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Digital Technologies

1. Digital technologies

Definition: Digital Technology is the use of digital resources such as computers devices and the Internet to effectively find, analyse, create, communicate, and use information in a digital context.

Digital technologies are electronic tools, systems, devices and resources that generate, store or process digital data (using the binary system). This includes social media, online games, applications, multimedia, productivity applications, cloud computing, interoperable systems and mobile devices.



2. Early years of PCs and the Internet

Year	Inventions
1975	The first PC was introduced – The MITS 880 and IMSAI 8080 using the 8080 CPU
	Zilog created the Z-80 processor
	MOS Technology produced the 6502 microprocessor
	BASIC compiler by Bill Gates and Paul Allen (Microsoft founders)
1976	Introduction of Apple I using the 6502 processor with a Keyboard, power supply and enclosed to an assembled motherboard
	Electric Pencil introduced - the first word processing program
	5.25' floppy drive introduced by Shugart
1977	Apple II introduced the first colour PC with expansion slots and floppy drive support
	Digital Research released the first 8-bit OS that led to MS-DOS
1978	Dan Bricklin and Bob Frankston produced VisiCalc, the first electronic spreadsheet. This turned the personal computer into a useful business tool
1979	The first Database software; Vulcan the predecessor of dBase II and its successors
	Hayes introduced a 300 bps modem as well as using a PC to establish telecommunication

Key inventions in the years of early PC use:

- The use of micro-processors to run smaller computers
- The use of smaller computer hardware
- The use of simple OS and windows (graphical user interface)
- The use of word processors, spreadsheets and database applications
- The use of modems for communication
- The use of peripherals – mouse, keyboard, printers, speakers, etc



Key inventions in the years of early internet use:

- The use of email
- The use of the World Wide Web
- The use of online services such as entertainment and online digital media
- The use of e-business

The personal computer (PC) was introduced in 1975, a development that made the computer more accessible to individuals. Up until that time, computers were very large and expensive devices, operated mainly by large companies.

Major changes with the use of PCs;

- Use in government, law enforcement, banking, business, education, and commerce.
- Becoming an essential tool in the fields of scientific, political, medical, legal and social research.
- The fact that people are now affected by the manipulation and storage of data.
- The negative consequences of these developments.
- Increased engagement in fraudulent acts, malicious mischief, and deception.
- Increasing need for computer security and a new category of technical crime fighters as a consequence of increasing malicious acts.

Today, the definition of a PC has changed because of varied uses, introduction of new systems, as well as new connections to larger networks. The term PC is now synonymous with the term desktop computer, regardless of whether it is for personal or business use. Most home computers are used by individuals for accounting, playing games, word processing, or accessing the Internet. They have become an appliance that provides entertainment as well as information. They are affordable, and anyone can learn to use them. An increasing number of people telecommute, doing business at home on their own PCs, or one provided by the company, and only need to travel to a place of employment for a few days every week.

PCs are also widely used by small enterprises like restaurants, cleaning shops, motels, and repair shops. Though possibly different in form, many business computers share a majority of the same fundamental components that home computers possess. With the exception of business-specific peripherals, like barcode scanners or credit card readers, the internal components of the PC, such as the memory or CPU, are most likely exactly the same. Some businesses employ servers to manipulate large amounts of data or to provide a network service like a website. Even these computers are similar to other PCs, albeit with higher quality components to either run faster or reduce chances of failure.

Both the importance and impact of the PC in and around the beginning of the twenty-first century rests firstly on the development of the computer and secondly on the creation of a new system of communication -the Internet –whose ubiquity would most likely not have been achieved without the PC. Together, computers and the Internet, on which the World Wide Web and e-mail are built upon, have made an immense impact on society, and every day radical changes are made in the way people all over the world communicate, shop, do business, and play.

The Internet is a global network of computers consisting of the computers themselves, network connections, and routing infrastructure such as switches. It began during the Cold War in a communications network linking researchers at the United States Department of Defense (DOD) with military contractors. In 1969, it was vital in maintaining contact come the event of a nuclear attack. When tensions eased, the network continued as a convenient way to communicate with research groups and companies all over the world. This network was developed at the Advanced Research Projects Agency and was initially termed ARPANET.

The World Wide Web enhanced the Internet. It is a collection of sites and information that can be accessed through those site collections. British physicist Sir Tim Berners-Lee (1955-) worked at the European Organization for Nuclear Research (CERN) in Switzerland and wrote software in 1989 to enable communication and collaboration with physicists around the world. This marked the beginning of the Hypertext Markup Language (HTML), which defines how information is transferred over the World Wide Web, becoming an essential part of the Internet in 1991. The Web has multimedia capabilities, provides pictures, sound, movement, and text. It is made up of a series of unique electronic addresses or websites. In 2013, a team of researchers at CERN announced plans to restore the original hardware and software used to create the world's first web page to commemorate the twentieth anniversary of CERN's decision to make the World Wide Web open and free to the world.

PCs have changed the way we do business. Computers have created new businesses and changed others. They have altered the focus in boardrooms from the people who procure money to those who create or make decisions about new product. It has also made millionaires and billionaires out of those who entered the business early. Undoubtedly, the effects of the social, economic, and cultural-revolution spawned by the development of the PC will continue to be felt throughout the twenty-first century.

Science and Its Times, 2001

Updated: May 08, 2013



Activity 1.1

1. Outline the main importance of the early inventions of PCs to the development of digital technologies.
2. Outline the importance of the early inventions of PCs to the development of the Internet.