds. The web is estimated to host nearly 2 billion websites translating to several billion individual web pages (Bosch, Bogers, & Kunder, 2016; Netcraft 2017). An estimated size of the World Wide Web is also provided daily by [worldwidewebsize.com](http://worldwidewebsize.com) (<http://worldwidewebsize.com>), where the size of the Indexed Web was estimated to contain at over 4.5 billion pages as of June 2017.

Enterprise search engines are designed with capabilities to process different information sources in a particular organization. Desktop search engines are designed to speedily provide means for searching through a heterogeneous mix of information sources like emails, new documents, web pages etc. existing on a single work station. Open source search engines are search engines that are available freely on the Internet which users can download, modify and use to search for information on the web or desktop or in an organization (Croft, Metzler & Strohmann, 2015).

### Search engines

| 2 mins

Definitely, you surreal want to know how web browsers differ from search engines, but often work together to help users to find information and resources on the Web. Web browsers are also software designed to enable users to access and display web pages directly, but also often also through search engines. Currently popular examples of web browsers are Firefox, Mozilla, Google Chrome and Microsoft Edge. User may want to access a website

or page on the Web directly with a known URL, such as [www.unilorin.edu.ng](http://www.unilorin.edu.ng). This is why organizations always readily tell us about the URL of their websites. A user may however not know a particular URL in order to be able to access the corresponding website directly. This is where search engines help a lot.

In order to use a search engine, the user needs to use the URL of the search engine to access its website, such as <http://www.google.com>. Once accessed, the search engine will provide a search box so that the user can input the search request or query, which is usually composed of comprises words, phrases or even sentences.

When a request (query) is placed by a user to the search engine, the search activity is not actually a traversal search of the entire Web as at the time of the search, but rather limited to the database of the search engine containing information that had been compiled earlier on existing web pages. The database is constantly updated, and different search engines compile information from their databases in different ways.

These are two reasons for the different results, also called search engine result pages (SERP) obtained for the same query at different times on a search engine or on different search engines at the same time. SERP differences also arise due to the differences in the computer programs that different search engines use to search for and compile information about existing web pages on the Web, to find information during a search of their databases, and to rank individual items in the search results before they are displayed as lists to the user. Leading web search engines can also undertake non-text based searches such as image, image and voice searches. In conclusion, the objective of a search engine is therefore to find required information from its huge database of information on the resources it known exist on the Internet without actually storing the resources it is database.

## Importance of Search Engines

 | 2 mins

Let me shock you with this fact. As at the end of May 2017, the internet plays host to nearly 2 billion sites and almost seven million web-facing computers, such an unbelievable number. The data suggest a reduction of about 1.4 million compared to that of the preceding month, however, web-facing computers has

witnessed a growth of 83,000 within the month (Netcraft, 2017). Figure 1 presents the logarithmic scale for the total number of websites from August 1995 to November 2016.

Due to the size of information on the Internet as provided above, search engines have become indispensable to the process of locating available resources online. Search engines filter and index selected information available on the Internet towards providing users with likely useful and possibly needed information. This allows users to speedily and effortlessly discover information that they consider to be of high value, without having to directly navigate the gargantuan mass of available resources, most of which are usually irrelevant to a user's need. Search Engines are directed towards providing users with search results that lead to credible and relevant information on information resources over the internet. It suffices to say; the internet would have been ineffectual without the help search engines.

## Architecture of Search Engines

 | 2 mins



SAQ 3

Regardless of its type, all search engines will fit into the architecture displayed in Figure 1, as provided by Hawking (2006). This shows the sequence of processes involved in the functioning of search engines. Information to be stored as unique collection of the search engine is gathered and extracted from different sources (depending on the type of search engine) such as local servers, document repositories, databases and over the internet.

This is now indexed to present a front for users to query through the user interface, linked resources to a user's query are then ranked before being presented to user. Enterprise search engines as described in the introduction are required to provide adopter (located at the top left of the Figure 2) for all kinds of Web and non-Web data, however these are not a requirement in a pure Web search consideration (Hawking, 2006).

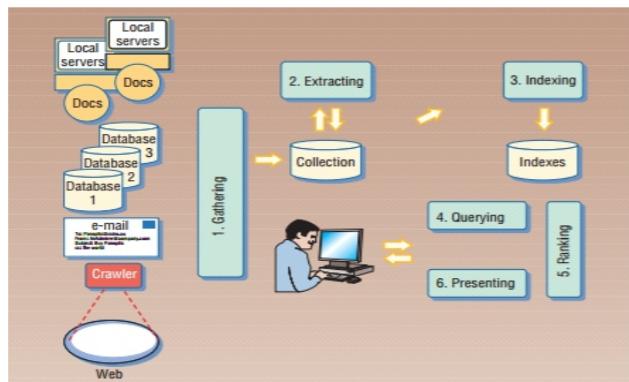


Figure 1: Generic search engine architecture. (Source: Hawking, 2006).

## Types of Web-based Search Engines

🕒 | 3 mins



In everyday usage, the term "search engine", is commonly used to refer to all types of search engines. However, it is important you understand that there are differences in how different types of search engines collect information on the Web for their databases. Accordingly, web-based search engines can be categorized into four: (i) crawler based search engines; (ii) human powered directories; (iii) hybrid search engines; and (iv) meta search engines.

### (I) Crawler Based Search Engines

You should know the unique feature of a crawler based search engine is that, listings are automatically created through a combination of software known variously as "Web Crawler", "Web Spider", or "Bot", the last standing for "Robot". It is also sometimes referred to as an automatic indexer (Kobayashi, & Takeda, 2000). The software is used for crawling the entire web periodically, say every house, day or week, to find resources which are then indexed in the search engine's database. A typical crawler based search engine, works through the following procedure as presented by Levene (2010):

- Crawling: Searching for and collecting information about pages on the Web.
- Indexing: Saving the information (which comprises key words and URL of the pages) in a database.
- Searching/Retrieval: Allowing a user to input queries in the form of words or

phrases and searching the database to find index pages that contain the words or phrases in a user's query.

Webnotes (2016) added another layer to the procedure named "Calculating Relevancy". However, it is the opinion of the authors that this layer is directly embedded in the third (3rd) item. This is strengthened with the search engine process presented in Figure 3. This also translates to the 3 key activities of the crawler based search engine which are: the crawler, the index and the search engine software also known as query engine.

The crawler software crawls (scans) the entire web space to collect available web pages. The frequency at which the crawling is carried out is dependent on the particular search engine and sometimes there are days in-between the crawling procedure. This sometimes explains why a deleted web page may still be retrieved as part of SERP, because information about the deleted page may still be in the search engine's database, which is only updated after each crawling procedure. The indexing aspect identifies words that best describe each page that has been crawled, as well as the URL of the page. The words are also called keywords. The query engine then compares the content of the indexed pages available in the search engine database to the search phrase or keywords in the query supplied by the user during a search. As many pages are usually going to be found, it is at this point that the likely relevance of each page is calculated, based on such variables as how many times words or phrases in the a query occurs in each page, thing. Different criteria and algorithms are employed in calculating relevance of pages to queries by different search engines. This query engine aspect terminates at presentation to the user of retrieval results.

### (II) Human-Powered Directories

You should know that human powered directories (HPD) are implemented using the direct participation of humans in the identification, filtering and grouping into labeled categories or classes of web pages. This approach aims to include in the directory or retrieve for users minimal sets of relevant results in contrast to the huge results always returned by crawler powered search engines. The closure in March 2017 of Directory Mozilla (DMOZ) (<http://www.dmoz.com>), which was before then considered to be the most popular dedicated HPD, virtually marked the end of the era of using humans

instead of software to fully organize the web. Other dedicated human powered directories like Chacha (<http://chacha.com>) and Mahalo (<http://mahalo.com>) had been discontinued earlier in 2016 and 2014 respectively. This is not unconnected with the fact that the enormity of the information on the internet has far exceeded what humans can provide listing service for. The size of the internet also makes, reviewing and ranking of pages in human-powered directories extremely difficult.

#### (ii) Meta Search Engines

Maybe the word 'Meta' use is confusing you a bit. A Meta search engine provides users with search results obtained and collated from several other search engines. Thus, they are also referred to as aggregators, serving as a search engine that work through other search engines in order to generate their results (Berger, 2005; Glover, Lawrence, Birmingham & Giles, 1999). This implies that there is the possibility of getting more results returned for a search conducted using a Meta Search Engine compared to using a regular search engine, such as Google or Yahoo. Actually, the label "meta search engine" actually means "search engine of search engines". Examples of meta search engines are: Dogpile (<http://www.dogpile.com>), Clusty (<http://yippy.com>) and Mamma (<https://www.mamma.com>). Figure 4 presents a conceptual architecture of a meta search engine.

#### (iv) Hybrid Search Engines

Search engines in this category implement both crawler-based and manual indexing of web pages for inclusion in their databases. Some crawler based search engines, including Google and Yahoo, have crawlers implemented as their primary listing mechanism, while a manual approach is engaged as a secondary method. An example of secondary listing will include manually reviewing a website or page to determine its nature and quality before being categorized and indexed in its database.

## Search engines for the Semantic Web



I should inform you as defined by its originators, "*The Semantic Web is an extension of the current web in which information is given well-defined meaning,*



*better enabling computers and people to work in cooperation*" (Berners-Lee, Hendler and Lissila, 2001). It characterizes the next direction in the evolution of information exchange and presentation on the Web. This involves describing any set of data exchanged among computers and other computing devices in terms of what they mean (i.e. semantic description of data set) so that the devices can deal with the data not merely as bits and bytes but as meaningful objects that the devices can then more meaningfully distinguish, categorize, combine or disaggregate automatically in useful ways. In other words, the idea of the semantic is to enable data exchange among computers to be described and coded in such manner to be understood by computers without human further involvement, so that computers on the web can perform more sophisticated tasks on or with the data.

This new "semantic web order" has some implication for search and search engines. Search engines in the semantic web should not only be able to return results based on keyword matching but also "... match the context (i.e. meaning) of search queries to the context (i.e. meaning) of information in web pages so that they are able to return results within their appropriate contexts (Radhakrishnan, 2009). The expectation is that semantic web search engine is less keyword dependent and more context-dependent based on semantics of the query and information in web pages (John, 2012). Figure 5 presents a typical architecture of a semantic search engine.

Some elements of semantic search are already being incorporated by leading search engines like Bing and Google. ASK.com is a popular search engine that has fully implemented semantic searches. Moreover, some dedicated semantic search engines are already active on the Web. Examples are Sensebot (<http://sensebot.com/>), Swoogle (<http://swoogle.umbc.edu/2006/>) and Exalead (<https://www.exalead.com/search/>).



## Summary

In this unit, you have learnt that:

- A search engine is a software program designed to accept and use keywords specified by users to query a database for web pages or documents.
- Different search engines are designed for different purposes.
- Web browser differ from search engine in that, search engine provides users with results collated from other search engines based on personality traits, demographic activities



## Self-Assessment Questions

- 1 What are the concepts of search engines?
- 2 Difference between search engine and web browser.
- 3 Describe the usefulness of search engines.
- 4 State the types of search engines.
- 5 What are the skills needed for the use of search engine?



## Tutor Marked Assessment

- I. List the types of search engines.
- II. State the differences between search engine and web browser.
- III. Draw the architecture of search engine.



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## UNIT 3

# WEB SEARCHING STRATEGIES AND TECHNIQUES



### Introduction

In this unit you will learn how people search the web, web search concepts, techniques and strategies, important search concepts and some search operations. In this unit, you will learn ways to carefully choose, combine and sequence the words to search in order to get a good search result, and also learn about the search operators.



#### At the end of this unit, you should be able to:

- 1 Explain web search concept
- 2 Relate how to search the web
- 3 Describe the concepts, techniques and strategies for web search
- 4 Highlight some search operations and their functionality



## Main Content

### Web search concepts, techniques and strategies



| 1 min

You should be aware that research undertaken on diverse search engines has proven over and over again that the correct and best approach to searching is to learn how to carefully choose, combine and sequence the words to be typed into a search box of a search engine, so that the engine can find and display the best much few hits that are the most relevant to your needs. You definitely need to acquire search skills as information professional, which entails knowing about certain search concepts, strategies and techniques and how to use them to precisely and quickly find the most relevant information sources from the Web.

Use of the strategies and techniques helps a searcher to save much time and effort required to evaluate while online or later the search results provided by search engines and applications. These strategies and techniques are also useful when using software that provides facilities for searching such as OPACs of libraries, organizational portals, and various search applications on computers or smartphones.

### Important Search Concepts



| 2 mins

To begin, you need to know about the following key concepts.

**Document:** Try to understand all information on the web is stored in documents, examples of which are web pages, records and files containing meaningful text, numbers, images, audio, and/or video. Searching involves trying to find only documents that contain information relevant to one's needs, while avoiding irrelevant documents.

**Search expression:** This refers to all the words you want to use for a search, along with any Boolean logical operators you might insert before or between the words and any punctuation marks such as brackets, quotation marks, semi-colons, colons, full stop, etc which may be required or necessary when using

some search engines or other applications.

**Search Term (or simply Term):** This refers to the separately meaningful parts of a search expression, which may be a single word (e.g. *graduates*), or a set of words taken together as one word (e.g. '*university of ilorin*', where the single and double quotation marks are used in most search engines to indicate that the words should be considered as one word). The words and terms of a search expression are not case sensitive.

**Boolean logic:** Please make sure to know that Boolean logic is named after the British mathematician, George Boole (1815-1864), who first introduced the concept. Boolean logic is used in virtually all human activities, because every activity involves making decisions about what is like something else and what is not, about what is needed and what is not, about which step of action can solve a problem and which cannot, and so on. In searching, Boolean logic is used to indicate to a search engine which terms or combination of terms in a search expression should be used to narrow, broaden or limit the search for information. Boolean logic helps the user to achieve relevancy and preciseness in the search results, thereby eliminating or at least minimizing the user's task and possible frustration in having to assess the large number of both relevant and irrelevant results retrieved and presented by the search engine.

### Boolean search operators

| 3 mins



You should be informed that Boolean logic in searching entails carefully using the three Boolean logical conditions (also known as operators) of "AND", "OR" and "NOT" in search expressions that you type into the search box. The "AND" or "OR" operators can be placed between two terms in a search expression, while the NOT operator is may be placed before a term in a search expression, in order to tell the search engine how to combine (OR, AND) or not use (NOT) the terms in searching. How each operator may be used correctly is explained next.

**AND:** The AND operator narrows a search when used in between two words. It is used to specify that you want web pages that contain both words and not just one of the words. If you leave a space between any two words in a search expression, this means the same thing as AND. Some, but not all search engines

require that Boolean operators must be entered in capital letters.

*Example:* education AND Africa

*Example:* Education Africa

i. What are the Boolean operators?

ii. Describe the usefulness of search techniques.

iii. State importance of search strategies.

iv. Highlight any five search operators and their functionalities.

v. State any five academic search engines.

Both of the about search expressions mean the same thing. Some databases allow you to use the AND command without capitalizing, others do not. In search engines that do not require capitalization the Boolean operators are reserved words that can only be used as Boolean operators in a search expression and not as ordinary words or terms for searching. Most search engines use AND as default to connect all the words that you provide for a search. For example, the search expression Education in Africa will be searched as Education AND Africa automatically, and there is no need to type the word (search engines automatically ignore unimportant words like "in", "of", and so on)

**OR:** The OR operator allows you broadens a search when used in between two words in a search term. It is used to specify that you want documents that contain either or both words. This means that the search should retrieve documents that contain either of the words alone, or both words together. This operator can be mostly useful when the user wants to find documents that cover a subject area comprehensively or the user wants to include words that represent or are related to the same concept or subject.

*Example:* mosquitoes OR malaria

*Example:* football OR soccer

The first search expression above will retrieve documents that contain information either on mosquitoes or malaria, the reason being that malaria

and mosquitoes are words that often mentioned together in documents. The OR operator is of great use with synonyms, in order to give more options to the search engine.

**NOT:** The NOT operator eliminates unwanted documents from the search result, when used in front of a word. The NOT operator placed before a word in a query prohibits the search engine from returning any document that has the word in it.

*Example:* eagles NOT Nigeria

The above search expression will find documents that contain the word *eagles*, but that do not contain the word *Nigeria*. The NOT operator is useful for words with multiple meanings, like *gates* and *windows*, which may refer to part of a house or to "billgates" of the windows operating system fame.

*Example 1:* virus NOT computer

*Example 2:* gates NOT bill

*Example 3:* gates OR windows (NOT 'bill gates')

Example 1 above would return only documents about biological viruses. Example 2 would return documents that contain information about gates of houses), while excluding documents that contain the word bill. This may however also exclude documents containing information on 'bill of quantities for gates of houses', which may not be desirable. Some search engines like Google only accept the minus (-) symbol to represent NOT. So, if NOT is not working for you, try the minus (-) symbol right in front of the word, without any space between it and the word. You can also use plus sign (+) to require specific words to be considered. For instance, if you want to require Google to use common words, numbers and characters that it would typically not use for searching (e.g. *and*, *of*, *not*, *in*, *from*, *into*, etc), put a plus sign (+) in front of such words or place them within a quoted phrase, such as '*merchant of venice*'.

Example 3 is more specific and better, and would return documents that contain information about *gates* (of houses), while excluding documents that contain '*bill gates*' specified as single word using the quotes. This example shows the use brackets to indicate the preferred order of processing of the search term (the part of a search expression in brackets is processed first by a

search engine), and how to use quotation marks to indicate sequence of words that should be looked out for during the search. The order in which the words or terms that make up a search expression are sequenced and linked with the "OR", "AND" and "NOT" operators, as well as the placement of certain allowed punctuation marks in the search expression can make a big difference in the search results retrieved. Most computers go from left to right when processing the words and terms in a search expression. So it is important to sequence the words in the search expression carefully to indicate any of them you might want the computer to consider together or before the others. We will later consider more uses of quotes and brackets.

## Other search operators

 | 1 min

Let me tell you of several other search operators that you should consider when searching the Internet, as different databases offer different search operator. These include the following:

**SAME or SENT:** The words or terms joined by SAME or SENT must occur in the same sentence for a document to be retrieved.

Example: *education SAME Africa*

This search expression will retrieve document that contain education and Africa together in the same sentence.

**NEAR, WITHIN, ADJACENT:** You can use this operators to find documents that contain the words separated by not more than a specified number of words distance. Some databases allow you to specify whether words should appear in a specific order, e.g. 'knowledge' before 'action'.

**NEAR (n):** This helps you to retrieves documents containing two words separated by not more than (n) other words. It does not matter which word appears first provided the words are close to one another as indicated by (n).

Example: *Ilorin NEAR (1) university*

This retrieves documents containing such text as '*university of Ilorin*', or '*university at ilorin*', '*ilorin university*'.

Example: *prozac n3 adverse effects*

This retrieves documents containing the words *Prozac* and *adverse effects* separated by not more than three other words)

**WITHIN(w):** This help you in retrieving documents containing the words within a specified range of each other and in the same order in which they are entered.

Example: *physical w1 therapy*

This retrieves documents containing the in which the word "physical" is listed first, followed by the word "therapy", or where not more than one word separates the two words.

**Brackets:** We use this to tell the search engine in which order to process the operators. The search expression "gravel AND (road OR highway)" will instruct that the search should begin by firstly retrieving documents that contain 'road' OR 'highway', as a preliminary result, and then from the preliminary result retrieving only those documents that also contain 'gravel', as the final result. Not using the brackets might lead to other possible results, which may or may not be what is desired.

## Search engines for information gathering

 | 1 min

It is worthy I highlighted that there are different types of search engines: General and academic.

(a) **General search engines:** There are hundreds of search engines you can use to search the web. You probably already using Google, but you can also try some others, such as the following:

[www.bing.com](http://www.bing.com) by Microsoft

[www.dogpile.com](http://www.dogpile.com) is meta search engine, it searches Google, Yahoo, Bing and Ask.

[www.ixquick.com](http://www.ixquick.com) is a meta search engine that provides privacy protection.



(b) **Academic/Reference search engines:** These search engines are especially valuable when searching information for assignments, projects, theses. They provide you with information that has been selected for being reliable and trustworthy.

[www.base-search.net](http://www.base-search.net) contains links to academic articles, most are free.

[www.scholar.google.com](http://www.scholar.google.com) contains links to academic articles, most of which are free.

[www.refseek.com](http://www.refseek.com) contains links to academic websites.



## Summary

In this unit, you have learnt that:

- The use of web to search and how Boolean operators are effectively utilized.
- The strategies used for searching the web for meaningful information that allow accurate or nearly accurate results.
- The importance of search concepts that include document, search expression and search terms.
- The usefulness of some search operators such as 'same', 'sent', 'near', 'within', 'adjacent'.



## Self-Assessment Questions

- 1 What are the Boolean operators?
- 2 Describe the usefulness of search techniques.
- 3 State importance of search strategies.
- 4 Highlight any five search operators and their functionalities.
- 5 State any five academic search engines.



## Tutor Marked Assessment

I. List the Boolean operators.

II. How do we use the Boolean operators to search for our document?



## Reference

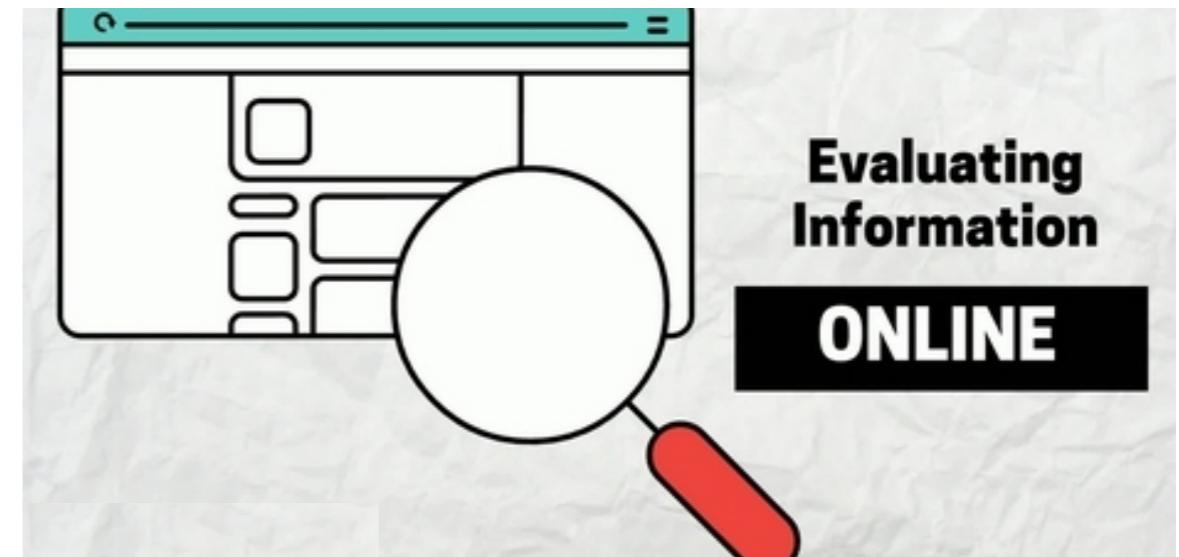
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## UNIT 4

# EVALUATING INFORMATION FROM THE WEB



### Introduction

You should know that the Web contains a great variety of information in diverse types of information sources. Much quality information is published online by reputable individuals and publishers and other organization as in the form of e-books, e-journals, e-magazines and e-newspapers, as well as research/technical reports, conference papers, theses, dissertations, etc. But there is also much average to very poor quality information that put out inexperienced or dubious people and organizations. The information may originate from authors who are experts on a subject or topic, but may also be from people who claim expertise but are not. People also publish information to the Web for various purposes, including to correctly inform or educate, or to misinform. Thus information users on the Web must beware. This chapter aims to improve your ability to properly evaluate any information that you obtain from Web and other sources before you use it.



## Learning Outcomes

### At the end of this unit, you should be able to:

- ① explain better and easier medium to find quality information against just the presence of keywords in the query
- ② appreciate how to critically evaluate the quality of each source before using the retrieved information
- ③ apply PROMPT criteria to evaluate information
- ④ identify how to properly adapt the evaluated information in their respective studies



## Finding quality information



SAQ 1



**M**ost of you nowadays prefer to use Web-based search engines like Google to search for information or information sources on the Web instead of using acquired print or subscribed or purchase electronic materials in the libraries of their institutions. Google and other search engines on the Web assist users with locating and indexing Web pages and other documents in their databases and thereafter enabling users to search the databases to find the pages or documents they want. This role of search engines is clearly valuable.

However, the numerous web pages and document that the search engine presents to you in response to your query (i.e. the keywords and phrases you typed into its search box) are usually not evaluated for quality of origin, purpose or content. The pages and documents are retrieved merely because they contain the key words and phrases you typed into the search box. So you must yourself determine if the information in each retrieved page or document is of adequate quality for your use.

Nevertheless, it is also important to note that highly specialized search engines like Google Scholar are much more careful in selecting web pages and documents for indexing in their databases than general search engines like Google or Yahoo. Thus, most of the pages and documents found through specialized search engines them are likely to be of high quality because they use special computer programs to sift quality web pages and other documents

that fit into their specialty from the Web for indexing in their databases. However, most of the quality documents provided by them are not available for free, but must be purchased or subscribed to at usually too high a cost for you being a student.

But there is a way out for you. What you do not know is that the library of their institution performs a very valuable role that most search engines do not do. The role is that of carefully reviewing and evaluating numerous alternative sources of information (print books, electronic books, journals, reports, thesis, dissertations, etc.) before some are selected and acquired for addition to their collection. The library performs this role very carefully because the different types of documents they maintain in their collection cost a lot to acquire, while their available fund for acquiring them are very limited. In other words, the print documents that you find on library shelves, or the e-books, e-journals and other electronic documents you find during a search of the library's OPAC are more likely to contain good quality information than the freely accessible and downloadable documents that you find using general web search engines like Google or Yahoo.

You (Students) as well as those in academics and researchers usually seek information for various academic and research purposes, and often do so using various Internet search engines such as Ask, Google, Yahoo, etc.. Among their objectives for seeking the information are:

- Seeing what is available by starting with a topic search
- Finding and verifying citations
- Finding material that's not in the published scholarly literature, such as conference proceedings and white papers can be found using the web.

Do you even know that Google and Google Scholar are among the popular search engines for finding information on the Web . The way to do a Google search is to enter one or more selected keywords or phrases into the search box on the Google main page (see Figure 1). Also, selecting the Advanced Search option on the page enables you to use Google Scholars (see figure 3), which enables you to find higher quality search results. Both Google and Google Scholar can provide you access to various databases that provide information

for academic and research purposes. These databases help researchers and students get hold of important academic and research resources, statistical surveys etc.



Figure 1: Search box of the main Google page.



Figure 2: Advanced search page (Google Scholar)

For some specialized subjects, you might also have to look beyond even Google Scholar to other specialized search engines that might be more focused on certain subjects. This is because not all the good information out there is available online. Additionally, good quality information is often not available for free download. This is the reason the libraries of tertiary education institutions often subscribe to major academic and research databases such as Elsevier, Springer, IEEE, etc. in order to enable their students and researchers to have access to high quality information.

It is very important that you patronize the e-resources (e-books, e-journals, etc.) that the library of their institutions purchase or subscribe to. Many libraries lament that you don't use much the high quality e-resources that their

libraries acquire at great cost, preferring instead to surf the Internet directly for information and download free documents much of which might be of poor quality. You should use their libraries more for obtaining both print and electronic documents for their research and academic works in order to encourage the libraries to continue to acquire and maintain good quality resources for them.

## Evaluating what you find



4 mins

You should be informed as well that the Internet offers variety of information and data from different sources worldwide. This makes information to be readily available and accessible. But the information may be true or false originate from political propaganda or product marketing sources, or from very good or very poor research sources. Some of the information might be unsuitable for use in any academic or research work, while other information might be adequate in quality only for students' assignments and projects, but inadequate for thesis and dissertation research work.

Thus, it is highly important you always think critically about and evaluate what you find, especially if you are going to use it for academic work purposes, such as writing assignments and projects (Open University, 2017).

You should take note a good research effort demands that you read adequate number of good number of sources of information on the topic of your research so that you can know about the earlier works of others on the topic, and obtain facts and ideas (evidence) to back up your own writings. But, the facts and ideas must be obtained from quality information sources. Thus, you need to critically evaluate the quality of each source before accepting or believing any facts and ideas from it. The key to critical evaluation is a fair and balanced assessment of information obtained from alternative sources. And it is important that you consider both the positive and negative aspects of each of the different sources (Study Hub, 2017).

There are some basic questions that you need to be typically considered in evaluating any information resource, print or electronic, this could include:

- Are the authors well-known in the discipline?

- What are the authors' qualifications?
- Do the authors' prior education, work, and publications relate to the topic under research?
- Is the publishing organization clearly identified on the document?
- If the document is a journal article, is the journal peer-reviewed?
- Are the reviewers well-known and knowledgeable in the field?
- Is this organization or publisher recognized as an expert in the field you are researching?

To keep these various criteria in mind, the Open University Library (Open University, 2017) developed “**PROMPT**”, an acronym for **P**resentation, **R**elevance, **O**bjectivity, **M**ethod, **P**rovenance, **T**imeliness, as a guide for evaluating any kind of information. Each of the elements of PROMPT are now explained in the table below.

<b>Presentation</b>	
P	R
O	M
P	T
<ul style="list-style-type: none"> <li>● Is this information clear?</li> <li>● Is the language right?</li> <li>● Can I find what I need here?</li> <li>● Is it succinct?</li> </ul> <p>Sometimes what you see may make it hard to judge whether what you have is what you want, or even if the information is worth having. It may be that something which looks insignificant is actually the most important piece of information available. Or it may be that something which looks good on the face of it, is not what it seems. However, you need to develop the skill of looking beyond the surface appearance.</p>	

## Relevance

- Does this information match my needs right now? Scan it quickly to get an overview.
- What is it mostly about?

The information in front of you may be of high quality but not actually relevant to the question you are asking or to the scope of your search, for example:

**Level** – it may be too detailed/specialized or too general/simple for the level at which you are working

**Emphasis** – it may not contain the kind of information you are seeking – this is often a question of emphasis, and one which, in the case of a journal article for example, may not easily be identifiable from an abstract

**Geographic** – it may relate to countries or areas you are not interested in at this time.

You can probably think of others that relate to your own subject field.

## Objectivity

- It's important to be aware of opinions and hidden agendas.
- What are you being "sold" here? A particular product, a corporate view?
- Is the language used emotive?
- Are opinions expressed?
- Are there sponsors?
- What are they selling?
- What are the vested interests?

The concept of objectivity can be problematic. This is especially true of controversial topics such as genetically modified foods, wind farms, climate change or parenting. However, even information which purports to be 'balanced' may have hidden agendas or vested interests.

It is important to develop a critical awareness of the positions or interests represented in what you read.

P  
R  
O  
M  
P  
T

### Method

- If statistical data is presented, what is this based on?
- How was data gathered?
- Was the sample used really representative?
- Were the methods appropriate, rigorous, etc.?

P  
R  
O  
M  
P  
T

### Provenance

- Is it clear who produced this information?
- Where does it come from? Whose opinions are these?
- Do you trust this source of information?

Provenance provides 'credentials' for a piece of information and supports its status and perceived value. Knowing the author enables you to find out whether they are an expert in this area and what their perspective is (are their views known to be controversial?), find out what else they have published, find out who else has cited their work and perhaps even contact them.

Knowing about the sponsoring organization can help you to understand what their main 'business' is (e.g. commercial, voluntary, research), how well-established it is, who the people involved are, and who they are linked with.

Knowing how something was published can help you identify how reliable it is. For example, has it been through an editorial or peer review process by experts in the field? Even if this is the case, you should still evaluate it. Being published in a prestigious academic journal is not an automatic indicator of quality.

P  
R  
O  
M  
P  
T

### Timeliness

- Is this current?
- When was it written and produced?
- Has the climate/situation changed since this information was made available?
- Is it still up to date enough?

How important it is to have the very latest information depends on what you need it for.

The date is not always easy to find: sometimes online sources do not have a clearly visible publication or 'last updated' date. Also, even information that is not very old may have been superseded, for example, in the case of regularly produced reports or statistics.

It is therefore important to be aware of the type of source and how often it is produced.

PROMPT offers a structured method for evaluating any information that you find online. This is useful if you are looking for information from trustworthy sources to support arguments in an assignment or project. This can also be used in a work environment, for example to find material for a project or report. Note however that the nature of your assignment or work will influence how you evaluate the usefulness of a source.



SAQ 4

### Using the information



Any information you find from a retrieved source must be evaluated in terms of the criteria and questions of the PROMPT evaluation method. The information may be facts, ideas or actual words extracted from the text, sound, images or video in the source. It is only after that that you can use the information in your assignment or project.

Furthermore, you need to also cite and reference the used information correctly in the project or assignment, to avoid plagiarism. Referencing involves the following two aspects:

(a) Inserting references to the sources of the used information at where the information is used in the text of your project or assignment (known as in-text citations); and

(b) Providing information about the source of information itself in the list of reference at the end of the project or assignment.

You should be informed that these two aspects are referred to as citing in the document and compiling your bibliography (Birkbeck Library, 2014). There are standard approaches to referencing, known as referencing styles, among which are the American Psychological Association (APA), Harvard, Institute of Electrical and Electronics Engineers (IEEE) styles. Another chapter of this book devoted to the Referencing in more detail. In order to select one, check your course or module handbook for guidance on which style to use. There is also a variety of referencing software that you could use, including EndNote, Zotero, RefMe, Mendeley. These tools can be used to store, manage and organize your references.

## Summary

This unit is able to help you broaden your knowledge with the following:

- Know better and easier medium to find quality information against just the presence of keywords in the query
- Know how to critically evaluate the quality of each source before using the retrieved information
- Apply PROMPT criteria to evaluate information
- Know how to properly adapt the evaluated information in their respective studies
- The process of finding quality information, the way to use PROMPT for information usage and the manner to evaluate the information you have access to.



## Self-Assessment Questions

- 1 Assuming you are given the assignment in the class, state step-by-step approach to search for the solution
- 2 How could you critically evaluate the quality of the retrieved information from your query
- 3 What does the acronym PROMPT indicate
- 4 Give a simple scenario of using the retrieved information



## Tutor Marked Assessment

Explain each element of PROMPT with appropriate verification questions.



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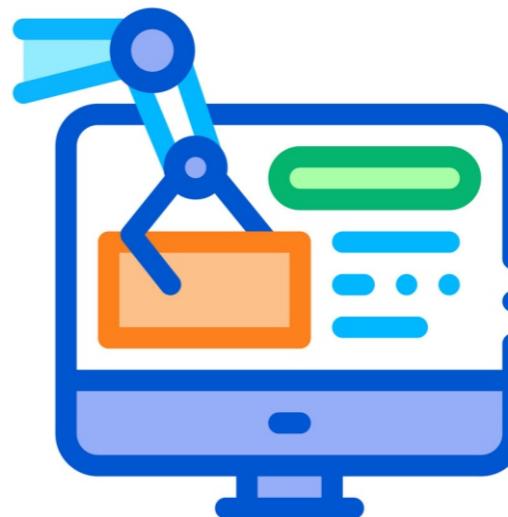
**Module 4**

# Information Retrieval

## Units

- Unit 1 - Basic concepts of Information Retrieval
- Unit 2 - Components of an Information Retrieval System





## UNIT 1

# BASIC CONCEPTS OF RETRIEVAL SYSTEM

### Introduction

Are you aware that Information Retrieval (IR) is a notable field in the modern approach of assessing the bulk of information which could be either relevant or not to a course of research study at hand. In this unit, IR system is justified by giving outright definitions, the reasons of adopting IRS, as well as the similarities and disparities between IR and fact retrieval. At the end of this unit, summary of the unit is executively made, and the assessment of the understanding of the course is made.



#### **At the end of this unit, you should be able to:**

- ① define Information Retrieval (IR)
- ② explain the reasons for IR
- ③ justify IR scenario
- ④ elaborate the similarities and disparities between IR and fact retrieval (FR)



## Main Content

### Definitions of IR

 | 1 min


**L**et me start with informing you that one of the earliest researchers on computerized information retrieval, Gerald Salton, defined the subject as "concerned with structure, analysis, organization, storage, searching, and retrieval of information" (Salton, 1968). Another useful definition for our purpose here is: Information retrieval (IR) is the process of searching a collection of items of information in order to identify those items which are about a particular subject.

It is useful to explain the following key concepts in this second definition.

- **Searching:** the activity of browsing, filtering or sifting through a collection of items to identify only those items that person want or needs.
- **Items of information:** Items of information (usually referred to as documents in information retrieval) vary a lot in terms of the type of data they contain, such as: written text, numerical data tables, graphs, images, audio, video or their combinations. The items or documents also vary a lot in terms of size of the data in them, such as: whole books, reports, newspapers, websites, photo or music albums, databases; individual chapters, sections, indexes or bibliographies in books; individual articles in journals or magazines; individual pages of websites; single tracks of music albums; individual records of a database; data in individual fields of records of databases; individual entries in the tables of content or indexes of books; individual entries in telephone directories; individual contacts or messages on your mobile phone. Items of information could also refer to the items themselves or description of the items (usually referred to as **document surrogates** (explained below))
- **Collection:** You should know that in the context of information retrieval this refers to the database of information items or documents created and maintained with information storage and retrieval system (ISRS) (explained below) on a computer system or network.
- **Subject:** A subject concept comprising comprises a set of ideas which is often described with a name, label or words (e.g. 'information retrieval').

- **Document surrogate:** This refers to the description written about a document (item of information).
- **Information storage and retrieval system (IRS):** Let me also tell you that Salton and McGill (1983) defined an information retrieval system (IRS) as "a system used to store items of information that need to be processed, searched, retrieved, and disseminated to various user populations".

### Why the information retrieval

 | 1 min


Large and small organizations continue to create, maintain and upscale different types of databases containing carefully selected and structured data and records on their resources, activities and operations. Such activities are encouraged by rapid development in database technologies which also provide Structured Query Language (SQL) for efficiently retrieving specific facts or records from the databases.

However, Merrill Lynch estimates that more than 85 per cent of all business information exists as unstructured data - in emails, memos, notes, news, chats, reports, web pages, etc. Such data are unstructured because their contents do not conform to same format in terms of such things as their length or size, use of words, phrases and sentences, abbreviations and punctuation marks, presence and positioning of tables or images, and so on. Also, for unstructured data, the meanings of the names, labels, words and statements cannot be known for sure because they do not conform to any one or known data types or structures. Information retrieval is mainly concerned with storing and searching unstructured data in such formats as text in whole books, company correspondence and memos, patterns in images, music, videos, drawings or maps, or descriptions with words of such images, music, videos, drawings or maps.

### An information retrieval scenario

 | 2 mins


Are you puzzled that what really brings about information retrieval scenario? It can be described as follows. Assuming you need information for making a decision and approaches a known information source (which is an information

or database system with a request to be provided with documents from the database that contain various information that can individually or collectively likely meet your need for information for making the decision.

- The request, also more commonly known as **query**, may be phrased thus: '*I want documents most relevant to cats in the wild that do climb trees*'.
- Your **information source** may be: a personal computer containing folders containing different types of document; an organization's database of operational records and other types of documents; a commercial database containing full-text or bibliographic or metadata information; the Web (containing webpages and various other types of documents accessible from the web pages). The **documents** usually contain texts, or a combination of text, numerical data, images, or they might be audio or video files, or might contain descriptive summary information on the tables, images, audio or image files.
- In information retrieval, you as the person requesting the documents is usually referred as a **user** in both of two important senses: that you wants to *use* the information or database to find some documents and thereafter use the information in the documents to meet her information needs.
- You should note that the request for documents is known as a **query**.
- You should also learn that the following definitions are also relevant in the scenario: A **document** contains a collection of **terms**, expressing ideas about some topic in a natural language understood by the user.
- A **term** consists of one or more words which are recognized a single unit with an associated distinct general or specific meaning. However in such specialized information retrieval contexts as multimedia, image, map or music retrieval a 'term' could refer to a distinct pattern in an image, map or music that a user might provide which can be searched for in an appropriate database.



## Information retrieval versus fact retrieval



You should be aware that information retrieval is often distinguished from fact retrieval or database retrieval. A fact is defined as an adequately accurate description of something. Suppose a person's name has been recorded in a database as 'John Doe'. Then, 'John Doe' is both data and a fact, at least as in the database. Fact retrieval involves finding out, for example, whether (a) fact 'John Doe' exists in the database and (b) how many times it occurs in the database. You will be satisfied once either of the information is provided. Database retrieval is very similar to fact retrieval as explained above. The similarity is that, in database retrieval, specific records (or rows or tuples) of data containing one or more facts are retrieved from a database using a query expressed in the Structured Query Language, such as `SELECT name, COUNT(name) AS 'Occurrences' FROM person WHERE name='John Doe'`, where 'person' is the name of a database table. Similarly to fact retrieval, the exactly correct information would be provided, and presented as the following table:

Name	Occurrences
Jane Doe	5

In contrast, in the typical information retrieval scenario we described above, the following uncertainties exist:

- You might not know for sure your real information needs (i.e. what information is needed to solve a problem or make a decision) at the time you approaches an information retrieval system for documents. Thus, it may not be true that you knows exactly what you wants when you issue a request (query) 'I want documents most relevant to cats in the wild that can climb trees'. Hence, you may need to be helped by the information retrieval system (IRS) to re-express or refine her query through feedback when processing the query. This is known as query negotiation between user and system.
- You might know in your mind and able to express your need very well in your own words, but might not know how to express the need in the form of an appropriate query using the words, terms and symbols of the language used by the IRS to describe and index its documents. The system usually provides a

dictionary or thesaurus through its help function that you can consult in order to know the language of the IRS. But in most cases you never care.

- An IRS, such as a search engine, serves as an intermediary between us to look for some useful documents out of the various documents out there written by various authors. The IRS usually does not have any control over how the authors write their documents. Moreover, the IRS usually does not store complete copies of the documents it knows about; it only stores brief descriptions of the documents using words, phrases or sentences from each document and/or words from its own thesaurus designed for the purpose. So, the IRS, authors of documents, and we who issue queries hoping to get some useful documents through the IRS, all might use words in different versions of the same language.
- The IRS is always able to retrieve and provide documents which contain the exact terms in your query. This is usually easy for the IRS because all what is needed is to match exactly terms on the query with terms it has used to describe and index documents in its database. This is very similar to fact retrieval explained above. However, if the query words do not describe your information need very well, or differ from the words used by an IRS to describe and index documents, the documents retrieved by the IRS might not be useful to you to meet your need. Also, the query words might have been used in different ways with different meanings by authors of different documents. So, although some of the documents retrieved by the system through simple matching of words would be very useful, some others might be only be partially useful, while some others might be totally useless.
- Your terms often have synonyms or near synonyms ('fish' and 'salmon'), or related terms ('farming' and 'farm mechanization') that might have been used by the authors of documents. This brings up the issue of the extent to which an information system should also retrieve and provide to the user documents that contain such synonyms, near-synonyms and related terms.

You should also note that in other words, there is much variation and uncertainties associated with the different aspects and participants (authors, IRS, users) of information retrieval scenarios which are not present in fact or database retrieval. This makes information retrieval complex, difficult, inexact, inherently based on probabilities, and thereby requiring probabilistic and

heuristic (inexact) solutions.



## Summary

In this unit, we discussed following:

- The definition of the term IR and the discussion of its main six key components
- The essence of IR to healthen the unstructured data into a well-structured data
- The analysis of IR scenario as everyone data user needs IR to make a decision, inclusively; technical terms are defined and briefly discussed.
- The differences between IR and FR, as the latter is concerned about the exactly correct information (like database retrieval in rows and column), unlike the former which retrieve from the bulk of unstructured or uncertainties data.



## Self-Assessment Questions

- 1 Define IR based on its key concepts
- 2 In your own understanding, discuss the reasons for IR
- 3 Justify the reason for IR scenario
- 4 Differentiate between IR and FR



## Tutor Marked Assessment

Explain the following terms regarding IR system:

- Document surrogate
- IR system
- Query



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## UNIT 2

# COMPONENTS OF AN INFORMATION RETRIEVAL SYSTEM

### Introduction

It is of importance to remind you that the basic concept of IR system has been elaborated in unit 1 of the module. While in this unit 2, we will discuss the basic components. This is so important as these make up the well functionality of this system. Under this unit, there are some concepts to be discussed as you are going to transit with it along the delivery of this unit course work.

**At the end of this unit, you are expected to have the in-depth knowledge of the following:**



- ① Building blocks of IRS
- ② Retrieval Strategies and Models
- ③ IRS user interface features
- ④ Information Retrieval Applications

## Main Content

### Building blocks of IRS

6 mins



A typical IRS has two main parts - indexing subsystem and retrieval subsystem.

#### Indexing subsystem

(a) **Documents (Docs) out there** (objects): You should have at the back of your mind that these are documents out there in the public domain such as web pages, email, memos, downloadable text, audio and video files, etc.

(b) **Build dictionary** (process): An IRS typically builds and uses its own dictionary of words and terms, in order to standardize how documents are described and indexed in their databases. The words and terms in the dictionary usually include words from documents out there, as well as some of their various synonyms, related words and common combinations. The dictionary is often compiled and updated automatically by a program of the IRS as new documents are described and indexed, and your queries are processed and documents retrieved by the retrieval subsystem.

(c) **Select documents** (process): This process is done automatically by a program of the IRS (known as an intelligent agent) that searches through the Web or organizational computers or networks to find, evaluate and select the documents to be processed by its indexing subsystem. All IRS, including search engines, have preferences, strengths and weaknesses in their awareness, coverage and selection of documents from all the documents out there.

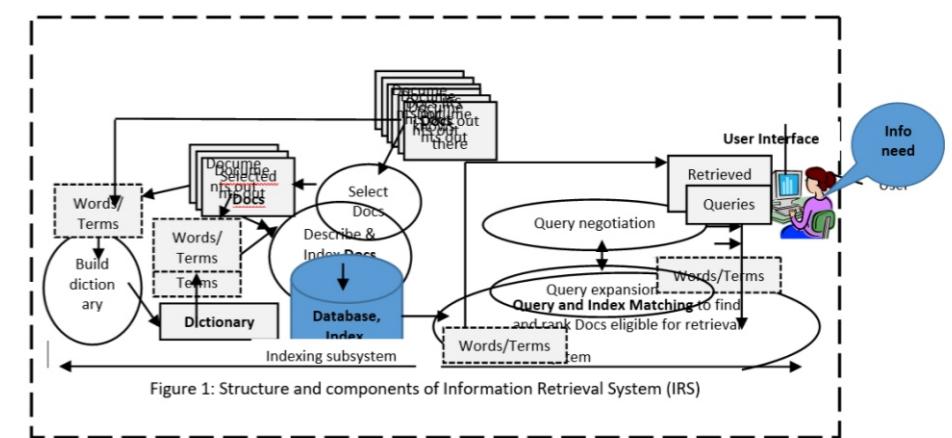
(d) **Selected docs** (objects): These are the documents selected for processing.

(e) **Words and terms in selected documents** (concepts): These could be single words, word pairs (bi-gram), or multiple word combinations (n-grams), sentences, labels, names or titles in selected documents.

(f) **Words or terms from IRS dictionary** (concepts): These are the words identified and selected from the dictionary as appropriate for describing a

document being processed.

(g) **Describe and index documents** (process): This process involves two steps. (i) The IRS uses words from parts of the selected documents or its own dictionary to describe briefly each of the selected documents. These descriptions are also as document surrogates, and are stored in the database of the IRS. (ii) All or some of the words in the document surrogates are used to create an index to facilitate fast searching and retrieval from the database by the retrieval subsystem. More on the index later below.



I should remind you that while indexing, there is a need to describe document. This is as a result of directly proportion of the document description to the specific nature of its indexing type.

#### Document description and indexing techniques

You should note also that two of the fundamental tasks of the indexing subsystem are: (ii) creating and maintaining on of a dictionary (thesaurus) of terms; and (ii) creating and maintaining an index to the document descriptions in the database. It is important for you to understand how most IRS do these tasks and the outputs.

- Creating a dictionary (thesaurus) of terms:

The dictionary or thesaurus usually contain single words, such as 'information' or 'retrieval', or two or more words usually taken as one word, such as 'information retrieval', indexing subsystem', 'document indexing technique', or names, labels or phrases such as 'Barack Obama', 'North Atlantic Treaty Organization', 'how the crow flies'. The thesaurus usually classify all its terms:

terms that can be used to index documents (Preferred Terms), or terms that cannot be used to index documents (Non-Preferred Terms). Accordingly, if a document to be described contains a non-preferred term that is so important in the document that it must be represented in the description of the document, it is automatically replaced by the most or nearly synonymous preferred term in the thesaurus. Further, each preferred term in the thesaurus may be linked to one or more other preferred terms according to whether the preferred term is related to, broader than, or narrower than each of those other preferred terms in meaning. The other preferred terms to which a preferred term is linked are referred to as Related Term (RT), Broader Term (BT) and Narrower Term (NT), respectively. These links between preferred terms are important because they are used by the retrieval subsystem in its query expansion processes.

- Creating and maintaining an index to document descriptions

Have it vividly at the back of your mind that the index that is created is usually known as an inverted index. To develop understanding of the structure of the inverted index, suppose that three documents had selected and briefly described three documents with their titles only as shown in Table 3(a). The words in the descriptions of the three documents are then used to construct an inverted index as shown in Table 3(b).

You should notice that each row in the inverted index provides information on: (i) word in a document description; (ii) record number of the document in which the word occurs; (iii) position of the word in the document description. You should notice also that the rows of the index have been arranged sequentially in the alphabetical order of the words. It should be clear that it is possible to reconstruct the three document descriptions with the data in the created inverted index, so not data is lost in storing the original records in the inverted file format. However, each separate word in an original data record now has a record to itself in the inverted file, and can thus be separately searched for much quickly than when it was tucked in the middle of a document description. The inverted index speeds the processes used by the retrieval subsystem to find and match terms used to describe documents with terms used in user queries.

**Table 3(a): Descriptions of three documents by indexing subsystem**

<i>Doc No</i>	<i>Document description</i>
1	Dickens, Charles - Tale of Two Cities
2	Laye, Camara - The African Child
3	Achebe, Chinua - Things Fall Apart

**Table 3(b) Inverted index of the document descriptions**

Word	Document No	Word Position
Achebe	3	1
African	2	4
Apart	3	5
Camara	2	2
Charles	1	2
Child	2	5
Chinua	3	2
Cities	1	6
Dickens	1	1
Fall	3	3
Laye	2	1
Of	1	4
Tale	1	3
The	2	3
Things	3	3
Two	1	3

## Retrieval subsystem

(a) **User:** I want you to know that you are the target audience for which IRS is designed. You are expected to play two roles: search for documents in an IRS, and thereafter use the documents retrieved from the IRS to meet the kind of information you needed. Also, I should tell you that the population of you the

users for which an IRS is designed can also vary from, say, all web users, students like you searching for documents using the OPAC of their academic institutions, or business executives searching the portal of their organizations.

(c) **Information need** (Concept): You should know this comprises the pieces of facts, information or knowledge you needed when making a decision, solving problems or innovate in a given situation. An information need may be described with one or more topics, subjects or questions which contain key words or terms associated with the decision to be made or problem to be solved.

( c) **User interface**: This is the visible part of an IRS to you as a user. An interface is everything designed into an information system or device with which we enables us interact with the system -- including the display screen, keyboard, mouse, light pen, various functions and tools that you can use in the system, how the functions and tools are organized and displayed with text, icons, buttons, fillable boxes, images, menus, tables, messages, color and so on. In an IRS, the interface subsystem provide you with space or means on the screen to edit and modify queries, to view or browse displayed search results, to access and browse the dictionary of words and terms being used by the system, to access help information, and so on.

(d) **Queries** (objects): A query comprises of a set of one or more words, terms or phrases which you are required to input in the search box of the IRS interface. These words, terms or phrases (terms for short) often may be enclosed in quotes or brackets, or preceded or separated by different symbols or logical operators, as explained in detail in the chapter of this book titled "Searching the Internet for information". One or more such queries may be input and executed during a search, with the IRS providing corresponding search results for each.

(e) **Query negotiation** (process): This process is performed by many IRS. This is done as part of during interactions with the you as a user to assist you in improving or refining your queries, through various feedback messages, suggestions about other queries or terms you can use, asking you to indicate criteria and options to be used for query expansion, assessment and indication by you the user to the system of the relevance of the documents retrieved in

response to previously submitted queries, and so on.

(f) **Query expansion** (process): You should also know that many IRS are able to perform this process in order to retrieve not only documents whose terms in the database match those of the user's query exactly, but also documents which whose terms are synonyms of or related to the query terms. This may be helpful to you, particularly if the terms your queries are not fetching many or good documents. But it can also lead to too many documents being retrieved for you.

(g) **Query and Index matching** (process): This process involves using terms in the your query in to search through the database and index of the IRS to identify, select and rank documents in the database in terms of their likely usefulness (relevance) to the user.

(h) **Retrieved documents** (objects): These are the documents found from the query and index matching process. These are ranked in terms of their potential relevance for you the user to display in that order, and usually in batches.

## IRS user interface features



- The following are the common features of IRS user interface:
- User query box and various functionalities
- Query suggestion
- Query expansion
- Providing snippets of documents to users
- Providing ranked retrieved list
- Highlighting matching or important terms

## IRS user interface features

 | 2 mins



Please it is very essential you know that the most fundamental requirement of the retrieval subsystem of an IRS is to be able to correctly and quickly determine which documents in the databases (as described with terms in the IRS dictionary and stored in the inverted index), are most likely to be those that would be relevant to the user's information needs (as described with the terms in your query). An information retrieval model is a technique by which relevance of a document to a query is determined.

Most information retrieval systems rely on using the importance and similarity of the terms that occur in a query and in the document descriptions in its database to determine their answers to queries. The similarity function  $\text{sim}(q,d)$  between query  $q$  and document  $d$  can be usually expressed in mathematical notation as:

$$\text{sim}(q,d) = \frac{\sum_{t \in q \cap d} \text{wt}_q \cdot \text{wt}_d}{\sqrt{\sum_{t \in q} \text{wt}_q^2} \sqrt{\sum_{t \in d} \text{wt}_d^2}}$$

where  $\text{wt}_q$  and  $\text{wt}_d$  are the weights of term  $t$  in query  $q$  and document  $d$ , respectively, according to the system's weighting function. The weight given to a term is typically (a) proportional to its frequency in a document (i.e. Term Frequency - TF), (b) inversely proportional to how many documents in the database are already indexed with the term (Inverse Document Frequency - IDF), and (c) length of the document containing the term. This broad formulation is common to several widely used document relevance ranking models which can be directly or indirectly traced back to the Vector Space Model [Salton and McGill 1984], Probabilistic Relevance Model (Robertson, 2005), and Statistical Language Modeling (Zhai and Lafferty 2001). Depending on the model being used by an IRS, various query and document statistics may be computed and compared in order to determine the similarity of each document to a query, and the similarity scores are used to determine which documents are retrieved, and how they are ranked and sequenced for display to the user.

## Information Retrieval Applications

 | 2 mins



Notice that there are some of the many different contexts where the strategies, computation algorithms, techniques and tools of information retrieval are being used today:

- Web search, using search engines such as Google, Yahoo, Bing.
- Organizational intranet and portal search, by organizational members such as students, faculty, employees, customers, visitors after having been registered, authorized and authenticated to do so.
- Subject search in commercial databases that provide either and/or full text of documents (e.g. MEDLINE, LEXIS).
- Desktop search for folders and files or information within files, using for the Search button provided by the operating system (e.g. Microsoft Vista), or applications (e.g. Microsoft Word).
- Question answering systems, which provide concise responses often extracted from documents to certain types of natural language questions such as "What are the rare adverse side effects of the use of drug A by children under 10 years?"
- Here, a question is similar to a query from you and an answer is similar to a newly created document composed of information from one or more other existing documents.
- Retrieval of non-text documents (e.g. music, images, maps) using music, image or map patterns or fragments.
- Filtering of document streams like electronic news, blog, email for information and routing to and routing to users whose information needs are also constantly evolving.
- Citation and link analyses, whereby certain documents are used to harvest other documents based on the other document it cites or is hyperlinked to, or the extent to which they are cited together.

- Identification and selection by intelligent agents and web crawlers of the documents that meet set criteria for inclusion and indexing in the databases in search engines.
- Identification, selection and classification of concepts, words and terms for inclusion in IRS dictionaries or thesauri.
- Classification and categorization of selected documents into directories and sub-directories for search engines such as Yahoo (e.g. 'Sports – Football – UK Premier League – Arsenal')



## Summary

In this unit we are able to:

- typically explain the major two components of IRS - indexing subsystem and retrieval subsystem
- sketch the diagram showing indexing subsystem and retrieval subsystem
- create a dictionary of terms and maintain an index to document description
- analyze different retrieval strategies and appropriate models
- highlight common features of the IRS user interface
- categorically state the applications areas of IRS



## Self-Assessment Questions

- What are the building blocks of IRS
- State the retrieval strategies and models adopted by IRS
- Highlight common user interface features of IRS
- Mention any five application areas of IRS in the modern time



## Tutor Marked Assessment

I. State any five application areas of IRS in the current time

II. Differentiate between indexing subsystem and retrieval subsystem



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- Wong, S. M., & Raghavan, V. V. (1984, July). Vector space model of information retrieval: a reevaluation. In *Proceedings of the 7th annual international ACM SIGIR conference on Research and development in information retrieval* (pp. 167-185). British Computer Society.
- Zhai, C., & Lafferty, J. (2004). A study of smoothing methods for language models applied to information retrieval. *ACM Transactions on Information Systems (TOIS)*, 22(2), 179-214.



## Further Reading

- [https://aspoerri.comminfo.rutgers.edu/InfoCrystal/Ch\\_2.html](https://aspoerri.comminfo.rutgers.edu/InfoCrystal/Ch_2.html)
- [https://www.google.nl/search?client=opera&q=Retrieval+Models+Information+Retrieval+\(spring+2016\)&sourceid=opera&ie=UTF-8&oe=UTF-8#](https://www.google.nl/search?client=opera&q=Retrieval+Models+Information+Retrieval+(spring+2016)&sourceid=opera&ie=UTF-8&oe=UTF-8#)
- <https://www.nap.edu/read/10866/chapter/80>
- [https://www.researchgate.net/publication/268626488\\_Information\\_retrieval\\_systems\\_Functions\\_and\\_their\\_applications](https://www.researchgate.net/publication/268626488_Information_retrieval_systems_Functions_and_their_applications)
- [https://www.researchgate.net/publication/274837522\\_Information\\_Retrieval\\_Models\\_and\\_Searching\\_Methodologies\\_Survey](https://www.researchgate.net/publication/274837522_Information_Retrieval_Models_and_Searching_Methodologies_Survey)



**Module 5**

# **Using Recall and Precision Ratios to Assess Relevance of Search Results**

## **Units**

**Unit 1** - Recall and Precision ratios  
**Unit 2** - Relevance, Accuracy, and Ranking



## UNIT 1

### RECALL AND PRECISION RATIOS



#### Introduction

Please you should note that while retrieving documents, there is a need to clarify relevance and retrieval process. In this scenario, a document might be retrieved but not relevant, and otherwise. There are metrics to know the corresponding percentage of each. This is to be analyzed in this unit. In this unit we are going to discuss the iterative search process, similarities and differences between recall and precision ratios, and F-score as measuring metrics.



**At the end of this unit, you are expected to:**

- ① describe the iterative search process
- ② compare and contrast between recall and precision
- ③ discuss the extent of F-score as a metrics



## Main Content

### Iterative search process

| 5 mins



**I**t is essential to add this to what you have learnt previously that the web has become an ocean of information and resources, which is growing rapidly larger in every microsecond. It has grown from an esoteric system used by a small community of researchers to the current most used system, as an inevitable tool for obtaining information by billions of digital citizens or 'digizens' (Helsper & Eynon, 2011). In a report released by the Internet World Stats (2018) on "World Internet usage and population statistics, June 30, 2018 - update" out of all the seven World regions namely – Africa, Asia, Europe, Latin America / Caribbean, Middle East, North America, and Oceanic / Australia, Africa has the least penetration rate (%population) of 36.1% but with a subtle growth of 10,199% in years 2000 - 2018, against North America of highest penetration rate of 95%.

I want you to know as well that significantly, the Web is both a huge database of web pages, as well as a gateway through which the search of information systems or databases of various organizations is conducted. Such information systems or databases include those of online stores like Amazon and Jumia, app stores like Google Play or Samsung Galaxy, as well as the online public access catalogues (OPACs) of libraries. Traditionally, we often directly search the information systems or databases of organizations wherein, they are staff, students, customers or permitted visitors. On the web however, search engines such as Google or Yahoo often do the searching of these other systems and databases for us, thereby saving them from having to search these other systems themselves.

You should bear in mind that due to the dividends of Web in this 21st century, many of us have never encountered, and thus even have no interest in the issues and challenges of retrieving information from such databases, despite its importance (Oppenheimer, Morris, McKnight, & Lowley, 2000). However, all information found on the Web through search engines or directly from other information systems or databases usually needs to be evaluated and filtered, as it may include plenty of irrelevant information to the subject at hand. Regrettably, the Web surfer may not be aware of many available search

engines that can be used to get information on a topic, which by the effect, drives you to use different search strategies, some of which might not be effective or efficient (Kumar and Prakash, 2009). While in the course of searching the Web, other information systems or databases, there are some notable challenges that a searcher faces which need to be answered at the initial searching process. The challenges are underlisted in an interrogative approach:

- (a) Which search engine or database would get you quickly the best search results that include only or mostly relevant information and also exclude all or most of the irrelevant information?
- (b) What search expression (or query) comprising important words, terms, names, URLs, etc best describes the information you need that I should input to the search engine or database?
- (c) How can I determine quickly which items in the initial search results provided by the search engine are most relevant to my needs?
- (d) How many items or pages of the search results should I look at before determining if the results are excellent, good, fair, poor or adequate for my needs?
- (e) If the initial search results are not adequate, how do I revise or refine my initial query to get better subsequent search results?
- (f) When should I end the search, satisfied or frustrated?

You should take note of the above illustration, searching is now obvious to be a multistep and iterative process. As an iterative process, an initial query may not be properly worded, and therefore needs to be improved using new words and terms identified from the previous search result(s). In an attempt to obtain improvement in the relevance of items in the final result, search process expects from the Web searcher the following nine steps:

- Define your information need (also known as request). Describe the information need as precisely as possible with concepts (i.e. Keywords or sentences)

- Choose an appropriate information resource (search engine database, full text or bibliographic database, library catalogue, document repository, the Web)
- Choose an appropriate search tool (e.g. Google, Yahoo, Ask, or as provided by a databases or information system).
- Identify and list relevant search terms derived from your search request that you would include in your query for use in searching.
- Modify the search terms to suit the chosen information resource (i.e. use the vocabulary dictionary of each information resource to get equivalent or other terms used by the resource)
- Combine the original, modified or augmented search terms to create a search query you intend to begin your search with.
- Run an initial search on the information resource, by entering your search query in the search box of the search engine or tool.
- Evaluate your initial search to determine how good the search result is, by examining and comparing some of the retrieved items in the search result with your information need.
- Modify your search query based on the previous results and run new searches as necessary until you are satisfied with the results you have obtained.

You should bear in mind the following points also. Firstly, step 6 above requires that you evaluate each search result, usually while still working with the search engine, in order to determine how good each search result is overall, and to also determine which items in each search result you need to copy, paste and save in Step 8. Secondly, the quality of the search results provided by a search engine or information system depends critically on (a) what you yourself do in steps 1 to 6, as well as how good the search engine is in matching terms in your search queries with words, terms, and phrases in its database. Often, because search engines and their databases have been researched and built to be effective and efficient for searchers as much as possible, the quality of what you get usually depends on you!

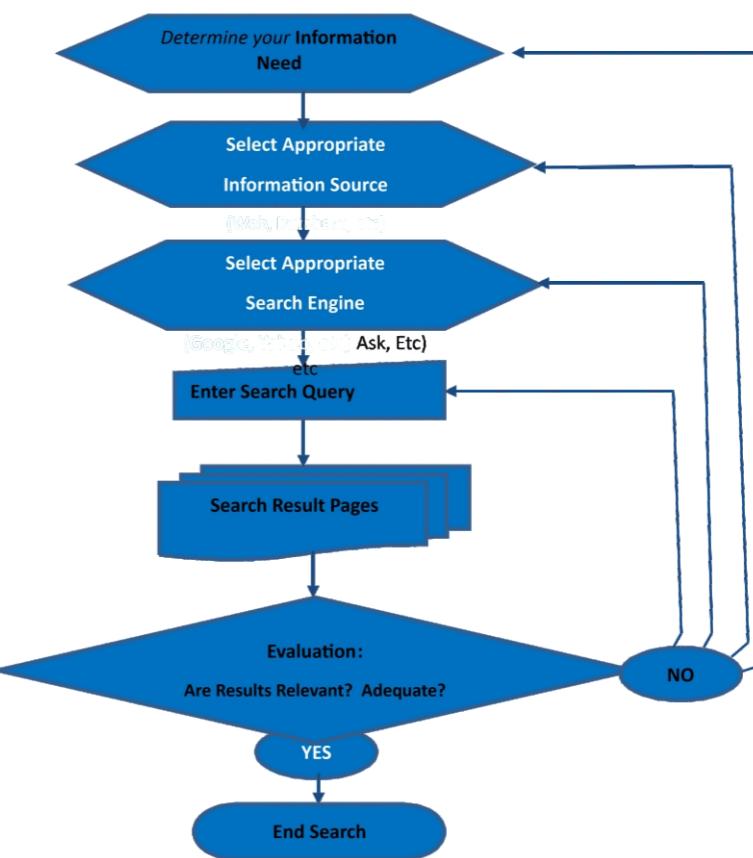


Figure 1: The Iterative Search Process.

Let us start from the beginning of the search process by considering step 1 above, which requires that you define or describe your information need with appropriate words simply, precisely and adequately. For example, consider an information need implied by this question: What are the effects of e-books on tertiary education students? Five different key words or concepts can be drawn out from the question which are: effects, e-books, tertiary, education, students. Then, in step 2 you need to identify other terms that are synonyms of the initial concepts, as shown in Table 1. In step 3, you need to find out the terms actually used by the chosen information system, which might or might not be the same as the initial or synonym concepts. Usually, the best search results are obtained when a searcher uses the same terms to search as the terms that were used by a search engine or information system when it was indexing its resources. Finally, steps 4 to 7 also depend on you – how you combine the concepts in the initial and subsequent queries, and how you evaluate the initial and subsequent search results. In a nutshell, in order to obtain the best search results, all the steps in the search process must be well conducted.

	<i>Concept 1</i>	<i>Concept 2</i>	<i>Concept 3</i>	<i>Concept 4</i>	<i>Concept 5</i>
<i>Concept in query</i>	effects	e-books	Tertiary	education	students
<i>Some nears synonyms of concept</i>	influence	electronic books	Collegiate	training	
	impact	digital books	higher education		
	consequence	online books	Post-secondary		
<i>Concept used in database, document or web page</i>	impact	online books	tertiary education		students

Table 1: Keywords (concepts) in query and their approximate synonyms

Although what you get usually depends on you, various yardsticks or metrics have been researched and recommended for use to evaluate the search results performance of search engines and other information systems. The rest of this chapter examines and explain the most common of these metrics.

## Recall and Precision ratios



1 min

Let me tell you as well that the earliest suggested and most commonly mentioned yardsticks are known as recall and precision ratios.

**Recall** is the ratio of the number of relevant records retrieved to the total number of relevant records in the database. It is usually expressed as a percentage.

**Precision** is the ratio of the number of relevant records retrieved to the total number of irrelevant and relevant records retrieved. It is usually expressed as a percentage.

## Real Life Illustration of Recall and Precision



2 mins

To make it easier for you let us go a bit practical. A simple yet good illustration of the ideas of recall and precision is the following possible real life usages of recall and precision.

Imagine that, your girlfriend gave you a birthday surprise every year in the last 10 years. However, one day, your girlfriend asks you "Sweetie, do you remember all birthday surprises from me?" This simple question is likely to be tough to answer because you need to recall all 10 surprising events from your memory.

Now, with the aid of recall and precision metrics approach, the solution is as follows:

Let us suppose your girlfriend has a particular set of 10 surprises in her mind which is what she expected to be told as her information need. Recall that, Recall ratio is the number of events (surprises) you can correctly recall divided by the number of all the correct events (that she expects you to recall). It measures effectiveness of recall! So, (1) if you can recall all 10 events correctly, then, your recall ratio is  $10 / 10 = 1.0$  (or 100%), while (2) if you can recall only 7 events correctly, your recall ratio is  $7 / 10 = 0.7$  (70%).

In another vein, Precision ratio is the number of events you can correctly recall divided by the number of all events you are able to recall (usually comprising a mix of correct and wrong answers). In other words, the precision ratio measures how precise and efficient your recall efforts are. Suppose in example (1) above you made exactly 10 attempts in getting the 10 correct events. Then your precision ratio is 10 correct recalls divided by 10 recall attempts, which is also 1.0 (100%). However, in example (2), you also made 10 recall attempts, but got only 7 correct recalls. So, the preciseness or efficiency of recalling the events is the 7 correct recalls divided by 10 recall attempts, which is 0.7 (70%).

Next, suppose you can actually recall many events (some of which are) correctly in the last ten years, while the others were not. Suppose you eventually told her 16 events in 16 recall attempts, out of which only 8 events are among the particular 10 events she has in mind. In that case, your recall ratio is the 8 correct events out of the 10 she has in mind, which is  $8 / 10 = 0.8$  (80%). Your recall ratio improved by 10%, but only after six more attempts beyond scenario (2) above. You improved your recall ratio by 10%, which means that your effectiveness in recalling correct events improved by 10%, but at the cost of 6 (60%) more attempts.

Would you say you are becoming more precise or efficient in example (3)?

Actually your precision ratio in example (3) is only 8 correct events out of 16 recalled events, which is only  $8 / 16 = 0.5$  (50%). Your recall ratio improved by 10%, but your precision ratio decreased by 20%. So you have become more effective at recalling correctly, but less efficient in doing so!

## Recall ratio vs. Precision ratio



| 2 mins



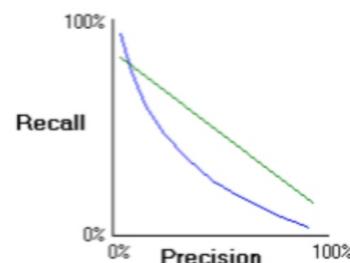
SAQ 2

If you take note of the above examples we have illustrated a natural inverse relationship between the concepts and measurement of recall and precision ratios of the search results provided by search engines in response to user queries. This can be shown both mathematically and graphically.

Mathematically,

$$\text{Recall} = \alpha \frac{1}{\text{Precision}}$$

Which you can and should confirm this using the recall and precision ratios calculated in examples (1) to (3) above. Recall ratios range from 0 to 1, likewise precision ratios. The inverse or tradeoff relationship that exists naturally between them for search results provided by an information system in response to different queries that users provide is illustrated in Figure 2 below



You should try to understand that in the figure, the two distinct lines may represent the recall-precision graphs of two search engines or information systems. While the exact slope of the curve may vary between systems, the general inverse relationship between recall and precision remains for every information system.

You should also learn that a system can increase its ability to recall by returning more documents; because the recall ratio is a non-decreasing function of the number of documents retrieved. A system that returns all documents in its database for a query will surely have 100% recall of all the relevant items in its database, but the precision ratio of such response to the query will be very low, due to the likely higher number of non-relevant items returned along with the

relevant items. The converse is also true, as it is possible for a system to aim for high precision; but at the cost of very low recall of relevant items from its database. This naturally occurring inverse relationship between precision and recall ratios forces information systems designed for general use to go for compromise between them. But, in real life, some information search tasks particularly need good precision, whereas others need good recall.

## A Combined measure: F score



| 1 mins



SAQ 3

I also admonish you to note that a combined measure that measures simultaneously the recall (R) and Precision (P) performance of the search results from an information system is the F score (weighted harmonic mean). The F-score is a measure which combines both recall and precision measures using a weighting factor  $\alpha$ , where high  $\alpha$  means that precision is more important.

$$F = \frac{1}{\frac{1}{P} + (1-\alpha)\frac{1}{R}} = \frac{(\beta^2+1)PR}{\beta^2 P + R} \quad \dots(1)$$

The harmonic mean is a very conservative average. People usually use balanced F1 measure.

$$\text{i.e. with } \beta = 1 \text{ (that is, } \alpha = \frac{1}{2}) \quad \dots(2)$$

Applying (2) in (1), we have:

$$F = \frac{2PR}{(P+R)} \quad \dots(3)$$

The notions of recall and precision were first used by Kent (1971), although the term precision did not appear until later. The F measure (or, rather its complement  $E = 1 - F$ ) was provided by van Rijsbergen (1979). He provided an extensive theoretical discussion to show that the principle of decreasing marginal relevance would at some point make a searcher for information to be unwilling to sacrifice a unit of precision for an added unit of recall and vice versa. He then proposed the F measure (which is the harmonic mean of the recall and precision ratios) as the appropriate method for combining precision and recall.



## Summary

In this unit we are able to learn:

- Outline the iterative steps to search for documents
- Analyze recall and precision ratios in terms of real life scenario applications
- Elaborate the proportionality of recall and precision ratios
- Explain the concept of F-score as combination of both recall and precision measures using a weighting factor  $\alpha$ .



## Self-Assessment Questions

- 1 Explain the iterative search process with the aid of suitable flow chart
- 2 Compare and contrast between recall and precision ratios
- 3 How important F-score is to the effects of recall and precision?



## Tutor Marked Assessment

Tabulate the query concepts and their respective synonyms of this quoted information need “*What are the effects of e-registration on tertiary education portals?*”



## Reference

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## Further Reading

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- Sampath Kumar, B.T. & Prakash, J.N. (2009). Precision and Relative Recall of Search Engines: A Comparative Study of Google and Yahoo. *Singapore Journal of Library & Information Management*, Volume 38.



## UNIT 2

# RELEVANCE, ACCURACY, AND RANKING

### Introduction

Having discussed recall, precision and F-scores in the unit 1 of module 5. In this unit we aimed to justify what the main metrics (Relevance, Accuracy, and Ranking) of IRS offer. However, the calculation metrics that abound IRS are also well elaborated in this unit.



#### At the end of this unit, you are expected to:

- ① Understand Relevance in the documents retrieval system
- ② Know the four sets of document – true positive, true negative, false positive, and false negative
- ③ Know how to identify and calculate accuracy index, and
- ④ Know how to rank retrieved documents in terms of term frequency, inverse document frequency, and hyperlinks to documents.
- ⑤ Calculate recall, precision, relevance, accuracy, and F-score of the retrieved documents.



## Main Content

### Relevance

| 3 mins



**I**t is cogent you know that the concept of relevance refers to the extent of usefulness of the documents retrieved during a search to meeting the information need that necessitated the search. Relevance is assessed relative to an information need, not a query was used for a search. But an information need might differ very much from a query used in a search. Let us take for an example, an information need of a secondary school physics teacher might be getting accurate information on the "strengths and weaknesses of using different teaching methods or aids in the teaching of physics at the secondary school level". This information need might be translated into a query such as:

*teaching AND physics AND "secondary school" AND (method OR aid)*

Let me also let you know that a document is said to be relevant if it helps in meeting the stated information need, not because it just happens to contain some of or all the words in the query. This distinction is often misunderstood in practice, because the words and sentences that describe an information need are usually in a searcher's mind and often not written down. Also know that nevertheless, an information need is present in a searcher's mind which drives him to do a search.

I want you to know that searching involves selecting and combining words which may be or may not be those in the searcher's mind to form a search query. Moreover, words can have different meanings. For instance, if a user types the word python into a web search engine, he might intend to get information on where to purchase a pet python, or information on how to learn the Python programming language, or what and how pythons eat. So just typing "python" into search box of search engine would often retrieve so many documents or web pages most of which would not be relevant to the information need. It is by this effect, usually very difficult for a system to know what the precise information need is, when such a one word query is used. Nevertheless, the searcher can judge the quality of the returned results on the basis of their relevance to his information need expressed with just that one

word. Therefore, to evaluate a system, an overt expression of an information need in the form of one or more words is required, which can be used for judging returned documents as relevant or non-relevant.

We should learn as well that relevance of returned documents can reasonably be thought of as a scale such as ranging from zero, through very low, low, moderate, high, very high, etc. However, in assessing relevance for the purposes of calculating recall and precision ratios or F score, a simplification is often made that, each document in the database being searched is totally relevant to the information need or totally irrelevant to the need. Thus, each document in the search results is also totally relevant or totally irrelevant to the need. This assertion is illustrated with the diagram below, where:

- I. The database of documents being searched is represented with the largest rectangle, which is divided into two smaller rectangles representing documents that are relevant and documents that are not relevant.
- ii. The search results is represented with the oval, which is also divided into two parts representing documents that are relevant and retrieved (true positives) or not relevant but retrieved (false positives).
- iii. The documents not retrieved from the database also divides into two: those relevant but not retrieved (false negatives) and those not relevant and not retrieved (true negatives).

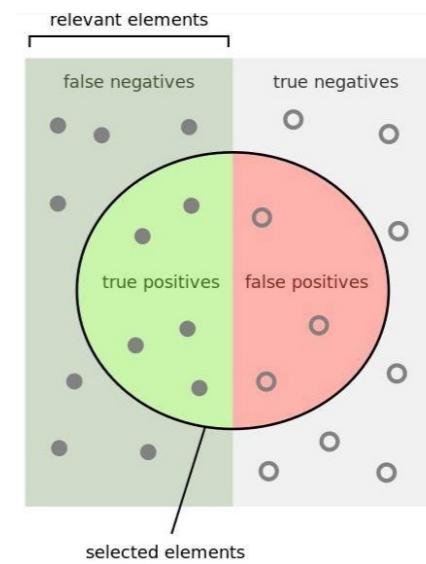


Figure 3: States of Information search query

Let us take a look at the above explanation of the meaning of the relevance of documents to a particular information need, and the above four sets of documents, let's analyze relevance based on binary decision. Mathematically,

$$\text{Precision} = \frac{|\{\text{relevant documents}\} \cap \{\text{retrieved documents}\}|}{|\{\text{retrieved documents}\}|}$$

$$\text{Recall} = \frac{|\{\text{relevant documents}\} \cap \{\text{retrieved documents}\}|}{|\{\text{relevant documents}\}|}$$

N.B:

Relevant documents are the **Positives** (*horizontally yellowed*)

Retrieved documents are **classified as** Positives (*vertically pinked*)

Relevant and Retrieved are the **True Positives** (*the intersection*)

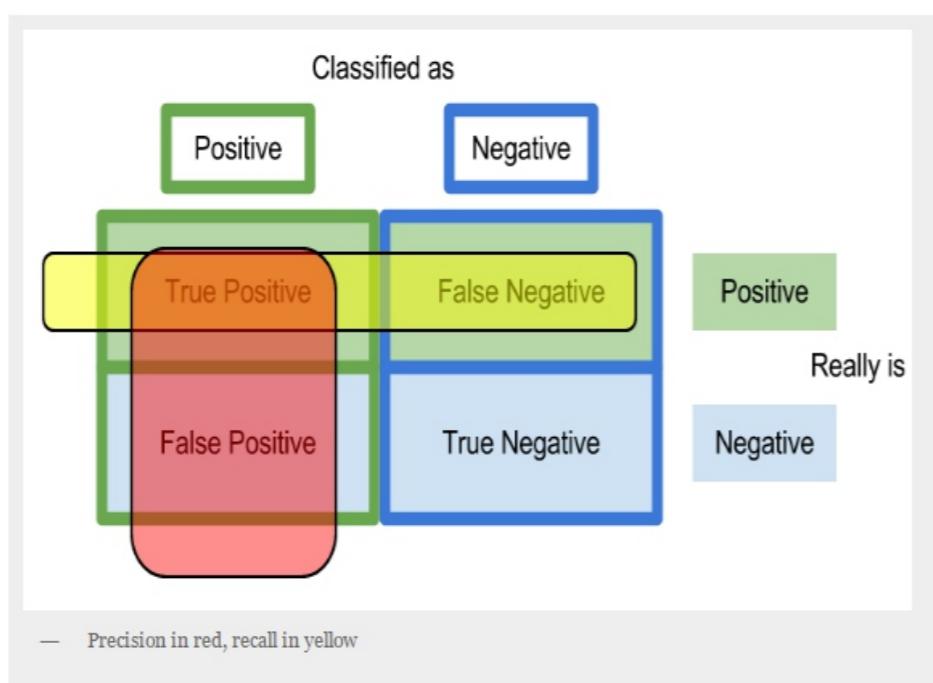


Figure 4: Classification of Recall and Precision

## Accuracy

| 1 min



Many of you are familiar with the word accuracy but let us see how it comes in here. Accuracy is another concept that has been mentioned as possibly useful yardstick for assessing the ability of an information retrieval system (such as search engine or database) to simultaneously correctly classify documents relevant and not relevant types. The number of such correct classifications is then expressed as a ratio of the total number of documents in the database. Using the TP, TN, FP, and FN classification of documents as illustrated in the diagram above, the **accuracy index** can be stated as:

$$\text{Accuracy} = \frac{TP+TN}{TP+TN+FP+FN}$$

I want you to note that however accuracy has been seen in literature as not a useful measure for assessing the effectiveness and efficiency of retrieval in large databases, such as in web information retrieval. This is because the focus in searching is usually on relevant documents, which is represented by TP, but in a large database TP is almost always a tiny fraction of all the documents in a database, and so is dwarfed by TN. Thus, even if good information retrieval system (IRS) retrieves only relevant documents in response to a query, the accuracy index of the system measured by the above formula will not be much different from that of a bad system that does not do well at all. Hence, the accuracy index cannot help us evaluate or compare IR systems (Schellekens, 2012).

## Ranking of retrieved documents

| 3 mins



Try to understand that when a search engine retrieves so many supposedly relevant documents in response to a query, some ranking of the documents is critical so that documents can be presented to the searcher in the rank order of their estimated relevance to the information need. Relevance ranking of the retrieved documents is usually done automatically by most search engines based on such indices as:

- Term Frequency (TF): This is the frequency of occurrence of each query keyword(s) in a document. Higher frequency gives the keyword more importance in the document)

- Inverse Document Frequency (IDF): Number of documents in the database a query keyword(s) occurs in (Fewer give more importance to the keyword).
- Hyperlinks to documents – Number of hyperlinks that point to the document from other documents in the database (the more links pointing to a document, the more important the document is taken to be).

**(a) Relevance ranking based on Term Frequency (TF) and Inverse Document Frequency (IDF)**

It is of importance that we all note that number of documents relevant to a query can be enormous if only term frequencies are taken into account as the yardstick. Thus:

- Words that occur in title, author list, section headings, etc. are given greater importance while words whose first occurrence is late in the document are given lower importance
- Stop words such as "a", "an", "the", "it" are not considered
- If the query keywords occur close together in a document, the document is given more importance than if the keywords occur far apart
- Documents are returned in decreasing order of relevance score, with usually only top few documents returned.

The TFIDF (Term frequency/Inverse Document frequency) ranking is performed as follow:

- Let "t" be a term in query Q
- Let "n(d)" be the number of terms in the document d
- Let "n(d, t)" be the number of occurrences of term t in the document d
- Then, relevance of a document "d" to a term "t" is:

$$TF(d, t) = \log(1 + \frac{n(d, t)}{n(d)})$$

- The log factor is then used to avoid excessive weight to the most frequent terms, such that the relevance of document d to term t is calculated as

$$r(d, Q) = \sum_{t \in Q} \frac{TF(d, t)}{n(t)}$$

**(b) Relevance ranking based on hyperlinks**

I want to tell you that this method has connections to social networking theories that rank the prestige of people, such as the president of the U.S.A, who has a high prestige because he is known by multiple prestigious people. An example of ranking methods based on hyperlinks is Hub and Authority Based Ranking which can be used by a search engine to rank retrieved web pages. You should learn that in this method:

- A hub is a page that stores links to many pages (on a topic)
- An authority is a page that contains actual information on a topic
- Each retrieved web page gets a hub prestige score based on prestige of authorities that it points to.
- Each page gets an authority prestige based on prestige of hubs that point to it.

## Calculations of Recall, Precision and Accuracy Scores examples



I want you to know this as well and mind you all what we have been treating so far are no jokes, try to instill-in your dedication while we are at it. Two Information retrieval systems, A and B, are being compared. Both are given the same query, applied to a collection of 1000 documents. System A returns 420 documents, of which 50 are relevant to the query. System B returns 90 documents, of which 25 are relevant to the query. Within the whole collection there are in fact 80 documents relevant to the query.

Create a contingency table of the results for each system, and compute the following:

- Recall
- Precision
- Accuracy
- Fscore

### Solution

<b>System A</b>	<b>Relevant</b>	<b>Non-relevant</b>	<b>Total</b>
<b>Returned</b>	<b>50</b>	370	<b>420</b>
<b>Not returned</b>	30	550	583
<b>Total</b>	<b>80</b>	920	<b>1000</b>

<b>System B</b>	<b>Relevant</b>	<b>Non-relevant</b>	<b>Total</b>
<b>Returned</b>	<b>25</b>	65	<b>90</b>
<b>Not returned</b>	55	855	910
<b>Total</b>	<b>80</b>	920	<b>1000</b>

#### System A:

$$\text{System A's Recall} = \frac{\text{TP}}{\text{TP+FN}} = \frac{50}{80} = 0.625 = 62.5\%$$

$$\text{System A's Precision} = \frac{\text{TP}}{\text{TP+FP}} = \frac{50}{420} = 0.119 = 11.9\%$$

$$\text{System A's Accuracy} = \frac{\text{TP+TN}}{\text{TP+TN+FP+FN}} = \frac{50+550}{50+550+370+30} = 0.6 = 60\%$$

$$\text{System A's F Score} = \frac{2\text{PR}}{(\text{P+R})} = \frac{2 \times 0.119 \times 0.625}{(0.119 + 0.625)} = \frac{0.149}{0.744} = 0.2$$

#### System B:

$$\text{System B's Recall} = \frac{\text{TP}}{\text{TP+FN}} = \frac{25}{80} = 0.313 = 31.3\%$$

$$\text{System B's Precision} = \frac{\text{TP}}{\text{TP+FP}} = \frac{25}{90} = 0.278 = 27.8\%$$

$$\text{System B's Accuracy} = \frac{\text{TP+TN}}{\text{TP+TN+FP+FN}} = \frac{25+885}{25+885+65+55} = 0.88 = 88\%$$

$$\text{System B's F Score} = \frac{2\text{PR}}{(\text{P+R})} = \frac{2 \times 0.278 \times 0.313}{(0.278 + 0.313)} = \frac{0.174}{0.591} = 0.294$$

### Summary

So far we talk about recall and precision and we said recall and precision are the two fundamental IR evaluation metrics. Both are the cornerstones for many other developed measures and are easy to understand by all users. To the practitioner's view, these two evaluation measures are interesting because they lead to more intuitive interpretations like, how much time people are reading useless documents (low precision), or how many relevant documents they are missing (low recall). Both precision and recall need to be taken into account when evaluating retrieval systems. It is not sufficient to pick one and use only that, because dependence on just one out of precision and recall can lead to extreme and unhelpful solutions. For example, a system that returns every document indiscriminately will have 100% recall; while another system that returns only a single correct document is 100% precise. The former system is of little or no help because the searcher needs to sift through the massive documents returned to identify those documents that are relevant to needs. The latter system is not much better, as the only one document it returns is unlikely to satisfy the need.

- Understand Relevance in the documents retrieval system
- Know the four sets of document – true positive, true negative, false positive, and false negative
- Know how to identify and calculate accuracy index, and
- Know how to rank retrieved documents in terms of term frequency, inverse document frequency, and hyperlinks to documents.
- Calculate recall, precision, relevance, accuracy, and F-score of the retrieved documents.



### Self-Assessment Questions

- 1 Explain in details the term “relevance” in IRS
- 2 State and differentiate the four sets of document in IRS with the aid of diagram
- 3 Accuracy index cannot help us evaluate or compare IR systems. Discuss
- 4 While ranking retrieved documents, some indices have been adopted by most search engines, mention those indices and justify their operations
- 5 Provided you are given this problem to solve “two Information retrieval systems, A and B, are being compared. Both are given the same query, applied to a collection of 1000 documents. System A returns 420 documents, of which 50 are relevant to the query. System B returns 90 documents, of which 25 are relevant to the query. Within the whole collection there are in fact 80 documents relevant to the query”. Calculate recall, precision, relevance, accuracy, and F-score



### Tutor Marked Assessment

Assuming you have a database contains 800 records on a particular topic, a search was conducted on that topic and 620 records were retrieved, and out of the 620 records retrieved, 405 were relevant. Calculate the precision, recall, and F scores for the search



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### Further Reading

- <https://www.creighton.edu/fileadmin/user/HSL/docs/ref/Searching - Recall Precision.pdf>
- <https://www.quora.com/What-is-the-best-way-to-understand-the-terms-precision-and-recall>
- <https://www.youtube.com/watch?v=2akd6uwtwc>
- <https://www.youtube.com/watch?v=mctizdBujk4>

## Module 6

# Plagiarism



Picture: Top 10 Free Plagiarism Detection Tools For eLearning

Photo: elearningindustry.com

## Units

- Unit 1 - Basic concepts of Plagiarism
- Unit 2 - Legal concepts of plagiarism



## UNIT 1

# BASIC CONCEPTS OF PLAGIARISM

### Introduction

In unit we will basically discuss about the basic concepts of plagiarism such as what plagiarism is and its common types, how it could be recognized and detected, and lastly how to avoid plagiarism in the manuscripts.



**At the end of this unit, you are expected to:**

- ① define plagiarism
- ② discuss common types of plagiarism
- ③ convincingly recognize and detect plagiarism
- ④ avoid plagiarism



## Main Content

### Plagiarism

 | 2 mins


You all know what we call plagiarism right but to refresh your knowledge, According to the 9th edition of the Webster's New Collegiate Dictionary, to plagiarize means to steal and pass off (the ideas or words of another) as one's own, to use (a created production) without crediting the source or to commit literary theft, i.e. present as new and original an idea or product derived from an existing source. Another definition of plagiarism by IEEE (2012) is "the use of someone else's prior ideas, processes, results, or words without explicitly acknowledging the original author and source". From these definitions of plagiarism, it can be deduced that plagiarism involves a lack of credit to the source or a misrepresentation of someone's intellectual or creative work in an academic, commercial or personal piece of writing. Gibaldi (2003) had noted that plagiarism is seen as a violation of someone else's intellectual property rights, a form of academic theft and a moral and ethical offence.

You should know as well that Eckstein (2003) described plagiarism as "one of the various malpractices in academics and professionalism termed academic fraud and could be committed deliberately or due to carelessness and sheer neglect". Due to digital technology which has made information easily accessible and the ability to "copy and paste", plagiarism is becoming an increasingly large problem in the academic, publishing and other environments. Individuals who engage in plagiarism include students, academics, professionals, journalists, musicians and authors among others. Some reasons why they plagiarize include poor writing skills, lack of research skills, ignorance of plagiarism and its consequences, laziness, inability to devote adequate time to reading and research, and absence of a strict and precise mechanism to countercheck plagiarism in the institutions in which they study or work.

Hence, a strategic approach to reducing plagiarism especially among students is to firstly educate them on issues that borders on plagiarism, devise approaches to assessments of students' work that minimize the possibility of plagiarizing, establish evident procedures for monitoring, detecting and

responding to incidences of plagiarism, and lastly, dealing with cases of plagiarism using established procedures. Many Nigerian universities now subject all theses and dissertations to software analysis to detect plagiarism, and students' project are likely to follow suit. So as an undergraduate student, you must be able to generate your own ideas and explain them in your words, and avoid plagiarizing others in order to uphold your academic integrity. Students should as well acquire knowledge on how to reference and cite information properly (covered in another chapter of this book) and learn how to do in-text citations so as to reduce incidences of plagiarizing.

### Common Types of Plagiarism

 | 2 mins


Let me bring to you according to Bowdoin College (2016), the most common types of plagiarism are:

- **Direct Plagiarism:** Direct plagiarism as the name implies is the word-for-word transcription of a section of someone else's work, without attribution and without quotation marks. This is regarded as unethical, academically dishonest, and constitutes grounds for disciplinary actions.
- **Self Plagiarism:** Self-plagiarism occurs when you submits significant, identical, or nearly identical portions of his or her own previous work, or mixes parts of previous works, without acknowledging it or citing the original work.
- **Mosaic Plagiarism:** Mosaic plagiarism occurs when you (assuming) borrows phrases from a source without using quotation marks, or finds synonyms for the author's language while keeping to the same general structure and meaning of the original. Sometimes called "patch writing," this kind of paraphrasing, whether intentional or not, is academically dishonest and punishable.
- **Accidental Plagiarism:** Accidental plagiarism occurs when you for an instance neglect to cite your sources, or misquotes your sources, or unintentionally paraphrases a source by using similar words, groups of words,

and/or sentence structure without attribution. You must learn how to cite your sources and to take careful and accurate notes when doing research. Lack of intent does not absolve you as a person of responsibility for plagiarism. Cases of accidental plagiarism are taken as seriously as any other plagiarism and are subject to the same range of consequences as other types of plagiarism.

It is also great to point out that a worldwide survey by Turnitin (2012) revealed the following different types of computer enabled plagiarism in order of severity of intent:

**Clone:** Submitting another person's work, word-for-word, as your own;

**CTRL-C:** Contains significant portions of text from a single source without alterations;

**Find-Replace:** This is when you change key words and phrases but retain the essential content of the source;

**Remix:** Paraphrases from multiple sources, made to fit together;

**Recycle:** Borrows generously from a writer's previous work without citation;

**Hybrid:** Combines perfectly cited sources with copied passages without citation;

**Mash-up:** Mixes copied material from multiple sources;

**404 Error:** Mixes copied material from multiple sources;

**Aggregator:** Includes proper citation to sources but the article contains almost no original work;

**Re-tweet:** Includes proper citation, but relies too closely on the text's original wording and/or structure.

## How to Recognize and Detect Plagiarism

 | 2 mins


Let me take through some things which will help you in detecting plagiarism. There are substantial set of specialized software tools that can help you in finding the original documents that contain a suspicious text in any research work. Some popular plagiarism checker available for you for free on the Internet include: CopyLeaks, Viper, PaperRater and DupliChecker. While the popular plagiarism software that comes with a cost include: TurnItIn, SafeAssign, PlagiarismDetect and Canexus, this paid service plagiarism software is usually subscribed to by schools/institutions and not by individuals. Although some of our Nigerian universities are currently using Turnitin software, the University of Ilorin in collaboration with six other Nigerian universities have developed home-grown anti-plagiarism software, designed to check academic fraud among students and staff.

I should tell you as well that Visser, Haidegger, and Papanikolopoulos (2012) are of the opinion that what should be considered when a case of plagiarism is suspected is the amount of text being plagiarized (ranging from a single sentence to a full paper), proper use of quotation marks, appropriateness credit notices and properness of paraphrased text. Meanwhile, The IEEE (2012) guidelines identify five levels of plagiarism, according to severity:

**Level 1** pertains to the uncredited verbatim copying of a full paper, or the verbatim copying of a major portion (>50%), or verbatim copying within more than one paper by the same author(s).

**Level 2** pertains to the uncredited verbatim copying of a large portion (between 20% and 50%) or verbatim copying within more than one paper by the same author(s).

**Level 3** pertains to the uncredited verbatim copying of individual elements (paragraph(s), sentence(s), illustration(s), etc.) resulting in a significant portion (<20%) within a paper.

**Level 4** pertains to uncredited or improper paraphrasing of pages or paragraphs.

**Level 5** pertains to the credited verbatim copying of a major portion of a paper without clear delineation (e.g., quotes or indents).

Aside using technology to detect plagiarism, the following are good indicators you can use to manually recognizing plagiarism in any document (Visser, et al., 2012):

- Lack of references and citations, or the over-representation of the author's own publications in the reference list;
- Outdated references, suggesting that no recent literature review was done;
- Figures that do not match with other figures in style, or are of very low quality;
- Unusual, bold statements about the generic status of the field and its future; and
- Sudden changes in the writing style between consecutive paragraphs.

## How to avoid Plagiarism



| 2 mins



SAQ 4

Above all, you are all familiar with the quote which says 'Give honor to whom honor is due to', giving credit where credit is due is the only strategy to steer clear of plagiarism. For example, if an idea or theory that was presented by another author in a scholarly journal, book, speech, or other sources is used, it must be noted in the research paper where the information originated using an in-text citation, by doing this, the reader can tell what is the writers' and what is not. Both published materials in digital or paper formats and unpublished sources must be cited. Published sources include journals, books, magazines, newspapers, websites, plays, movies, photos, paintings, and textbooks. While unpublished sources include class lectures or notes, handouts, speeches, other students' papers, or material from a research service.

In addition, as writers you must diligently and carefully avoid submitting written works from others, past assignments in other classes and essays/projects purchased from the Internet. In order not to be accused of plagiarism, the following recommendations should be put into practice:

● Master the procedure for citing and crediting sources within the text of a paper or essay using the correct format, such as MLA, Harvard, Chicago or APA. This includes not only written words and ideas, but also art, graphics, computer programs, music, charts, pictures, graphs, diagrams, data, images, statistics, etc.;

- Please be careful not to over-quote, put quotations around and indent information that is word-for-word while also crediting the source;
- Keep accurate notes when conducting any type of research;
- Double check that all sources are properly cited;
- Paraphrase information without borrowing the language or structure used in an original source and include a citation noting the author;

Below is a passage taken from Polivy and Herman's "Sociocultural idealization of thin female body shapes: An introduction to the special issue on body image and eating disorders." Journal of Social & Clinical Psychology 23, (2004): p 1-6.

"To the extent that a woman's self-image is challenged or threatened by an unattainable ideal of an impossibly thin female physique, she may well become susceptible to disruption of her self-regard, and may be more likely to develop an eating disorder".

Here is an example, in APA style, that is considered acceptable paraphrasing of this passage:

"If a woman interprets the media's representation of thinness as the ideal she must achieve, her sense of self-esteem might be threatened and even damaged, making her more likely to exhibit disordered eating patterns" (Polivy & Herman, 2004, p. 2).

However, facts can be viewed as common knowledge if they are generally known and widely established. Common knowledge is undisputed knowledge or information that is known to an educated reader, such as widely known facts and dates usually with reference to the community in which the term is used. This is the only source material that can be used in any writing without attribution because it is not attributable to one source. For example, dates referring to well-known events can be viewed as common knowledge. So, when

referring to March 28, 2015 as the date of the 2015 presidential election in Nigeria or stating that Ilorin is home to the University of Ilorin, one would not need to cite a source for such information if of course Nigerians are the target audience.

Some of you view all information on the Internet as equal to common knowledge simply because it is free, publicly shared and easily accessible. Nevertheless, the language, ideas, and work in electronic sources, even those without an identifiable author, must be cited as anonymous.



## Summary

In this unit we are able to:

- bring closer to you the different definitions to plagiarism by notable scholars in academic.
- keep you abreast of the evils of plagiarism in academic as well as approach(es) of mitigating it.
- highlight common types of plagiarism as well as computer-enabled ones.
- discuss several ways of recognizing and detecting plagiarism such as technology-inclined paid or free plagiarism checker. Visser, et al., 2012 also made some ways of detecting it manually
- explain ways of avoiding plagiarism such as giving credits to the source of information coupled with paraphrasing of the texts.



## Self-Assessment Questions

- 1 Give any three different definitions to plagiarism
- 2 What are the common types of plagiarism according to Bowdoin College (2016)
- 3 Highlight the steps to convincingly recognize and detect plagiarism
- 4 As an undergraduate student, how could you avoid plagiarism



## Tutor Marked Assessment

I. What do you understand by the term plagiarism and how can you avoid being a victim?

II. Enumerate different ways plagiarism can be detected in a document without the use of technology.



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## Further Reading

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## UNIT 2

### LEGAL CONCEPTS OF PLAGIARISM



#### Introduction

Having discussed with you the basic concepts of plagiarism in the first unit of this module, in this unit we will elaborate the legal aspect of the concept. The effects of plagiarism in the perspectives of law are to be beamlit here. Other things to explain are the approaches to protect intellectual property right as well as copyright in the current digital age.



#### At the end of this unit, you are expected to:

- ① explain the consequences and Legal implication of Plagiarism
- ② discuss protection of Intellectual Property Rights and Copyright in the Digital Age in line with plagiarism
- ③ Be aware of some of the legal rights credited to an author or copyright owner.

## Main Content

### Consequences and Legal implication of Plagiarism

 | 2 mins



SAQ 1,2

**I**t is very important for you either as a (writer or an author) to consider the consequences of plagiarism before trying to pass off the work of another as their own, as the consequences of plagiarism are far-reaching and no one is immune. These consequences can vary depending upon how and where the plagiarism occurred. For authors, rejection of article, ruined reputation, loss of career (if employed) and inability to further publish research works are some of the consequences of plagiarizing. For example, in September 2015, three academic staff of Umaru Musa Yar' Adua University, Katsina plagiarized a published paper titled "Assessment of Health Care Waste Generated by Government Hospital in Agra City, India (2009)" authored by Khajuria and A. Kumar both of Ambedkar University, India. The following actions were taken by the university: the Staff involved were demoted to the next lower rank, the plagiarized article was expunged from the CV's of the staff, they would be denied promotion for three years and they were strongly warned to desist from committing similar act in future (Committee of Vice-Chancellors (CVC) of Nigerian Universities, 2015).

Usually for you being as a student, the school sets the penalty depending on whether the student committed plagiarism intentionally or not, and this may range from formal warning, reduction of marks, resubmission of the work, undertaking additional assessment, failing the assignment, suspension and in extreme cases expulsion. When a professional or journalist commits plagiarism, the stakes are even higher. He/she may be fired, asked to step down from the current position and when such individual is a public figure, his/her professional reputation may be destroyed. In October, 2014, Daily Post reported that Google slapped a famous and one of the richest bloggers in Nigeria, Linda Ikeji, famous for posting gossips and news almost on anything, on the face with accusations of plagiarism. Consequently, Ikeji's blog was pulled down.

You should also know that cases have been initiated against plagiarists

because plagiarism can include prosecution under copyright laws, which often include an attempt at a monetary award based on damages. The individual may also have to pay to make up for lost profits when the owner of the work has lost income or is unable to use their work any longer. In some cases, depending on the environment, plagiarism can include criminal prosecution. The individual may face fines, jail time and community service, in addition to a civil case. For example, the PM News (2012) reported that two professors lecturing at the Department of Economics, University of Port Harcourt, were dragged before a Federal High Court sitting in the state on alleged plagiarism of the work of a US-based Nigerian Professor, Prof Victor Dike who is an adjunct Professor at the School of Engineering and Technology, National University, Sacramento, United States. The alleged Professors plagiarized Prof Victor Dike's work titled "Corruption In Nigeria: Understanding and Managing the Challenge" published in the Nigeria Economic Summit Group, NESG, Economic Indicators, by publishing same as an article titled "Corruption and Economic Growth: A Survey of Three Institutions in Nigeria", in Journal of Research in National Development Volume 6, June 2008, without properly citing the original author. The plaintiff requested for a sum of N27million as compensation.

### Protection of Intellectual Property Rights and Copyright in the Digital Age

 | 3 mins



SAQ 3

What we will find out here is what intellectual property rights all about and we say it is referred to as the protection given to creators of works that are intellectual properties including research output, invention or artwork, to prevent other persons from illegally appropriating their intellectual assets. Adekola and Eze (2015) explained that "Intellectual property law is an area of law which deters others from copying or taking unfair advantage of the work or reputation of another and provides remedies where this arises". Under intellectual property law, owners are granted certain exclusive rights to a variety of intangible assets, such as literary, and artistic works; discoveries and inventions; words, phrases, symbols, and designs. Intellectual property laws reward creators of intellectual property by preventing others from copying, performing, or distributing their works without permission.

What we will find out here is what intellectual property rights all about and we say it is referred to as the protection given to creators of works that are intellectual properties including research output, invention or artwork, to prevent other persons from illegally appropriating their intellectual assets. Adekola and Eze (2015) explained that "Intellectual property law is an area of law which deters others from copying or taking unfair advantage of the work or reputation of another and provides remedies where this arises". Under intellectual property law, owners are granted certain exclusive rights to a variety of intangible assets, such as literary, and artistic works; discoveries and inventions; words, phrases, symbols, and designs. Intellectual property laws reward creators of intellectual property by preventing others from copying, performing, or distributing their works without permission.

You should note that principal types of intellectual property are patents, copyrights, and trademarks. Patent law protects inventions that demonstrate technological progress, for example, Pfizer invented an ingredient called Amlodipine Besylate used to produce drugs and patented it in Nigeria under patent No. RP 9970. Copyright law protects a variety of literary and artistic works, including paintings, sculpture, prose, poetry, plays, musical compositions, dances, photographs, motion pictures, radio and television programs, sound recordings, and computer software programs, examples include books, the literary works of Chinua Achebe and Wole Soyinka, and the musical compositions of Sunny Ade. Trademark law protects words, slogans, and symbols that serve to identify different brands of goods and services in the marketplace, examples of some well-known registered trademarks in Nigeria are Coca-Cola, Glo, Nestle, etc. Our concern in this chapter is copyrights.

As digital technologies have brought about competitive environments where sharing digital content is extremely easy and inexpensive, authors, writers, journalists, etc., are concerned about how to share and protect their intellectual outputs while not infringing the rights of others. Country-specific copyright laws no longer fully protect an author's work, as balancing the need to protect an author's intellectual property from unauthorized use without hampering innovation still poses a challenge. The digital age has led to new and challenging intellectual property issues especially with regards to digital assets — such as software, music, websites, e-books and much more. Some of the challenges posed include:

Ease of reproduction: Traditionally, intellectual property rights had several natural barriers in place that helped minimize infringement unlike digital assets that can be infinitely, easily, and cheaply reproduced. Let us take for an example, reproducing physical intellectual property is both costly and difficult which is enough to convince copyright violators to refrain from illegally reprinting and distributing a copyrighted book.

Ease of distribution: Aside ease of reproducing digital intellectual property illegally, it is also much easier to distribute it. The proliferation of social media like Facebook and Twitter has made distribution of digital materials impossible to police.

Enforcement: The enforcement of intellectual property law posed a challenge prior to the digital age, now; pursuing a claim may be incredibly difficult for a copyright owner who discovers unlicensed use of his/her digital intellectual property.

The World Wide Web: this is a worldwide service that enables the recreation and distribution of digital assets in various countries all over the planet, this creates a world of jurisdictional problems when it comes to digital intellectual property

Cross-country interpretation of IP law: You also note this cogent point that

- i. The right to be acknowledged in any use made of your work and also to prevent any derogatory use; alteration; distortion or mutilation of same (referred to as moral rights);
- ii. The right to earn money from your work by determining the condition under which the work may be commercially used by a third party (economic rights);
- iii. The right to prohibit the reproduction of the work in various forms such as printed publication; photocopying or making a recording in any media;
- iv. The right to forbid public performance of work such as staging a play in a theatre;

- v. The right to prohibit recording of work in the form of compact disks, cassettes, videotapes, etc;
- vi. The right to prohibit broadcasting of the work by radio, cable or satellite;
- vii. The right to disallow the translation of the work into other languages or its adaptation such as from a novel to a screenplay.



## Summary

In this unit we have been able to justify the legal-compliant concept in the mitigation of plagiarism in academics. Some of the identified issues attempted in the unit include the following:

- The principal types of intellectual property such as patents, copyrights, and trademarks
- The digital based challenges against the digital age in terms of ease of reproduction, ease of distribution, enforcement, www, and cross-country interpretation of IP law
- Some of the rights of author or copyright owner in a work



## Self-Assessment Questions

- 1 What are the consequences and legal implication of a student found guilty of plagiarism?
- 2 What are the challenges of intellectual property rights in the digital age?
- 3 List five rights an author or copyright owner enjoys in a work



## Tutor Marked Assessment

Can same consequence be made on all plagiarists?

Justify your answer with the variety of punishment available



## Reference

- Adekola, T. A. and Eze, S. (2015). Intellectual Property Rights in Nigeria: A Critical Examination of the Activities of the Nigerian Copyright Commission. *Journal of Law, Policy and Globalization*, 35, 56-61.
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- Oyekunle, R. A. (2019). Plagiarism and Copyright. In Balogun, N.A. Tiamiyu, M. & Ahlan, A. R. (Eds.), *Information literacy for digital age* (pp. 126-135). Ilorin, Kwara: Unilorin Press.



## Further Reading

- Copyright Act Cap C28. Laws of the Federation of Nigeria 2004.
- Nnamdi, F. (2012, September 12). Plagiarism: 2 Nigerian teachers sued. PM NEWS. Retrieved from: <https://www.pmnewsnigeria.com/2012/11/12/plagiarism-2-nigerian-teachers-sued/>
- The Nation Online (2016). COSON takes MTN to court. Retrieved from <http://thenationonlineng.net/coson-takes-mtn-court/>
- <https://www.pmnewsnigeria.com/2012/11/12/plagiarism-2-nigerian-teachers-sued/>



## Module 7

# Referencing

## Units

**Unit 1** - Referencing at a glance  
**Unit 2** - Reference Styles



## UNIT 1

### REFERENCING AT A GLANCE



#### Introduction

I want you to know that my objective of this topic is to expose you to proper methods and styles for referencing sources consulted and cited in academic publications, such as technical reports, theses, dissertations, projects and assignments. It also introduces the APA Style Guide to Electronic References. This guide specifies the key pieces of information to include in references to different types of electronic or printed information sources that you borrow facts or ideas from and how to format each reference in the list of references or bibliography at the end of the paper, chapter, project or thesis that you have written. Also provided are examples of referencing formats stipulated by the APA Style Guide and other well-known referencing styles for some academic disciplines.



### At the end of this unit, you are expected to:

- ① identify types of information sources referenced
- ② elaborate some aspects of referencing
- ③ explain reference elements

intellectual worth of the contents of an article, book, journal or paper, and that he acknowledges this by referencing it (University of Exeter, 2001). There are different types of information sources than can be referenced in a write-up. In most cases, a writer consults several types of sources at a time, each of which must be referenced in order to avoid charges of plagiarism of the consulted



## Referencing

| 1 min

You should learn referencing involves an author of a write-up (i.e. paper, project, thesis, report) mentioning and providing details of the different sources that he/she consulted or from which information were borrowed during the write up. It is an important requirement in academic writing, in order to acknowledge and appreciate the works, concepts and ideas of other writers or authors that were consulted or borrowed. The consultation of earlier research works and information sources is very important requirement in order to achieve a successful research and academic writing. It is a way of including sources or citations in a write-up, in order to recognize the quality or importance of the sources used by the writer. You should know also that referencing also allow readers of the write up to know about or make use of the referenced sources (University of Queensland Library, n.d.).

## Why Referencing?

| 1 min

It may bother you that 'why referencing', keep following closely. Referencing is required of a student, writer and or researcher in order to identify the use of someone else's concepts or ideas during the course of a write-up. Failure to reference indicates a form of plagiarism (i.e. stealing of intellectual property) which is an unethical behaviours and considered to be serious academic misconduct. Referencing on the other hand shows and demonstrates that a student, writer or researcher had read, understood and recognized the

## Types of information sources referenced

| 1 min



The types of information sources that may be consulted during a write up vary a lot, and include:

- Books
- Journal articles
- Conference proceedings
- Technical report
- Thesis or dissertation
- Student projects
- Newspaper or magazine articles
- Curriculum or Course material
- Reference materials (dictionaries, encyclopedias, manuals)
- Presentation slide
- Policy brief
- Podcasts
- Web log text, images or video
- And so on

## Aspects of referencing



SAQ 2

Please you should note that basically, there are two aspects of referencing: in-text citation (which are written within the text of a write up), and the reference list (which is provided at the end of the write up). Write up refers to a written paper, assignment, report, project or thesis. An example of in-text citation is as provided at the end of the above paragraph. An example of reference list is provided at the end of this chapter. This chapter focuses more on what information to provide in the reference list, and how to sequence and format the information.

## Reference elements



SAQ 3

I want you to know that reference elements are the pieces of information that are required to be provided in each reference in a reference list or bibliography. Each of the above information sources are often referenced differently in terms of the reference elements to be provided, there are still some elements which need to be present in the reference of each type of source. The following elements of an information source that are generally required in any reference of an information source:

Author(s) name

Title

Publisher's name

Year published

Volume number (if any)

Issue number (for journals, newspaper and magazines)

Page numbers

## Summary



In unit we are able to analyze the concept “referencing”, the main reasons of referencing, the different types of information sources referenced. The aspects of referencing as in-text citation and the referencing list are also explained. All seven pieces of information that are required in each reference are stated and analyzed.



## Self-Assessment Questions



- 1 Highlight any 5 types of information sources referenced
- 2 State and discuss the aspects of referencing
- 3 In any information sources referencing, there are common reference elements, state and explain any five



## Tutor Marked Assessment

Looking at the hurdles surrounding the writing skills and initiatives, the author is still obliged to make references. In your own perspective, why is the need of referencing?



## Reference

- Haroon-Sulyman, S. O. & Balogun, N. A. (2019). Referencing. In Balogun, N.A. Tiamiyu, M. & Ahlan, A. R. (Eds.), *Information literacy for digital age* (pp. 126-135). Ilorin, Kwara: Unilorin Press.
- Virginia Polytechnic Institute. (2016). AIP (American Institute of Physics). Retrieved from <http://www.lib.vt.edu/find/citation/aip.html>



## Further Reading

- Huber, T. (2006, March 15). AIP Style Manual References. Retrieved from <http://physics.gac.edu/~huber/misc/aiprefs.htm>
- Monash University. (2015). Citing and Referencing: AIP. Retrieved from <http://guides.lib.monash.edu/citing-referencing/aip>
- University of Exeter. (2001). Referencing - The Harvard System. Retrieved from [https://education.exeter.ac.uk/dll/studyskills/harvard\\_referencing](https://education.exeter.ac.uk/dll/studyskills/harvard_referencing)
- University of Queensland Library. (n.d.). Referencing Style Guides. Retrieved from <https://web.library.uq.edu.au/research-tools-techniques/referencing/referencing-style-guides>



## UNIT 2

# REFERENCE STYLES



## Introduction

In this unit, I will introduce you to the various types of varieties of reference styles in the academics and we will discuss about reference list and bibliography



### Learning Outcomes

#### **At the end of this unit, you should be able to:**

- ① state and differentiate between the varieties of reference styles in the academics
- ② differentiate between reference list and bibliography



## Main Content

### Reference Styles

| 7 mins



SAQ 1

Let us see what we will be able to learn here. A reference style is a particular way information sources consulted during a write up are cited within the text and written out at the end of the write up. There are different available reference styles that one can select from and use for a particular write up. However, it is very essential to make use of one particular reference system or style and stick to that particular reference style throughout a write up in order to avoid inconsistency. Some education institutions adopt and stipulate a specific reference style to be used by their students for assignments or project reports. For example, the Department of Information and Communication Science, University of Ilorin has adopted the use of APA reference style for both assignments and research work carried out by their students. Book publishers and journal editors usually also insist on the use of a particular reference style. Among the several available reference styles are the following:

American Chemical Society (ACS) style

American Institute of Physics (AIP) style

Australian Guide to Legal Citation (AGLC) style

American Psychological Association (APA) style

Chicago Manual of Style

Harvard Style

Institute of Electrical and Electronics Engineer (IEEE) style

Vancouver Style

MLA (Modern Language Association of America) style

Oxford reference style

I should inform you that The **American Chemical Society (ACS)** reference style is one of several styles used by academia, researchers and students in their academic writing. The ACS style was developed by the American Chemical Society mostly and thereby mostly used in chemistry and other related disciplines (Williams Libraries, 2016). The general rules for an ACS style

- Italicize journal titles; volume numbers and the comma after the volume number (do not italicize the issue number and the comma after it).
- The publication year and comma after it are always in bold for a journal article
- The ACS style allows the use of the original source of information only in the citation, and does not allow the use of secondary sources.

Examples of ACS style:

- i. In Article: Haroon, S.O; Abdulrauf, T.O. A Virtual Reality Prototype for Learning Maize Planting. *Communication on Applied Electronics* 2015, 2,(1), 10-14.
- ii. In Book: Balogun, N. *The Influence of Personality Traits on Internet Usage Activities: In Organization*; LAP Lambert Academic Publishing: Germany, 2012.
- iii. In Webpage: University of Ilorin. Events: 165th Inaugural Lecture. <http://www.unilorin.edu.ng/index.php/events/5574-165th-inaugural-lecture> (accessed Feb 28, 2017).
- iv. In Conference Proceedings: Bello, O.W; Sikiru, I.A. *Electronic Journals Usage Profile in Africa: New Dimensions of An Old Problem*. In a conference on Electronic Publishing and Dissemination putting Africa Journals Online: Opportunities, Implications and Limits, Dakar, Senegal, Oct 6-7, 2008.

**The American Institute of Physics (AIP)** style was developed by the American Institute of Physics, and is mostly used in the field of physics. It specifies that references must be numbered in the order of appearance in an article and also listed in the same numbered

**The American Institute of Physics (AIP)** style was developed by the American Institute of Physics, and is mostly used in the field of

- References should be cited in numerical order and the numerals placed after the punctuation
- Authors should be referred to in the in-text citation by surname only
- All authors' names should be used for a maximum of three authors'. If there are four authors or more than, use only the first author's name followed by 'et al'. (Monash University, 2015).

Examples of AIP Styles:

- i. In Article: S.O. Haroon and T.O. Abdulrauf, CAE. 2(1), 10 (2015)
- ii. In Book: N. Balogun, The Influence of Personality Traits on Internet Usage Activities: In Organization, (LAP Lambert Academic Publishing, Germany, 2012), pp. 1-92
- iii. In Webpage: University of Ilorin, Events, 165th Inaugural Lecture, (<http://www.unilorin.edu.ng/index.php/events/5574-165th-inaugural-lecture>)
- iv. In Conference Proceedings: O.W. Bello and I.A. Sikiru, in: Conference on Electronic Publishing and Dissemination Putting Africa Journals Online: Opportunities, Implications and Limits, (CODESRIA, Dakar, Senegal, 2008), pp. 1-9.

**The Australian Guide to Legal Citation (AGLC)**, as its name implies, is a reference style used mostly in Law related courses as well as for legal citations (Melbourne University, 2010).

The general rules of the AGLC style of referencing include:

- Superscript numbers to be used as an in-text citation
- Italicize book titles

Examples of AGLC style:

- i. In Article: Haroon Shakirat and Abdulrauf Tosho, 'A Virtual Reality Prototype for Learning Maize Planting,' (2015) 2(1) Communication on Applied Electronics 10, 14.
- ii. In Book: Balogun Naeem, The Influence of Personality Traits on Internet Usage Activities: In Organization, (LAP Lambert Academic Publishing, Germany, 2012) 92.
- iii. In Webpage: University of Ilorin, Events, 165th Inaugural Lecture, <<http://www.unilorin.edu.ng/index.php/events/5574-165th-inaugural-lecture>>.
- iv. In Conference Proceedings: Olaiyiwola Bello and Ismaeel Sikiru, 'Electronic Journals Usage Profile in Africa: New Dimensions of an Old Problem (Paper presented at Conference on Electronic Publishing and Dissemination Putting Africa Journals Online: Opportunities, Implications and Limits, Senegal, 6-7 October 2008).

**The American Psychological Association (APA)** style is one of the popular reference styles. It was developed long time ago by some group of psychologists and anthropologists who establish simple sets of procedures and rules for scientific writing and research. It is commonly used in the fields of the social sciences (Official APA website, 2017). The general rules of APA style include:

- An Author's name followed by its initials
- Year of publication
- Article title followed by a full stop
- Name of journal in italic form
- Volume followed by a comma and
- Page number

Examples of APA style:

- i. In **Article**: Haroon, S.O. & Abdulrauf, T.O. (2015). A Virtual Reality Prototype for Learning Maize Planting. *Communication on Applied Electronics*, 2(1), 10-14.
- ii. In **Book**: Balogun, N. (2012). *The Influence of Personality Traits on Internet Usage Activities: In Organization*. Germany: LAP Lambert Academic Publishing.
- iii. In **Webpage**: University of Ilorin. (2017). Events: 165th Inaugural Lecture. Retrieved from <http://www.unilorin.edu.ng/index.php/events/5574-165th-inaugural-lecture>.
- iv. In **Conference Proceedings**: Bello, O.W., & Sikiru, I.A. (2008). Electronic Journals Usage Profile in Africa: New Dimensions of an Old Problem. *Proceedings on Electronic Publishing and Dissemination Putting Africa Journals Online: Opportunities, Implications and Limits* (pp.1-9). Dakar: Senegal. CODESRIA

**The Chicago** style which got its name from the University of Chicago, is a reference style generally used in the field of Arts, Humanities and related fields (University of York, 2014). The general rules of Chicago style include:

- Name of author
- Article title in double quotation mark
- Title of journal in italic
- Volume, Year of publication and

Examples of Chicago style:

- I. In **Article**: Haroon, Shakirat, and Abdulrauf, Tosho. 2015. "A Virtual Reality Prototype for Learning Maize Planting." *Communication on Applied Electronics*, no. 2 (2015): 10-14.

ii. In **Book**: Balogun, Naeem. *The Influence of Personality Traits on Internet Usage Activities: In Organization*. Germany: LAP Lambert Academic Publishing, 2012.

iii. In **Webpage**: University of Ilorin. "*165th Inaugural Lecture*." Accessed Feb 28, 2017. <http://www.unilorin.edu.ng/index.php/events/5574-165th-inaugural-lecture>.

iv. In **Conference Proceedings**: Bello, Olaiyiwola, and Sikiru, Ismaeel. "Electronic Journals Usage Profile in Africa: New Dimensions' of an Old Problem." *In Conference Proceedings on Electronic Publishing and Dissemination Putting Africa Journals Online: Opportunities, Implications and Limits, October 6-7, 2008*. Dakar: Senegal, 2008.

**The Harvard** style is also known as the author- date referencing style. It is a style used across many fields of study (University of Western Australia, 2017). The general rules of the Harvard style of referencing include:

- An Author's name followed by initials
- Article title with the single quotation mark followed by full stops
- Name of journal in italic form
- Volume followed by comma and
- Issue no. in brackets

Examples of Harvard style:

- i. In **Article**: Haroon, S. & Abdulrauf, T., 2015, 'A Virtual Reality Prototype for Learning Maize Planting', *Communication on Applied Electronics*, 2(1), 10-14.
- ii. In **Book**: Balogun, N. (2012) *The Influence of Personality Traits on Internet Usage Activities: In Organization*, Germany: LAP Lambert Academic Publishing.
- iii. In **Webpage**: University of Ilorin 2017, *165th Inaugural Lecture*, viewed 28 February 2017, <<http://www.unilorin.edu.ng/index.php/events/5574-165th-inaugural-lecture>>

Examples of Harvard style:

- i. In Article: Haroon, S. & Abdulrauf, T., 2015, 'A Virtual Reality Prototype for Learning Maize Planting', *Communication on Applied Electronics*, 2(1), 10-14.
- ii. In Book: Balogun, N. (2012) *The Influence of Personality Traits on Internet Usage Activities: In Organization*, Germany: LAP Lambert Academic Publishing.

**The Institute of Electrical and Electronics Engineer (IEEE):** As its name what this implies is a reference style which is widely used in the electronics, engineering and computing related field (University of Pittsburgh, 2017). The general rules of IEEE style include:

- Authors' initials is written first followed by the author's last name
- Title of an article is enclosed in quotation marks
- Journal or Book title is written in italics

Examples of IEEE style:

- i. In Article: S.O. Haroon and T.O. Abdulrauf, "A Virtual Reality Prototype for Learning Maize Planting 2015," *Communication on Applied Electronics*, vol. 2, no. 1, pp. 10-14, June 2015.
- ii. In Book: N. Balogun (2012) "The Influence of Personality Traits on Internet Usage Activities," in Organization, Germany: LAP Lambert Academic Publishing, 2012, pp. 1-92.
- iii. In Webpage: University of Ilorin. "165th *Inaugural Lecture*." Internet: <http://www.unilorin.edu.ng/index.php/events/5574-165th-inaugural-lecture>, Feb. 27, 2017 [Feb. 28, 2017].
- iv. In Conference Proceedings: O.W. Bello and I.A. Sikiru. "Electronic Journals Usage Profile in Africa: New Dimensions' of an Old Problem," in *Conference Proceedings, Electronic Publishing and Dissemination Putting Africa Journals Online: Opportunities, Implications and Limits.*, Senegal, Oct. 6-7, 2008. pp. 1-9.

**The Vancouver** please note that this style is mostly used in the field of sciences and related fields. It involves the use of numbers instead of text for its in-text citation (Melbourne University, 2010). The general rules of the Vancouver style include:

- Author surname followed by initials
- Title of article followed by double quotation
- Title of journal(abbreviated)
- Date of publication followed by double quotation
- Volume number and
- Issue number in bracket

Example of Vancouver style:

- i. In Article: Haroon S, Abdulrauf T. A Virtual Reality Prototype for Learning Maize Planting. *Communication on Applied Electronics*. 2015 June; 2(1):10-14.
- ii. In Book: Balogun N. *The Influence of Personality Traits on Internet Usage Activities: In Organization*. Germany: LAP Lambert Academic Publishing; 2015
- iii. In Webpage: University of Ilorin 2017. Events: 165th *Inaugural Lecture*. Available from: <http://www.unilorin.edu.ng/index.php/events/5574-165th-inaugural-lecture>. [Accessed 28th February 2017].
- iv. In Conference Proceedings: Bello O, Sikiru I. Electronic Journals Usage Profile in Africa: New Dimensions of an Old Problem. In: *Conference Proceedings on Electronic Publishing and Dissemination Putting Africa Journals Online: Opportunities, Implications and Limits*, 2008 Oct 6-7, Dakar, Senegal. 2008. p. 1-9.

**The MLA** (Modern Language Association) style is used widely in the humanities, especially in the field of literature and language (Monash University, 2015). The general rules of MLA style include:

- Author's name
- Title of article
- Name of journal
- Volume number followed by decimal & issue number
- Year of publication
- Page numbers and
- Medium of publication

Examples of MLA style:

- i. In **Article**: Haroon, Shakirat and Abdulrauf Tosh. "A Virtual Reality Prototype for Learning Maize Planting." *Communication on Applied Electronics* 2.1 (2015):10-14. Web.
- ii. In **Book**: Balogun, Naeem. *The Influence of Personality Traits on Internet Usage Activities: In Organization*. Germany: LAP Lambert Academic Publishing, 2015. Print
- iii. In **Webpage**: *165th Inaugural Lecture*. University of Ilorin, Feb. 2017. Web. 28 Feb. 2017. <<http://www.unilorin.edu.ng/index.php/events/5574-165th-inaugural-lecture>>
- iv. In **Conference Proceedings**: Bello, Olayiwola, and Sikiru Ismaeel. "Electronic Journals Usage Profile in Africa: New Dimensions of an Old Problem." *Conference Proceedings on Electronic Publishing and Dissemination Putting Africa Journals Online: Opportunities, Implications and Limits, Senegal, 6-7 October 2008*, pp. 1-9.

The **Oxford** reference style is known as a documentary style system and sometimes referred to as a note citation reference system (University of Western Australia, 2017). The general rules of Oxford style include:

- Authors last name, author initials
- Article title
- Journal Title
- Volume
- Issue Number
- Year of Publication
- Page Numbers

Examples of Oxford style:

- i. In **Article**: Haroon, S., and Abdulrauf, T., 'A Virtual Reality Prototype for Learning Maize Planting', *Communication on Applied Electronics*, vol. 2, no.1, 2015, pp.10-14.
- ii. In **Book**: Balogun, N., *The Influence of Personality Traits on Internet Usage Activities: In Organization*, Germany, LAP Lambert Academic Publishing, 2015.
- iii. In **Webpage**: University of Ilorin, 'Events', *165th Inaugural Lecture*, 2017, <http://www.unilorin.edu.ng/index.php/events/5574-165th-inaugural-lecture>, (accessed 28 February 2017).
- iv. In **Conference Proceedings**: Bello, O., and Sikiru, I., 'Electronic Journals Usage Profile in Africa: New Dimensions of an Old Problem', *Conference Proceedings on Electronic Publishing and Dissemination Putting Africa Journals Online: Opportunities, Implications and Limits*. Senegal, 2008, pp. 1-9.

## Difference between reference list and bibliography

1 min



I want you to be beware not to mix reference list up with bibliography. A reference list is a list of all sources used and cited as in-text citations by an author in document or article. On the other hand, a bibliography is a full list of

I want you to be beware not to mix reference list up with bibliography. A reference list is a list of all sources used and cited as in-text citations by an author in document or article. On the other hand, a bibliography is a full list of



## Summary

In this unit we have been able to justify the concept of reference list and bibliography in terms of:

- Different types of reference styles such as ACS, AIP, APA, IEEE, Harvard, Vancouver, MLA with their peculiarities
- The general reference elements to all the reference styles
- Disparities between the reference list and bibliography



### Self-Assessment Questions

- 1 Make a clear-cut similarities and comparison between any five selected reference style of your choice.
- 2 There are some mix-up in reference list and bibliography at some quarters, show their differences in a tabular form.



## Tutor Marked Assessment

Pick up an article, a book, a webpage, and a conference proceedings, then reference each using **IEEE** and **APA reference styles**.



## Reference

- Haroon-Sulyman, S. O. & Balogun, N. A. (2019). Referencing. In Balogun, N.A. Tiamiyu, M. & Ahlan, A. R. (Eds.), Information literacy for digital age (pp. 136-151). Ilorin, Kwara: Unilorin Press.



## Further Reading

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- Melbourne University (2010). Australian Guide to Legal Citation. Retrieved from [https://law.unimelb.edu.au/\\_data/assets/pdf\\_file/0007/1586203/FinalOnlinePDF-2012Reprint.pdf](https://law.unimelb.edu.au/_data/assets/pdf_file/0007/1586203/FinalOnlinePDF-2012Reprint.pdf)
- The University of Western Australia (2017). Harvard Citation Style: Internet/Websites. Retrieved from <http://guides.library.uwa.edu.au/c.php?g=380288&p=2575703>
- University of Pittsburgh (2017). Course and Subject Guides. Retrieved from <http://pitt.libguides.com/citationhelp/ieee>
- University of New England (n.d.). APA: The Reference List. Retrieved from [https://www.une.edu.au/\\_data/assets/pdf\\_file/0020/10874/REF\\_APAT-Reference-list.pdfw](https://www.une.edu.au/_data/assets/pdf_file/0020/10874/REF_APAT-Reference-list.pdfw)

## Module 8

# Presentation and Time Management

### Units

- Unit 1 - Concept of Time
- Unit 2 - Time Management Strategies
- Unit 3 - Presentation Skills



Picture: Alarm Clock-Time Management

Photo: salesforce.com



## UNIT 1

### CONCEPT OF TIME

#### Introduction

*"When you invest your time, you make a goal and a decision of something that you want to accomplish. Whether it's make good grades in school, be a good athlete, be a good person, go down and do some community service and help somebody who's in need, whatever it is you choose to do, you're investing your time in that." - Nick Saban, an American football coach.*

In today's world we are constantly bombarded by information, emails, text messages, the need to like a message, send a friend request, not to mention constantly ringing mobile phones demanding to be picked up immediately, all as a result of a digitally connected world. Alongside these are face to face interactions that humans as social beings delight in. Typically, there is usually the important need to balance interpersonal interactions alongside formal activities of schooling, working, running a business, taking care of one's health, home, children, parents, friends. The list is endless!

The objective of this chapter is to expose you to personal time management skills and time management tools, such as rule and activity logs, action priority, urgent matrix and

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#### At the end of this unit, you should be able to:

- 1 explain concept of time in our dailies
- 2 identify the factors mitigating against effective time management



Learning Outcomes

## Main Content

### What is Time?

1 min



SAQ 1

I took this from 'The Longman Dictionary (YEAR10)' which most of you are familiar with and it defines Time as "*the thing that is measured in minutes, hours, days, years, etc., using clocks*"; and that this can be "*an occasion when something happens or when someone does something*" or "*a period of time during which something happens or someone does something*" or "*an amount of time that is available for you to do something*".

Below are several adages allude to time which some of you are familiar to already:

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- "Time is money" - Anonymous
- "Time waits for no man" - Anonymous
- "Better three hours too soon than a minute too late." - William Shakespeare
- "If you love life, don't waste time, for time is what life is made up of." – Bruce Lee
- "My favourite things in life don't cost any money. It's really clear that the most precious resource we all have is time." - Steve Jobs

There is general agreement that we all have only 24 hours in a day. So, for instance, everyone has available to them, 24 hours in a day, from which to allocate time for sleep, for personal chores, for "work", for leisure, etc. So how is it that some people achieve much more in the same time than others? The key is *Time Management*.

### Time management

2 mins



SAQ 2

Please know that time management is the process of organizing and planning how to divide your time between specific activities. Good time management enables you to work smarter – not harder – so that you get more done in less time, even when time is tight and pressures are high. Failing to manage one's time damages your effectiveness and causes stress. Among the activities or non-activities that tend to prevent effective use of your time are time wasters, individual personal attributes, and procrastination.

#### Typical Time Wasters

I should let you know that Collins English Dictionary defines time wasters thus: If you say that someone or something is a time waster, you mean that they cause you to spend a lot of time doing something that is unnecessary or does not produce any benefit. Different ways in which time-wasting occurs in today's digital age are:

Surfing the internet for fun

Checking Facebook

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- Surfing the internet for fun
- Checking Facebook
- Instant messaging friends
- Frequently checking email
- Setting the mobile phone to ring (instead of placing it on "silent") all the time
- Downloading and watching movies online
- Chatting online
- 
- 

### Personal attributes of the individual in the use of Time

A person's ability to make the best use of their time depends to a large extent

- on their personality and inclinations. For example (Cole, 1996, pp.216-217):

Some people work best early in the day, whilst others work best later in the day

Some people like to pace out their work effort, whilst others prefer to concentrate their efforts into short, intensive periods

Some people can only deal with one issue at a time, whereas others can juggle with several simultaneously

Some people are task-oriented whereas some are people-oriented

Some people like to delegate as much as possible, where others prefer to keep tasks to themselves

Some people are tidy and methodical, others are untidy and disorganized

Some people are naturally assertive and will be better equipped to deal with people who interrupt on their time than someone who is naturally rather inoffensive



### Summary

- At the end of this unit, we are able to learn how to be acquainted to the concept of time in terms of its importance, effects, and allotment. In the same vein, several strategies that catalyze the effective measures of time management are discussed in the unit. Additionally, the mitigating factors to the time managements are also clearly figured out.



### Self-Assessment Questions



- 1 In your own assessment, how do you think 24 hours a day is sufficient for all our day-to-day activities.
- 2 Some set of factors have been highlighted as a mitigating force to effective time management, state and briefly analyze them.



### Tutor Marked Assessment

Compare effective and ineffective time management with suitable examples.



## Reference

- Cole, G.A. (1996). "Time Management and Personal Effectiveness". In: Management: Theory and Practice (5th edition). London: Continuum, pp. 215-224.
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- Mejabi, O. V. (2019). Time Management. In Balogun, N.A. Tiamiyu, M. & Ahlan, A. R. (Eds.), Information literacy for digital age (pp. 172-177). Ilorin, Kwara: Unilorin Press.



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- Tips for Effective Time Management. <http://quickbooks.intuit.com/r/employees/7-tips-for-effective-time-management/>



## UNIT 2

# TIME MANAGEMENT STRATEGIES



## Introduction

Having studied “time management” in the previous unit alongside with its enormous benefits, the time would not be maximally managed if the effective strategies are not put in place. Due to this need, I have highlighted a number of strategies which we will discuss about in this unit to facilitate and enhance the time management.



## Learning Outcomes

**At the end of this unit, you should be able to:**

- ① Be much aware of the time management strategies
- ② Execute **Urgent -Important matrix** as a prioritization tool



## Main Content

### Time Management Strategies

 | 1 min


**M**anaging time effectively has been studied extensively and businesses such as Life Coaching have emanated from this. The following seven steps to take in order to manage time more efficiently especially at the beginning of embarking on time management:

I. Know your goals

II. Assess your time – keep track of everything you do for an entire week, from the time you wake up to the time you fall asleep. That means recording every single detail. If you find you are losing a lot of time to activities other than studying, try to balance your schedule. Start eliminating the time bandits by making small adjustments in your habits and behavior in order to get better control of your precious time.

III. Set your Priorities and Prioritize wisely

IV. Plan ahead – make a schedule, use a calendar, plan activities logically, include down time in order to take care of personal needs such as sleep and exercise in order to rest and refresh the mind and body.

V. Eliminate distractions

VI. Concentrate on results

VII. Learn to say "No"

VIII. Delegate more often when it is possible

### Goal Setting

 | 1 min


Please know that the first place to start in effectively managing one's time is to know your goals. It is widely repeated especially in motivational books that in 1979, interviewers asked new graduates from the Harvard MBA Program about their goals and found that

- 13% had goals but they were not committed to paper
- **3% had clear, written goals and plans to accomplish them**

In 1989, the interviewers again interviewed the graduates of that class and found that:

- The 13% of the class who had goals were earning, on average, **twice as much as the 84% who had no goals at all**.
- And more importantly, the 3% who had clear, written goals were earning, on average, **ten times as much as the other 97% put together**.

### Managing Time by Concentrating on Results

 | 1 min


Let me inform you that most time management coaches emphasize a golden principle: Concentrate on results, not on being busy. This principle has been well captured in the 80:20 Rule or the Pareto Principle.

The 80:20 rule says that typically 80% of results are achieved with only 20% of the effort. The converse is that 80% of unfocussed effort generates only 20% of results. While the ratio is not always 80:20, this broad pattern of a minority of causes, inputs, or effort leading to a majority of the results, outputs, or rewards recurs so frequently that it is the norm in many situations.

By applying time management tips and skills you can optimize your effort to ensure that you concentrate as much of your time and energy as possible on the high pay-off tasks ensuring that you can achieve the greatest benefit possible with the limited amount of time available to you.

### Prioritization

 | 1 min


I want you to know that Covey (1994 in his best-selling book, The 7 Habits of Highly Effective People, advises his readers to Put first things first – that is,

I want you to know that Covey (1994 in his best-selling book, *The 7 Habits of Highly Effective People*, advises his readers to Put first things first – that is, identify your real priorities in the light of the end you wish to achieve (your goal), thus enabling you to say no to what is not important.

Let us take you as a student for an example, prioritization may mean having a good idea of the study requirements even though each subject places different demands on you such as reading, writing, research, experiments, assignments, essays, projects, papers, presentations, tests, and exams. By prioritizing, you will increase your chances of success. For each subject, decide how to complete all required tasks, over a weekly, monthly, and yearly basis. This advance planning will increase your awareness, making it less likely for you to squander time away meaninglessly.



- Make a list of all your tasks and then fit each task into the appropriate part of the matrix.
- Start with the Green box, this should be easy to sort out – usually put them in the bin! These are Not urgent, Not important.
- Now look at the Blue box. Could any of these tasks fall into the green box? Is it really your work? Consider each task to check whether you have it in the right

category. These are Urgent, not important (mark activity as 3, for 3rd in priority)

- The tasks in the Amber box should be scheduled into your diary and the documents placed in a 'bring-forward' file. These are Important but not urgent (mark activity as 2, for 2nd in priority)
- Now to tackle the Red box items – Urgent and Important. Mark each activity here as 1, for number 1, meaning highest in priority). Of those tasks you should check deadlines, see if there needs to be any input from anyone else, make sure you have all the information to hand and put them in order of priority.

In this way you can see your progress, check on your timescales, ensure that all the things you needed to get done today are achieved and, having completed all tasks, can sleep with a sense of satisfaction.

## To-Do Lists



SAQ 2

After establishing your priorities, set up a schedule that reflects your priorities. A wide variety of organizers, diaries, planners, electronic tools and time management systems are available online and on mobile devices for this. Follow the following steps to prepare a To Do list manually.

- I. Write down all of the tasks that you need to complete. If they're large tasks, break out the first action step, and write this down with the larger task.
- II. Run through these tasks allocating priorities from 1 (important, urgent) to 4 (unimportant, and not urgent).
- III. If too many tasks have a high priority, run through the list again and demote the less important ones. Once you have done this, rewrite the list in priority order.
- IV. To use your list, simply work your way through it in order, dealing with the priority 1 tasks first, then the 2s, then the 3s, and so on. As you complete tasks, tick them off or strike them through. What you put on your list and how you use it will depend on your situation.

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- V. Many people find it helpful to spend, at least 10 minutes at the end of the day, organizing tasks on their list for the next day.

Note that some authors use A, B, C, and so on, in place of 1, 2, 3, to represent priority ordering.

## Activity Logs

 | 2 mins



Know that activity logs are an important tool for time management and especially for assessing your time. Many people don't realize that the few minutes they waste can turn into huge amount of time over the long term. For example, if you spend a total of ten minutes surfing the net each day at a time when you should be working, it will turn into a large amount of time. Over the course of a month, you would have spent 200 minutes surfing the net if you worked five days each week, and in a year, that would grow to about 2400 minutes! It allows you to get a detailed understanding of how you spend your time. Once you have attained the knowledge which allows you to know how much time you are spending doing things, you will next want to use that knowledge to help you improve. Doing this will put you on the path to better

time management.

An activity log requires that you take note of the following for each activity: Start time, End time, Duration, Activity description, Activity category, Priority, (and possibly "Could delegate?"). Recording this in a tabular form is best.

Start and end times and duration are pretty straightforward. For each activity you engage in, record the time you started the activity (it's best if you record times as you engage in activities rather than relying upon fallible memory), the time you finished or diverted attention from the activity, and the duration spent on the activity. Next, record a brief description of the activity, and assign the activity to a category. Were you playing games on Facebook? If so, you may record this as "entertainment." If instead you were spending time on a work project, you would categorize it as "productive work." Also, you will want to assign each activity a priority – how important was it that you were doing this activity? You can use the standard 1, 2, 3 priority system, or the urgent-important quadrants from the time management matrix as your guide. Finally, could someone else have done this task? If so, note this in your log under "Could delegate? (Bright Hub)

## Summary

- Time management is very important if you want to achieve your goals at the expected time. By assessing how you are using your time, you can make changes in order to apply the time available more profitably. Tools are available to help in achieving effective time management and some of them such as goal setting, activity logs, prioritization and the use of to-do lists, have been discussed.

## Self-Assessment Questions

- 1 What do you understand by "time management strategies"?
- 2 State and clearly discuss the strategies needed for time management. Illustrate with diagram where applicable.





## Tutor Marked Assessment

Give three ways of managing interruptions.



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## UNIT 3

# PRESENTATION SKILLS



## Introduction

In this unit we will talk about the ability to present facts and ideas in both oral presentation of written material using appropriate information technologies and skill in today's information and digital age. Among the numerous instances where such skills are needed are: presenting an assignment report in class in one of your courses; defending your final year project work before a panel of examiners, presenting yourself and resume during a job interview, defending a business idea and plan before a bank loan officer, and so on. This unit aims to develop and improve your knowledge and skills in presenting your written up ideas in the above and other settings



### At the end of this unit, you should be able to:

- 1 discuss the concept presentation
- 2 analyze the elements of presentation
- 3 explain the main group of activities for effective presentation



## Main Content

### What is presentation?

| 4 mins



I want to tell you know that presentation is the practice of explaining the content of a topic to an audience, who may be experts on a topic or news learners of a topic. A presentation is a means of communication which can be adapted to various speaking situations, such as talking to a group, addressing a meeting, or briefing a team. A presentation usually involves orally explaining facts and ideas on a topic to an audience, often complemented with the presentation or display of previously prepared information written on paper or displayed with computer to support or illustrate the explanations.

A presentation typically involves properly or optimally interrelating at least the following seven elements or components, each must be adequately considered and planned for in order to ensure a successful presentation:

Objectives

Facts and ideas

Audience

Presenter

Venue

Technology

Media

**I. Objectives:** This is the aim of a presentation, consisting of one or more envisaged impact or consequences of the presentation. Every presenter wants her presentation to have a great impact on the audience, thereby creating value of the audience and/or the presenter. Examples of presentation objectives are: you and your course-mates learning a presented topic very well; your lecturer getting high ability-to-teach ratings among students; you as a student receiving very high mark for your defense of the final year project; most farmers making use of the findings of a research after listening to a

presentation by the researcher; a bank approving a loan for an entrepreneur to expand his business.

**II. Facts and ideas to be presented:** You should know that facts are pieces of information that are true or proven true. Ideas are propositions that may or may not have been proved to be true. Facts concerning the topic of a presentation can be obtained from authentic reference sources such as dictionaries, encyclopedias, manuals, maps, government gazettes, published government or company statistics or documents, published research results in quality journals and books, etc. The rule here is that you must be sure about the truthfulness of a piece of information before it can be considered to be a fact instead of opinion. Ideas are opinions, propositions or conclusions by yourself or other people that have not been verified to be true or not by research or other means.

The more widely you read on a topic, the more you come across various ideas some of which you might want to include in your presentation. Note that information about the sources and authors of the sources of facts, as well as of ideas by others that you consider important must be recorded when reading and cited in the documents prepared for the presentation. A few of them should also be referred to while speaking in the presentation. Getting appropriate facts and ideas for a presentation takes substantial time. For instance a teacher spends weeks studying and learning about a new topic before writing out the lesson notes and assignment and test questions, and compiling the appropriate reading material for her students. The teacher also spends some hours rehearsing a particular lesson note before stepping in the classroom to deliver it. A researcher spends months investigating a topic before delivering a short 30-minute presentation on the research. An entrepreneur often spends months or years collecting information before putting together a plan for a new business to be defended in support of a bank loan application.

**III. Audience:** This is the group of people to which the presentation is to be made. The audience may be you (student), panel of assessors of students' projects, a job interview panel, a bank loan application assessment officer, or a large number of people in an auditorium. It is very important to know the expected size and characteristics of the audience so that all the remaining five elements of the presentation can be prepared for to suit the audience. The

I want to tell you know that presentation is the practice of explaining the content of a topic to an audience, who may be experts on a topic or news learners of a topic. A presentation is a means of communication which can be adapted to various speaking situations, such as talking to a group, addressing a meeting, or briefing a team. A presentation usually involves orally explaining facts and ideas on a topic to an audience, often complemented with the presentation or display of previously prepared information written on paper or displayed with computer to support or illustrate the explanations.

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## Key Presentation Activities



A presentation involves the following four main groups of activities, performed in sequence: planning and preparation, rehearsal, anticipating and answering questions, the actual presentation, evaluating the presentation.

### Planning And Preparing The Preparation

I want you to let you know that adequate preparation or planning is the fundamental secret of a successful presentation. This is because a person who does not plan or prepare for any activity is prepared to fail. Preparation means you must always plan, prepare for, or get ready and effectively combine the seven elements of a presentation explained in the preceding section: Also important to keep in mind is that preparation takes time and must be done systematically much within the time between knowing you need to deliver a presentation and the time you actually do it. Prepare everyday of that time by doing little of it every day. The following words of advice elaborate further some of the points presented under each of the seven elements explained above.

#### Target your Audience:

Consider your audience carefully. You must know and plan your presentation strategies to suit the characteristics of the people you will be speaking to (e.g. colleagues, students, the public etc.) You must be able to reach them through your presentation. Else you might as well be presenting to the deaf and blind!

- Keep it simple - don't let the message be overwhelmed with technical jargons, which only suit specialized and expert audiences.
- Respect your audience – do not antagonize or fool around with them.
-

- Do not bore your audience with too much detail.
- If you sense that the audience is showing boredom, reduce the details, shift to the next sub-topic
- Use interesting stories, humor and variation in how you speak to keep the audience engaged.

*Know your Facts/Ideas:*

- Know your subject or topic very well so that you know what you are talking about.
- Keep effective control over the information you plan to or actually deliver to the audience.
- Answer all questions you are asked carefully, and say so if you cannot. Do not claim or pretend to know everything.

*When speaking:*

- Work on yourself to be an effective speaker. Some people are born with excellent speaking ability, but most can learn to do so with training and continuous practice. Ask any newscaster, radio talk show host, or preacher.
- Choose and use the right words: what you say and how you say is very important, so state your point or position, explain your ideas, use examples.
- Use short sentences, short words, active tenses.
- Follow the acronym CLAP in the voice you use in speaking, i.e. let your voice be Clear, Loud, Assertive, and Pause regularly for listeners to digest what you have said.
- Use effective body language: make confident eye contact with random members of the audience as you speak; move around if possible; use hand gestures; don't back the audience while speaking.

*Use of Memory and Reminder aids:*

- Use prompts, scripts and notes to remind you of points you need to cover

during the presentation and when.

- Learn and use a script for formal presentation to large groups : small note cards or PowerPoint note page can be used;
- Underline key words that will best remind you what you want to say.

*Presentation equipment, media and materials:*

- If you plan to use equipment such as computer displays, software or sound equipment, make sure the equipment is in good working condition, and check the equipment out before the presentation begins to ensure that they do not disappoint you.
- You often would need to provide, display or project overhead some prepared material to complement your speech. Don't use written materials containing too much text.
- Enrich and liven up your material with images, graphs, tables and careful use of color.
- You can make use of graphs instead of text or tables in representing facts and ideas.

*PowerPoint slides:*

- PowerPoint slides, if you use them, should be organized and presented in the sequence of topic of the presentation, table of content, followed by slides that provide the title, labels or very short summaries of the facts and ideas being presented, then further slides for the conclusion, recommendations, etc.
- Each slide should have title for its content, and then the content itself bullets in the form of topic or subject labels with bullets.
- There should not be too many slides.

### **Rehearsing**

- This is another key strategy to successful presentation. You should note and implement the following strategies:
- Write down what you would say during the actual presentation, ensuring that you use short sentences, short words, active tenses and avoid long sentences and big words.
- The rehearsal should mimic as much as possible how you want to actually deliver the presentation.
- Ensure you use CLAP when rehearsing (i.e. let your voice be Clear, Loud, Assertive, and Pause regularly, as you would in the actual presentation).
- Use your slides as an aid as you intend to do during the actual presentation. Don't read through every word on the slide.
- Practice in front of a mirror, time yourself and get it right.
- Give the talk to a friend, accept criticism and be ready to change.
- Rehearsal should be repeated as many times possible to get it right and give you adequate confidence.
- Don't memorize your rehearsal with the intent of remembering and off-loading it verbatim. If you do, forgetting some part of the memorized rehearsal would confuse you.
- You can use your cell phone cameras to record your rehearsals. This will help you spot and overcome any annoying mannerism you may have.

### **Anticipating and Answering Questions**

I should you be informed that this is another secret of successful presentation. The more widely you had read on your topic the more likely you will know about the various issues, perspectives and controversies on the topic and various related issues.

- Plan for possible questions that the audience might throw at you

- Think through reasonable answers to the possible questions beforehand
- Don't be intimidated, you know your subject, don't you?
- Break long questions into smaller units
- Stand over your data, and explain as much as you can
- Tell the truth if you don't know the answer to a question.

### **At the Actual Presentation**

- Think positively about the presentation and don't panic.
- As a person doing the presentation, be neat and tidy, dress well, smile.
- Eat a light meal on the day.
- Be on time,
- Check the hall and make sure everything is in order as you want it to give you confidence during presentation.
- Make sure the technology you need are working as expected.

### **Evaluating the Presentation**

- Always make an effort to evaluate your presentation in order to build upon your strengths and eliminate your weaknesses.
- If the presentation is open to the public ask one of your friends or colleague them to record the presentation for you for later self-review.
- You can also ask a few of your friends or colleagues to assess you and send you an anonymous report on your presentation performance (for example, by word processing and sending the report to you anonymously)
- You can ask someone in the audience you never knew to assess you and post the report to you, in a self-addressed envelope you provide.

- Note that lack of questions after a presentation may suggest that no one was interested in or understood your presentation. This depends on the extent to which you were able to effectively gain and keep the interest of the audience during the presentation. So, you may deliberately leave out one or two very necessary details in your presentation to prompt some members of the audience to ask for further clarifications. However this should be done sparingly and with care, as it may seriously affect the perceived quality and success of the presentation.



## Summary

- In this unit we are able to discuss the concept of presentation in its entirety as it is an activity which you the students as well as those in academia, and industrial personnel do discharge. Summarily, this unit elaborates several elements or components that make up the presentation. It also discusses the 4 main groups of activities to be carried out for effective presentation.



### Self-Assessment Questions



- 1 Discuss the concept presentation
- 2 Analyze the elements of presentation
- 3 Explain the main group of activities for effective presentation



### Tutor Marked Assessment

Make a practical discharge of presentation depicting all the major ingredients of presentation discussed in this unit.



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### Further Reading

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