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Study of LIS and Information Technology

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ABSTRACT

Library and Information Science (LIS) education completed a decade of the 21st century. In this era most of the changes in the society are due to the emergence and advancement in Information Technology (IT). The rapid developments in the field of IT taking place in the last three decades could be easily related to the widespread computer and internet technologies, alluring classroom tools for locating and applying knowledge in a variety of contexts. Thus, it is quite evident to notice the changes that has come along with the development of IT, its influence on certain discipline like LIS is such that certain subjects that were once considered as the integral part of LIS has already lost or losing its importance like traditional cataloguing, card systems.

1. Introduction

Library and Information Science (LIS) education completed a decade of the 21st century. In this era most of the changes in the society are due to the emergence and advancement in Information Technology (IT).

The rapid developments in the field of IT taking place in the last three decades could be easily related to the widespread computer and internet technologies, alluring classroom tools for locating and applying knowledge in a variety of contexts. Thus, it is quite evident to notice the changes that has come along with the development of IT, its influence on certain discipline like LIS is such that certain subjects that were once considered as the integral part of LIS has already lost or losing its importance like traditional cataloguing, card systems. For this reason, many Library Science schools made IT curricula a priority in order to transform student learning methodology and to increase global perspective with latest development in the LIS. Impact of IT is so huge that it is not the matter of choice anymore for the LIS professionals to opt IT in LIS but today it's mandatory for the survival owing the increasing pressures in the changing times.

2. Basics Of Information Technology

I.T. stands for "Information Technology," and is a combination of two words "Information" and "Technology" and forms the meaning as the technology that is used to treat information, such as acquisition, processing, storage and dissemination of vocal, pictorial, textual and numerical information. It refers to anything related to computing technology, such as networking, hardware, software, the Internet, or the people that work with these technologies. The concept of IT has been described in the library literature in different ways.

Wilson defined IT as, "It is the means by which science is used in the collection, storage, processing and movement of information". Another term that is generally used in LIS to represent the concept of IT is Information and Communications Technology (ICT). Womboh and Abba stated that ICT and IT are similar terms that are used interchangeably. Islam and Islam considered ICT as "the use and application of computers, telecommunications and microelectronics in the acquisition, storage, retrieval, transfer and dissemination of information".

According to Adesanya, IT permits dissemination of information of greater value effectively and efficiently to the world at large through large number of media (wide variety of sources) e.g. computer databases, Internet services, online information retrieval, compact disks, etc.

3. Definition of IT

The Information Technology Association of America (ITAA) defines IT as: "The study, design, development, implementation, support or management of computer-based information systems, particularly software applications and computer hardware. Encompassing the computer and information systems industries, IT is the capability to electronically input, process, store, output, transmit, and receive data and information, including text, graphics, sound, and video, as well as the ability to control machines of all kinds electronically. IT is comprised of computers, networks, satellite communications, robotics, videotext, cable television, electronic mail ("e-mail"), electronic games, and automated office equipment. The information industry consists of all computer, communications, and electronics-related organizations, including hardware, software, and services. IT results in rapid processing and information mobility, as well as improved reliability and integrity of processed information.

4. History of IT

The term "Information Technology" evolved in the 1970s. Its basic concept, however, can be traced to the World War II alliance of the military and industry in the development of electronics, computers, and information theory. After the 1940s, the military remained the major source of research and development funding for the expansion of automation to replace manpower with machine power.

Since the 1950s, four generations of computers have evolved. Each generation reflected a change to hardware of decreased size but increased capabilities to control computer operations. The first generation used vacuum tubes, the second used transistors, the third used integrated circuits, and the

fourth used integrated circuits on a single computer chip. Advances in artificial intelligence that will minimize the need for complex programming characterize the fifth generation of computers.

The first commercial computer was the UNIVAC I, developed by John Eckert and John W. Mauchly in 1951. It was used by the Census Bureau to predict the outcome of the 1952 presidential election. For the next twenty-five years, mainframe computers were used in large corporations to do calculations and manipulate large amounts of information stored in databases. Supercomputers were used in science and engineering, for designing aircraft and nuclear reactors, and for predicting worldwide weather patterns. Minicomputers came on to the scene in the early 1980s in small businesses, manufacturing plants, and factories.

In 1975, the Massachusetts Institute of Technology developed microcomputers. In 1976, Tandy Corporation's first Radio Shack microcomputer followed; the Apple microcomputer was introduced in 1977. The market for microcomputers increased dramatically when IBM introduced the first personal computer in the fall of 1981. Because of dramatic improvements in computer components and manufacturing, personal computers today do more than the largest computers of the mid-1960s at about a thousandth of the cost.

Computers today are divided into four categories by size, cost, and processing ability. They are supercomputer, mainframe, minicomputer, and microcomputer, more commonly known as a personal computer. Personal computer categories include desktop, network, laptop, and handheld.

Technological innovations have given rise to new ideas relating to collection, processing and dissemination of information. These innovations and ideas including Artificial Intelligence, Robotics, Speech Synthesis, Electronic mail, CD-ROM, CD, Networking, Barcode systems, Electronic publishing, Hypermedia, Multimedia, Tele facsimile, Radio data paging, Networks etc. share a common technology revolving around electronics, computers, Telecommunication, Printing and Reprography, popularly known as Information Technology. Alvin has predicted that computers will enhance our ‘mind power’ just as the industrial revolution has enhanced our ‘muscle power’.

5. Current Role Of Information Technology

Every day, people use computers in new ways. Computers are increasingly affordable; they continue to be more powerful as information-processing tools as well as easier to use.

5.1 IT In Business

One of the first and largest applications of computers is keeping and managing business and financial records. Most large companies keep the employment records of all their workers in large databases that are managed by computer programs. Similar programs and databases are used in such business functions as billing customers; tracking payments received and payments to be made; and tracking supplies needed and items produced, stored, shipped, and sold. In fact, practically all the information companies need to do business involves the use of computers and information technology.

5.2 IT In Medicine

Information technology plays an important role in medicine. For example, a scanner takes a series of pictures of the body by means of computerized axial tomography (CAT) or magnetic resonance imaging (MRI). A computer then combines the pictures to produce detailed three-dimensional images of the body's organs. In addition, the MRI produces images that show changes in body chemistry and blood flow. Further, due to an enormous increase of knowledge in the area of IT, computer and biological sciences there is an emergence of a new and integrated scientific field termed as Bioinformatics. It deals with algorithms, databases and information systems, web technologies, artificial intelligence and soft computing, information and computation theory, software engineering, data mining, image processing, modeling and simulation, signal processing, discrete mathematics, control and system theory, circuit theory, and statistics. Bioinformatics generates new knowledge as well as the computational tools to create that knowledge.

5.3 IT In Science And Engineering

Using supercomputers, meteorologists predict future weather by using a combination of observations of weather conditions from many sources, a mathematical representation of the behavior of the atmosphere, and geographic data.

5.4 Integrated Information Systems

With today's sophisticated hardware, software, and communications technologies, it is often difficult to classify a system as belonging uniquely to one specific application program. Organizations increasingly are consolidating their information needs into a single, integrated information system. One example is SAP, a German software package that runs on mainframe computers and provides an enterprise-wide solution for information technologies. It is a powerful database that enables companies to organize all their data into a single database, then choose only the program modules or tables they want. The freestanding modules are customized to fit each customer's needs.

5.5 IT In Libraries

The rapid technological development has affected every facet of library operations and services. Computers have, in different ways, influenced acquisition of documents, management of serials, circulation system, preparation of bibliographical control tools, and services such as Reference, Circulation, Inter library loan, data and automating of whole lot of library operations. Automation activities in special, research, university and academic libraries have been increased. Most LIS professionals are using e-mails, CD-ROMs, LAN, and Machine Readable Catalogue for resource sharing.

The on-line searching of remote databases has become possible because of convergence of computers and communication technologies. CD-ROM technology has enabled libraries and information centers for storing and retrieving large quantity of data. Further ahead, optical disc storage technology combined with high resolution laser printing device provide capacity for storing large quantities of textual and graphic data with facility for instant access to image and voice display and reproduction. This capacity has had far reaching implications for resource sharing and service as a cheaper alternative for databases otherwise available through on-line networks. The situation is changing rapidly with the application of IT in the libraries. Networking of computers at the local, national and

international level has made this possible. Collection development poses to be another challenge for the information professionals. The main job of the LIS professionals is to provide relevant information to users as fast as possible. Speedy retrieval of information is very important for information professionals. Presently, LIS professionals are generally using computer-based information retrieval, use of computer networks for accessing databases and organizing library services on networks.

6. Library and Information Science (LIS) As A Profession

LIS as a profession is concerned with the knowledge and skill by which the records of human communication are collected, organized and utilized. “A librarian is a mediator between man and the graphic records that his and previous generations have produced and the goal of the librarian is to maximize the social utility of these records for the benefit of humanity”.

7. Historic Background Of LIS Education In India

The first training course in Library Science in India was established at the Central Library, Baroda in 1911/12 by W. A. Borden and at Punjab University in 1915 by A. D. Dickinson. Gradually other universities and library associations started setting up library schools. Madras Library Association and Bengal Library Association started certificate courses in 1929 and 1935 respectively. Postgraduate courses also started in other universities subsequently, such as Andhra University (1935), Banaras Hindu University (1941) and University of Delhi (1947). The University of Delhi started providing facilities for research leading to doctorate degrees. It was the first institution to start the M.Phil courses in 1977. In addition to formal teaching courses, many universities have introduced correspondence courses at various levels of education. This provides facilities to library personnel working at the lower level to improve their qualifications and update their limited knowledge and skills and also to those who could not get admission to formal courses earlier. In India, Library Science has almost been recognized as an established discipline now at par with other social sciences courses in the university education system.

8. Present Scenario Of LIS Education

LIS education is currently facing a turning point. Various factors have contributed to bring about the change from the conventional to an automated library operation. Today only computerized libraries can participate in networking at the national and international levels. Most of the computerized libraries suffer from paucity of competent personnel at top and middle level managerial positions. Presently in India, LIS education is imparted through more than 118 universities and institutions. A total of 105 universities provide Bachelor of Library and Information Science (BLIS) courses, 78 universities provide the Master of Library and Information Science (MLIS) courses, 21 are offering two-year integrated courses, 16 universities provide M.Phil in Library and Information Science, 46 universities provide Ph.D in Library and Information Science and 2 Universities provide D.Litt Degree. Besides this, the National Institute of Science Communication and Information Resources (NISCAIR) which was earlier known as the Indian National Scientific Documentation Centre (INSDOC), New Delhi, and Documentation Research and Training Centre (DRTC), Bangalore, provide Associateship courses in Information Science, which are equivalent to the MLIS degree.

Presently the following LIS courses are available in India –

- Certificate course in Library and Information Science (C.Lib.Sc)
- Diploma in Library and Information Science
- B.Lib.Sc. /BLIS (Bachelor Degree in Library and Information Science)
- M.Lib.Sc. /MLIS (Master Degree in Library and Information Science)
- PGDLAN (Post Graduate Diploma in Library Automation and Networking)
- M.Phil (Master of Philosophy) in Library and Information Science
- Ph.D (Doctor of Philosophy) in Library and Information Science
- D.Litt in Library and Information Science

9. Development Of Curriculum

With the growth of IT, LIS Schools have understood the need of periodic examination and analysis leading to necessary changes and improvements in curriculum for the interpolation of new and fast developing areas of information technology and computer science. The objective for training of LIS professionals is to promote library, to educate, to articulate and provide for the need of the clientele to increase productivity and economy. In order to provide some suggestions to restructure the syllabus of LIS education an attempt has to be made to collect the syllabus of different library schools, scan and analyze them and change according to the degree of requirement in its present shape.

To design a model curriculum for a dynamic inter-disciplinary subject like Library and Information Science on the national/ world level is not only difficult but almost impossible as LIS worldwide is not running by any single organization. There is no accreditation agency in India like the American Library Association (ALA) Committee on Accreditation in USA and Canada to ensure reasonable standards and quality of educational programme. Moreover, change in any curriculum will raise awkward questions regarding inclusion or exclusion of particular topics and the emphasis to be given to individual topics.

According to Kavulya, recent trends in IT have witnessed developments in internet and multimedia technology which is the key to the vastly increasing speed and quantity of information transfer across the global networks. This led to proliferation of electronic resources such as e-journals, e-databases, e-archives and digital libraries. The adoption of a wide range of IT calls for training that enables graduates to develop information systems which will help people to meet their information needs efficiently.

The contemporary information arena in which IT serves as a driving force has meant that the LIS field has to take advantage of the emerging technologies i.e. the Internet, Intranet and other new technologies for training of future information professionals to assume their expected roles. Minishi-Majanja has noted that the rapid development of ITs has meant that LIS curriculum and structures have to be reorganized, infusing greater ICT knowledge and skills into courses and providing more hands-on practice. Also Lim opined that the emergence of the concept of

the virtual library provides the opportunity for library schools to restructure their curricula and to make them more relevant to the needs of the profession in the 21st century. In other words the curriculum should be built around the virtual library model. Thus, it is now a common practice to find LIS Schools struggling to infuse IT related courses in their curriculum which is expected to give them new lease of life in the training of their students in the 21st century.

Due to developments in IT, information professionals whose fundamental mission is to collect, organize, store, retrieve and disseminate information have faced new challenges, because of the change in the nature of information. Consequently, they need additional skills to be able to fulfill their mission. Malekabadizadeh observes that the essential role of librarians and information scientists in providing access to information for development means that LIS departments must provide dynamic educational system which necessitates basic changes in the curriculum. In addition, the curricula should include skills related to designing, consulting, and improving information systems. Mohammed concluded that due to the need for new competencies expected in the information digital age, LIS schools should continually review their curriculum to fit the contemporary age expectations.

10. Indian Scenario On LIS Curriculum

Until the year 2000, most of the library schools in India have adopted the curriculum recommendation of the Report of University Grants Commission (UGC), Review Committee 1965 under the Chairmanship of Dr S R Ranganathan. In 2001, a Committee was appointed by the UGC, Government of India under the Chairmanship of Prof. C R Karisiddappa. This committee included experts, practitioners, teachers and scientists who made an outstanding effort in designing the National Curriculum for LIS Education. The committee, while keeping a practical and feasible approach, framed a modular curriculum keeping in view the contemporary developments in the job market in India suiting the different levels of LIS education. The special features of UGC model curriculum has clearly stated the learning objectives for each module, unitized syllabi, special instructions to emphasize the theoretical and practical aspects, and it also indicates the implied concepts of information literacy in LIS curriculum. The Committee also suggested a 60:40 approach for practical and theoretical sessions respectively. The practical sessions include hands-on experience, assignments, seminar presentation and demonstrations by LIS students during the course of study.

With the growth of IT, LIS Schools have understood the need of periodic examination and analysis leading to necessary changes and improvements in curriculum for the interpolation of new and fast developing areas of information technology and computer science. The objective for training of LIS professionals is to promote library, to educate, to articulate and provide for the need of the clientele to increase productivity and economy. Curriculum is the core of the reform. Most of the library schools and departments have revised or in the process of re-designing their curricula. In their curricula, courses relating to traditional library science with names such as "History of books" and "Libraries" disappeared. Instead, many computer-related courses were added. Examples of some of the topics included are:

a) An Introduction to Computers;
b) Programming Design;
c) Database Management;
d) Computerized Information Networks;
e) Design and Analysis of Computer Application Systems; and
f) Computerized Information Retrieval.

11. Skills For LIS Professionals

In the Indian context, the scope of the subjects taught varies from university to university and the students who come out of these universities with degrees mostly fail to perform in a technical or a research library. The electronic environment of the 21st century demands a range of skills from LIS professionals, which include technical skills, IT skills and managerial skills.

Library users are turning towards the LIS Professionals for help and advice on search techniques, database development, quality of online databases, and choice of databases that are available. As a result, LIS professionals need organized training programs, which can be in the form of workshops, conferences, seminars, symposia, and so forth.

12. Conclusion:

Libraries world over are going through a transition stage where Information Technology has fundamentally affected the operations of Library & information services and that has direct impact on the LIS education, which arises the need to complete overhauling of the LIS schools curriculum. The Library professionals need to be confident enough to handle and serve the information needs to the prospective users with the use of the latest tools and techniques of Information Technologies.

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