MODULE INTRODUCTION

MODULE TITLE	Computer Systems	DOMAIN	ICT

INTRODUCTORY TEXT (300 words or less; please indicate media placement with [Insert UNM A-1 Here]

Technology can be defined as the means by which humans modify the world to address their needs and wants. That means that a pencil, a bridge, a car, and of course a computer is a result of technology.

You use technology all the time without even realizing it. You will explore how technological innovations have changed and continue to change our world. People interact with technology every day, but do they have a working knowledge of these technologies? Is it enough to know when and how to use a device, or should you also know how the device works and the effects of the use of that device on society and the environment?

Because of the seamless nature of user-friendly technology, people have become accustomed to using devices without knowing what makes them operate, the implications of their use, or how they came to be.

In this module you will learn:

- The history of computers
- Understanding computers
- Computer components
- Peripherals, servers, and green IT
- Computer operating systems
- Computer ethics and the law
- Careers in related fields

TEACHERS NOTES	(Not visible to students)

Pre-Requisite Knowledge

Hints for Teachers

MEDIA INFORMATION: Module Introduction				
Media Asset #: UNM A-1				
Media Thumbnail:				
Text source:	Hacker, *Engineering and Technology*			
ISBN:	978-1-4180-7389-1		Figure #:	Page #:
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SECTION INTRODUCTION					
MODULE TITLE	Computer Systems	SECTION TITLE	Technology and the History of Computers	SECTION #	2

INTRODUCTORY TEXT (300 words or less; please indicate media placement with [Insert UNM A-2 Here]

Technology and the History of Computers

In this section, you will discover the technical innovations that have led to our computers today. You will learn key events, dates, and people that have shaped our technological development. The key concepts of this section are:

- The rate at which technology has developed.
- That technological progress promotes the advancement of all disciplines.
- That technological innovation often results when ideas, knowledge, or skills are shared within a technology, among technologies, or across other fields.
- That early in the history of technology, the development of many tools and machines was based not on scientific knowledge but economical gain

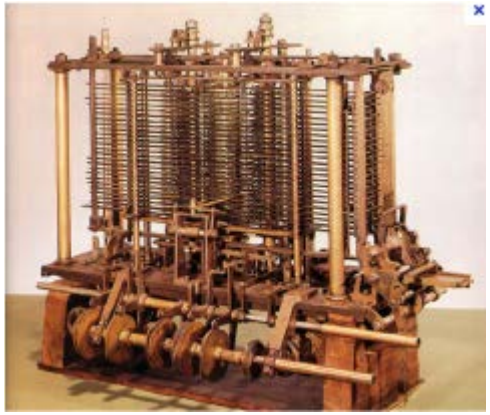
[Insert image UNMA-2]

STANDARDS	
LEARNING OBJECTIVES	
KEY VOCABULARY AND DEFINITIONS	

MEDIA INFORMATION: Section Introduction

Media Asset #: UNM A-2

Media Thumbnail:



Text source:	Hacker, *Engineering and Technology*		
ISBN:	978-1-4180-7389-1	Figure #:	Page #:
Website URL: http://plyojump.com/classes/pre_1945.php			

Permissions Status:	Have:	Need: X	PD/Fair Use:	Notes:
Caption:	Charles Babbage invented the Difference Machine, a mechanical computer			
**Courtesy:	Used with permission from the Plyojump Corp			

SECTION DETAIL – TOPICS							
Section #	1	TOPIC TITLE:	Defining Terms	TOPIC NUMBER:	1	SCREEN #:	1
TOPIC TEXT (300 words or less; please indicate media placement with [Insert Exhibit A-1.1 Here]							

Defining Terms

Before you can understand the role technology has played in human history, you need to make sure you understand these terms.

Science is the systematic study of the natural world. We can think of science as having two main parts:

- A body of knowledge about the natural world
- A process of inquiry that generates such knowledge

Engineering is the practical application of the information acquired by science. Like science, engineering consists of two main parts:

- A body of knowledge about the design and construction of products
- A set of processes and techniques that are the methods for accomplishing the desired aim of creating the products

Generally speaking, science is about understanding the natural world, about discovering and explaining *what is*. Engineering is about humans creating *what has never been*. Think of present-day science and engineering as being tightly coupled. They each use the same tools, but their objectives differ. Science involves the analysis of newly observed or unexplained events or objects. The results of the analyses are then used to model, mathematically or graphically, the particular event or object. In contrast, engineers focus on designing solutions for specific problems. Engineers apply analyses and mathematical or graphical modeling as they design or modify socially useful products.

Technology is the means by which humans modify the world to address their needs and wants. We can think of technology as a combination of engineering and science. Throughout history, technology has been a powerful force in reshaping our social, cultural, political, and economic landscapes. So how does the term “technology” fit into this? Our focus is on technology as it relates to computers and the Internet.

ASSESSMENT QUESTION(S) – SPECIFY METHOD	
TEACHER NOTES/ INSTRUCTIONS	

MEDIA INFORMATION: Section Detail Topics					
Media Asset #: Exhibit A-1-1					
Media Thumbnail:					
Text source:	Hacker, *Engineering and Technology*				
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SECTION DETAIL – TOPICS							
Section #	1	TOPIC TITLE:	Defining Terms	TOPIC NUMBER:	1	SCREEN #:	2
TOPIC TEXT (300 words or less; please indicate media placement with [Insert Exhibit A-1-2 Here]							

Defining Terms

The first use of the word "**computer**" was recorded in 1613 referring to *a person or device employed to make calculations*. The word continued with the same meaning until the middle of the 20th century when dictionaries changed the definition to *a programmable, usually electronic, device that can store, retrieve, and process data*. Many devices today can be classified as a computer or at least have computing functions:

- Cell phone
- Calculator
- iPod
- Digital camera

All these devices have similar computing function when you think about it. They store data and programs; they can retrieve information like a song, photo, or keyboard input; and the process the information in some way before giving it back to the user as music, a photograph, a letter, etc.

You can probably think of other technological developments, like the Internet, that allows humans to share what they have learned about the world.

ASSESSMENT QUESTION(S) – SPECIFY METHOD	
TEACHER NOTES/ INSTRUCTIONS	

MEDIA INFORMATION: Section Detail Topic					
Media Asset #: Exhibit A-1-2					
Media Thumbnail:					
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Courtesy:	9				

SECTION DETAIL – TOPICS							
Section #	1	TOPIC TITLE:	History (Pre 1899)	TOPIC NUMBER:	2	SCREEN #:	1
TOPIC TEXT (300 words or less; please indicate media placement with [Insert Exhibit A.1-3 Here]							

- The first calculating machine was the **Abacus**. We don't know the exactly date, but it was somewhere between 2700-2300 BC. Though first used by Sumerians, ancient China, Babylon, and Europe developed their own versions.
- 1622 saw the invention of the **slide rule**, a mechanical precursor of the pocket calculator. It was invented in England by **William Oughtred**. Commonly used until the 1970s when it was made obsolete for most purposes by electronic calculators.
- 1822 saw the invention of the **Difference Engine**by Charles Babbage. It could calculate numbers to the 20th place to produce tables to help ships navigate.
- In 1834, Charles Babbage developed the **Analytical Engine**. It carried out instructions based on information provided to it on punched cards. This device served as a model for the modern computer. **Charles Babbage** is known as the father of the modern computer.
- **Samuel Morse**, after seeing a prototype in Europe, patented the original**telegraph** transmitter and receiver in 1844. He also created a system of communication for the device known as **Morse code**. This invention was the foundation which led to the information age as we know it today.
- In 1885, **Heinrich Rudolf Hertz** was the first to satisfactorily demonstrate the existence of electromagnetic radiation by building an apparatus to produce and detect UHF radio waves. The term **hertz** is used in technology to define the number of cycles per second in a given period. This is how you measure the speed of a computer.
- Having completed the 1880 census in 9 years and 10 months, the Bureau of the Census established a competition for a technological solution. A young engineer, named **Herman Hollerith**, won the competition by proposing a manual cardpunch with mechanical counting dials. The 1890 census counted 62 million people in only 2 years. In 1924, after a successful business career, he sold his company, and the company's name was changed to International Business Machine -- IBM

ASSESSMENT QUESTION(S) – SPECIFY METHOD	Who is known as the father of the modern computer and inventor of the Analytical Engine? ● Nikola Tesla ● Steve Wazniak ● Charles Babbage X

	• Galileo • Bill Gates
TEACHER NOTES/ INSTRUCTIONS	

MEDIA INFORMATION: Section Detail Topic

Media Asset #: Exhibit A-1-3

Media Thumbnail:

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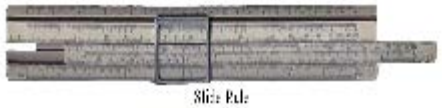
MEDIA INFORMATION: Section Detail Topic

Media Asset #: Exhibit A-1-3

Media Thumbnail:



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MEDIA INFORMATION: Section Detail Topic

Media Asset #: Exhibit A-1-3				
Media Thumbnail:  Babbage Difference Engine				
Text source:	Hacker, *Engineering and Technology*			
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Website URL:				
Permissions Status:	Have:	Need:	PD/Fair Use:	Notes:
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Courtesy:	9			
Media Asset #: Exhibit A-1-3				
Media Thumbnail:  Hollerith Census Machine				
Text source:	Hacker, *Engineering and Technology*			
ISBN:	978-1-4180-7389-1		Figure #:	Page #:
Website URL:				

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