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ICT Tools for building Digital Learning Environment

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Abstract

The paper presents brief information about recent advances in information technology, components of IT that facilitated the building of digital learning environment. Various ICT-based enabling technologies that can be used for information storage, handling and dissemination have been discussed.

1. Introduction

Information technology has been evolving rapidly during the last half of the 20th century, particularly since the 1960's and 1970's.The current era has acquired the name "information era" It has revolutioned the media and modes of computing, storing and communicating information.

Man's infinite capacity for invention and desire for discovery, exploration and research has lead to rapid growth of technologies and there by information technology, Information explosion has created problems for proper processing and dissemination of information, which can only be solved, with the aid of this information technology.

ICT facilitates innovation, free of information creative expression, and effective management. IT in education has tremendously increased because of it provides enhanced satisfaction, cost effectiveness, faster and simpler programmes, rapid responses and easier operational procedures.

2. Information Technology

The term "Information Technology" in English is derived from the French word '*Informatique*' and "*Informatika*" in Russian encompasses the notation of information handling. IT is a new science of collecting, storing, processing and transmitting information.

The word "Information Technology" is a combination of two words. One is information and other is technology. Information means knowledge, it can be a bit or a para or a page. IT is science of information handling, particularly using computers to support the communication of knowledge in technical, economic and social fields.

According to ALA Glossary, Information Technology is the application of computers & other technologies to the acquisition, organisation, storage, retrieval & dissemination.

According to UNESCO, IT is scientific, technological and engineering disciplines and management techniques used in information handling and

processing their applications, computers and their interaction with man and machines or associated social, economic and cultural matters.

3. Components of Information Technology

Technological change is becoming a driving force in our society. Information technology is a generic term used for a group of technologies. James William (1982) has identified the following six major new technologies as most relevant in modern library and information system.

- Processor, memory and input/out put channels,
- Micro. Mini and Large scale computers,
- Mass storage technologies,
- Data communication, networking and distributed processing,
- Data entry, display respond, and
- Software

These technologies can also be grouped into three major areas:

- Computer Technology,
- Communication Technology and
- Reprographic, Micrographic and Printing Technologies

3.1 Computer Technology

The wide spread use of computer technology has made dramatic developments in the information transmission process in very field of human life. Highly sophisticated information services ranging from elaborate abstracting and indexing services to computerized data bases in almost all scientific disciplines are in wide use all over the world.

The current developments in computer technology include mini computers, microcomputers, personnel computers, potable computers, super computers, speaking computer with IQS. Seeing robots, microchip technology, artificial intelligence, software developments, C-ROM technology, machine-readable database, etc.

3.2 Communication Technology

3.2.1 Audio Technology
Due to tremendous improvements and inventions, older gramophone records are now dwindling and much sophisticated cassettes and tape records are emerging. The outmoded AM (Amplitude Modulated) radio receivers are being received by the modern FM (Frequency Modulation) receivers. Thus, the new audio technology can be used in libraries and information centers for a wide variety of, recreation, etc.

3.2.2 Audio-Visual Technology
Motion pictures, Television, Videodisc are the main contributions of this technology
 Videodisc is a new medium containing prerecorded information, which allows the user to reproduce this information in the form of images on the screen of a television receiver at, will. Videodisc technology offers high quality storage, image stability and speed of recall.

3.2.3 Facsimile Transmission (Fax)
Facsimile transmission has been boosted by the adoption of methods of data compression made possible by compact, reliable and inexpensive electronics. During the initial stags, the average sped of facsimile transmission was found to be 3.4 minutes per page. This technology was slow it was replaced by micro facsimile- Satellite communication and fiber optics have increased the potential of facsimile transmission.

3.2.4 Electronic Mail
E-mail is the electronic transmission and receiving of messages, information, data files, letters or documents by means of point-to-point systems or computer-based messages system.

3.3 Reprographic, Micrographic and Printing Technologies

The technology of reprography made a big impact on the document delivery system. Most of the research libraries have reprographic machines and provide photocopy of any document on demand. Using reprographic and micrographic techniques, we can condense the bulky archives and

newspapers and solve the storage problems. They also serve the purpose of preservation they help in resource sharing and save the time of users.

3.3.1 Micro Forms

Microforms is a term for all type of micro-documents whether they are transparent or opaque or in roll or sheet form. The verities of microforms are microfilm, microfiche, ultra fiche, microopaques, cards, computer about microfiche / micro film (COM)

3.3.2 Roll-film (microfilm)

It is a continuous strip of film with images arranged in sequence. It is available in 100 feet roll with 35mm width.

3.3.3 Microfiche

It is flat film having large number of images arranged in rows and columns. Standard sized microfiche of 4x6 inches accommodated 98 pages.

3.3.4 Printing Technology

Thousands of years ago, people recognized the necessity of keeping records of their daily activities. Paper was invented and the art of writing and record keeping came to be defined. At present lasers and computers have entered the field of printing. Computer printers are three categories; line printers, dot matrix printer, and laser printers. Laser printers are popular today.

4. Impact of ICT on DLE

In the above discussion the sections highlight the various developments in Information Technology in terms of computer hardware evolution and communication technologies. Application of such technology to create online learning modules forms the basis of Digital Learning Environment (DLE). Hence the chief components of DLEs are computer based resources, organising tools, specialised e-leaning tools, retrieval mechanisms and interfaces to these modules.

The core collections in the DLE comprise of learning objects which may be (1) lessons, (2) training modules, (3) audio and (4) video presentations among others.

Interactive modules are built using various multimedia components for presentation of the information as well as for interaction. Learning objects may consist of text, audio, video, or integrated presentation containing more than one of these components.

5. Conclusion

New information technology will enable information services to carry out consolidation and synthesis of scientific information on a very large scale. Inspite of tremendous advantages and advancement of information, it can be concluded that digital learning will help learners to get a new learning experience. No doubt, ICT will supplement the traditional educational system but it wouldn't replace it.

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