

The Role of Information Communication Technology (ICT) in Library and Information Science (LIS) Careers in India

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Abstract

Library professionals need distinct information tools (Information Communication Technology) for daily routines tasks as well as for research and academic activities. The latest devices for information communication technology have resulted in the rapid circulation of knowledge and have transformed the information handling activities in research and academic libraries in India. Research and academic libraries, mostly associated with universities and research institutions as centers of library services, have enormously improved with the expeditious changes in information communication technology. The emergence of modern library advances in ICT has opened up new ways of accumulating, regulating and disseminating scientific and technical information. Research and academic libraries have already changed their routine tasks by using effective and efficient information communication technologies to intensify and integrate their electronic resources and services. Finally, librarians in research and academic libraries need to update their knowledge and expertise in information and communication technology (ICT) in order to successfully undertake their roles of being responsible for validating the library

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and information centers' goal as a knowledge support network for society. All Indian universities need ICT-based LIS curriculum and to adapt to modern web technology.

Key Words: *ICT, ICT Literacy, LIS Education, Digital Library, Subject Gateways. LIS Employment, E-resources, Online Databases, Library networking.*

In this 21st century the development of library information science education in India is drastically improved and so many universities having this programme both in regular and distance modes. The decision of selecting a career has become vital for both individuals and society. Career in librarianship may also be viewed as a process of improvement of value of life. In the 1930s Dr. S. R. Ranganathan developed a theory of five laws of library science that are in conformity with the Indian tradition of fundamentals profit of library life. The basic goal of LIS education hence is provide better knowledge and capacity building needed for an LIS career in the current digital world.

Libraries must continuously improve themselves with up-to-date computer technologies for knowledge transmission and networks. To sustain efficient services, library professionals need to have knowledge and skills in ICT techniques and handling procedures. Thus, changes in the LIS curriculum are needed to keep in step with the latest technology and modern computer networking experiences.

The LIS profession is a challenging and demanding profession in this current web environment. Professionals have modern digital technologies and their applicability to knowledge handling activities that have helped in distributing qualitative services to end users. To assist the information professionals should provide themselves with modern techniques which help in meeting user's needs in their knowledge centers. The prominent trend in ICT technologies and their application towards knowledge handling activities adds new technology to knowledge. In the information society the knowledge centers have the role of coordinator and accumulator and in order to be successful at this knowledge professionals have to adopt multiple knowledge roles in order to survive in an e-environment of sustained and rapid change. The information revolution and networked domains have made the information centers without walls and now virtual information centers exist where data and knowledge can now be

communicated to all areas of the globe. Now knowledge is considered like any other product which can be bought and sold in the market place. As a result, the practice of providing services for free is being reviewed, and sometimes replaced by professional practices as knowledge centers are looking ahead to the possibilities of income generation.

Library science courses have a lot of opportunities to provide the information and capacity building required to compete in the present day information society. Globalization and broad based networks have opened up different career options to the LIS professionals. The old functions of LIS have changed with the improvements in ICT. Librarians are expected to be higher system thinkers with proficiency to work in digital and computer communication environments. The LIS career should expand these pursuits, after providing the important training necessary to secure positions upon graduation, and to advance the perspective and understanding to help graduates to be better managers in a global information community.

LIS Education in India –An Overview

This year is the centennial anniversary of the establishment of a university level LIS programme in India. Library education was first formally began in 1911 at Baroda in the form of a training programme and establishing a public library system. At the university level, the Punjab University started a course in LIS in 1915. The scholars like K. M. Assadullah, Dr. S. R. Ranganathan, and Prof P. N. Kuala contributed greatly to developing the sources of LIS subjects in pre-independent India. In post-independent India, library science is being offered by more than 100 universities and other organizations at various levels such as certificate, diploma, bachelor, masters, PG diploma, and research. To update the LIS syllabus, UGC (University Grants Commission) designated the CDC (Curriculum Development Committee) in 2001 to redesign the courses in LIS, which quickened the LIS schools to include different facets of ICT in their syllabi. So far, most of the departments in LIS in India have widely adopted the models given by the CDC. Currently in India, library and information science (LIS) education is disseminated through traditional classes and through the distance mode by important institutes like NISCAIR (National Institute of Science Communication and Information Resources), DRTC (Documentation Research and Training Center),

ISI (Indian Statistical Institute) and all universities. PG Diploma Courses with ICT specialization are offered by Alagappa University, Annamalai University, IGNOU, Punjab University, Sambalpur University and University of Hyderabad, etc.

Courses Available in LIS in India

1. Certificate Course
 - ◆ ICT Application in Libraries
 - ◆ IT enabled Services
 - ◆ Librarianship
 - ◆ Library & Information Science
2. Diploma Course
 - ◆ PGDLAN (Post Graduate Diploma in Library Automation & Networking)
 - ◆ Diploma in Library Automation
 - ◆ Diploma in Lib. Sc. /Inf. Sc.
3. B. Lib. Sc. or B. LIS.
4. M. Lib. Sc. or M. LIS or MSc (Inf. Sc) or MS (Inf. Management)
5. M. Phil.
6. PhD (Doctorate in Philosophy)

LIS Education Distinction

In the past, many bodies like the UGC, ILA (Indian Library Association), and IATLIS(Indian Association of Teachers in Library Information Science) took different initiatives for developing the quality of LIS education in India. Development has now passed through stages and LIS education has become a fast improving discipline with a multi-subject approach. Today LIS education not only includes the information specific discipline but has extended to subjects like digital technology, information science and management studies. With the changing situation, modern information professionals have become a profession with a multiplicity of opportunities and challenges for LIS students and librarians.LIS education is being provided at the university level in various eminent universities in India. LIS subjects desire to build competent human resources controlled the libraries and

information centers on scientific lines. These capable human resources are being taught all the techniques needed for proficient information resources in an effective manner. From some of the literature reviews, ICT skills requirements, ICT used in libraries and ICT in LIS education (syllabus), to provide the knowledge falling under the ICT skills requirements category by exploring whether ICT has an impact on job requirements in the Indian LIS market.

ICT components in LIS Jobs

ICT (Information Communication Technology) has changed the way information centers manage. Today ICT plays a very drastic role in the library disciplines. All manual performed library operations are converted into computerized operations which means applied ICT techniques in libraries, and providing better and faster services in the end users. As an outcome, librarians have been forced to incorporate new ICT skills. Indian LIS schools should strengthen formal and informal ICT knowledge and training in order to meet the insistence of the current LIS job market. In this digital scenario, ICT has changed the possibilities of the library job promotions and has changed expected library performances. The computer and networking atmosphere has compelled LIS professionals to have appropriate basic ICT knowledge and training skills. These skills can help the librarians to merge advanced ICT skills and competence in areas such as web development in libraries, integrated library systems, and the World Wide Web (Ameen, 2010). This tendency has led to significant changes in the LIS field.

ICT Techniques used by libraries in India

As per Dr. S. R. Ranganathan, librarians have to push the right information and make it accessible to the right person at the right time, which is the motto for any modern library. The World Wide Web has emerged as effective sources for various types of library users. The Internet has become more favored for selective dissemination of information for its various functions like, web portal, social networking sites. ICT are the software and operating equipment that authorize society to fabricate, accumulate, communicate and amalgamate information in multimedia formats and for different purposes.

Impact of ICT in Information Centers

ICT made knowledge construction in electronic format possible; ICT made electronic approaches and file transfer possible, thus

ICT increases the level of digital learning. First the libraries will be networked, stocked with the core collection, and also provide access to worldwide knowledge and be virtual. Nowadays library automation is a core source. Effective ICT techniques used by libraries are found in circulation, a main task for library services, which saves a lot of time for users as well as for library staffs, and with the help of Web OPAC users can search information from anywhere. Users can easily reserve library resources through apps like IOS, Android, and others. Some automation software provides images of the resources through multimedia applications. RFID (Radio Frequency Identification) can help to protect the resources from theft. Automation also enables users to use self-circulation systems. Various online ICT tools can be used for library operations like OCLC Worldcat, Classification Web, Web Dewey, the catalog calculator, and others. These new trends in the application of ICT and computers to library operations and the allocation of information services bring pressure to libraries. However it is evidence that ICT as a device for library operations and services.

Access to the Web based resources

E-Journals: Libraries have been expected to easily cope with the dual issues of ever increasing prices of the journals and space requirements for back issues. Nevertheless, libraries are required to maintain back issues of the journals, usually in bound form. E-Journals provide the librarians a remedy to these issues without remarkably changing the service levels. E-Journals can be approached via the Internet from any web enabled personal computers.

E-Books: The E-Book has been elucidated as a text corresponding to a book that is in electronic form to be unveiled on a computer screen. E-books can be read just like a paper book, using dedicated E-Book readers like Kindle, Kobo Touch, or others, or GemStar or other reader software on a computer screen after downloading it.

Electronic Theses and Dissertations (ETD): Theses produced at universities are effective sources of knowledge for further research. A large number of universities have transformed their dissertations collection into electronic libraries and have made them available on the Internet for global access.

Digital Library Archives

Libraries have been repositories of local information and owned

publications like manuscripts, rare books, maps, photographs and paintings. Archives are also part of library system, particularly in research and development organizations. In other instances like university libraries, college libraries, and academic libraries, their publications such as thesis, research reports constitute the cognitive strength of the organization.

Subject Gateways

Libraries' subject guides or have pathfinders are analytical assignments for librarians. Such guides are normally developed in consultation with the subject experts, who select the resources after careful assessment. One of the most useful ways to discover reliable resources in a particular subject discipline is to use subject-based Internet gateways and archives.

Use of ICT tools by libraries

Now every library is undergoing a transformation from paper to digital. It is essential for librarians in India to take part in this changing scenario. ICT has provided libraries with new technologies to advance their resources and services. The following ICT tools have been used for libraries, computers, printers, pen drive, DVD & CD ROMs, digital camera, web OPAC, modem, scanner, animation technology, e-mail, e-group, fax, internet, intranet, mobile phones and video conferencing. These are helping expand information literacy in the use of ICT among library professionals.

Impact of ICT on Librarians

Presently ICT has impact on different levels of librarians. Improvement in ICT and the extensive use of ICT result in electronic information sources and digital media collections and archives becoming the supreme form of knowledge storage and retrieval. ICT also sustains and makes new roles for librarians. ICT, with its significant knowledge sources and easy approach, ensures the benefits that users will demand. It also increases and elucidates the librarian's demand for library development. It is effective source for information centers.

Emerging ICT Technologies for Library Services

Global-level information retrieval is fast and in recent years, increasingly more user friendly for library end users. The following ICT technologies have been used by many of the research and

development libraries in India:

- ◆ Approach by touch – Disseminate library services.
- ◆ Cellular Technology
- ◆ IOS Technology
- ◆ Smart card Technology
- ◆ Talking Computer Library – Robot
- ◆ Social Networking
- ◆ RFID and Smart card
- ◆ CDROM Searching
- ◆ Online Networking
- ◆ Photostat
- ◆ Online Information services
- ◆ News Clipping Scanning Services
- ◆ Online –Reservation Services
- ◆ Database Searching Services
- ◆ Audio Visual Services
- ◆ Internet Access
- ◆ E-Query Services
- ◆ E-Journals
- ◆ E-Books
- ◆ E-Lists
- ◆ Barcode technology
- ◆ Printing Technology
- ◆ Web Rings
- ◆ FAQs
- ◆ Digital Archives
- ◆ Bulletin Boards
- ◆ Web Exhibitions
- ◆ Virtual Help Desks

Use of ICT tools to provide and disseminate knowledge has been slowly adopted in a great number of libraries. This may be due to different issues such as inadequate ICT facility or funds and management reasons. Libraries should aggressively invest in ICT

technologies, applications and soft training skills in librarians. All the above ICT services are needed for the today libraries.

ICT in LIS Career

Nowadays to enter the library science job market a M.Lib Sc with IT background is necessary for the position of librarian not even the information professionals, the position of librarian, sometimes called information professionals, as they are required to have IT skills for e-library development, library networking, database development and maintenance, and multimedia RSS feed, podcasting, etc.) The following list provides the new designations for library science professionals:

- ◆ Systems Librarian
- ◆ Electronic Resource Librarian
- ◆ Library web application specialist
- ◆ Electronic resource manager
- ◆ Head of research repository
- ◆ Digital archives manager

The above positions are available only for ICT trained Library science professionals, because ICT is being increasingly used in libraries for the electronic provision of services, and processing the dissemination of knowledge. Libraries have been using ICT based services to benefit their users. Moves towards electronic handing of knowledge will be cost effective and end users will be in a role to get precise information with the help of strong search engines. The use of ICT opens new opportunities for effective services in the electronic environment as the libraries appropriate new technologies. The roles of ICT- equipped librarians in India have included managing the ICT environment and the delivery of e-resources in order to benefit their communities. If librarians have the ICT training and skills that are needed to implement so many modern techniques in their libraries, this will help to access, evaluate, and communicate knowledge and to make publications available electronically by the use of digital technologies. These ICT skills include:

- ◆ Provide Office applications
- ◆ Provide and managing library automation systems
- ◆ Conserve databases in the libraries

- ◆ Design library web pages
- ◆ Online searching to retrieve information

These are all the main skills required for the librarians to run a modern library. Hence they had the ICT techniques in their courses to evaluate the above functions in the library, as the following themes are already in the syllabus ICT Skills, ICT Training and ICT development with market needs.

ICT Skills and Syllabus

Nowadays most of the LIS courses taught by Indian universities have an ICT curriculum along with a LIS discipline. The LIS teaching faculties were questioned about the methods about what is taught and they adopted to learn and teach ICT techniques in the respective courses. The following would be favorable methods:

- ◆ Through ICT courses, with the benefit of a faculty, were viewed as the perfect way to help the students with IT Skills.
- ◆ Arrange seminars, guest lecturers and others to give lectures of recent advances in ICT
- ◆ Try self –study for students with a recent level of ICT
- ◆ Give more assignments and activities to students so that they learn more about ICT

The ICT courses taught were appropriate for the LIS departments in the Indian universities as courses cover recent development methods and other ICT skills and training for the LIS students' entry into the job market, such as Web 2.0 and metadata. In addition to ICT skills, LIS students should also develop various other skills like communicating effectively, team work, and problem solving. It is beneficial to include ICT in the beginning of their courses and also appoint well ICT equipped LIS teachers to teach LIS students about the modern technologies used at library information centres.

The impact of ICT on each element of human knowledge is unquestioned and is also all extensive, which signals the desperate need to train library professionals towards a sustainable ICT proficiency. The LIS syllabus development in India has shown how ICT capability has increased as most LIS schools have prospered a with relevant ICT technologies and knowledge included in the LIS syllabus. However, most LIS courses teach ICT theoretically and also

in computer laboratories with Internet access.

ICT Literacy

The required skills to use the ICT in the library services include the daily activities of a functioning library. These include basic concepts of ICT, using computers and managing ICT based services in the library. Information retrieval through computers, managing e-databases, e- journals, e-books and other services. ICT literacy and learning how to apply ICT to span these services in a professional goal. Importance is placed is on skills and training of ICT in a scope of tools and applications, and increasing teachers in LIS. LIS teachers have to apply ICT in their courses of learning.

ICT reshaping through teaching

In the reshaping the perspective of the development of ICT, library science teachers consider ICT to be a part of everyday life of librarians and library operations. This perspective is linked with LIS schools that are using ICT and renew library operations. ICT is taught as a discipline is at a particular level and is combined to all related areas. The LIS schools should become a centre of intellectual growth and training skills for the community.

ICT Skills to be procured

While there are common ICT skills for all users, nevertheless there are certain ICT skills and development needed to be the focus points focus of the LIS teaching s as they pursue ways to develop their teaching. Such ICT skills are:

- ◆ To reasons for selecting particular ICT tools for syllabus
- ◆ Facility to access application of ICT in libraries
- ◆ Facility to assist students and users to discover, contrast and analyse information from different sources of ICT
- ◆ Assist students and users to combine and to incorporate current information using ICT techniques.
- ◆ Evaluate ICT tools to use for teaching and library functions for smooth participation.

ICT Themes in the Syllabus

Some of the specialized ICT themes that are included in the syllabus of Indian universities in the Indian universities follow:

- ◆ Information resource management

- ◆ Information retrieval
- ◆ Metadata forming
- ◆ E-Resource sharing
- ◆ Introduction to ICT
- ◆ Computer management of library automation
- ◆ Information system analysis and design
- ◆ Library software development and packages
- ◆ Management information systems in libraries
- ◆ Library networking
- ◆ Website development and Internet technology
- ◆ Digital library services
- ◆ Data processing and management

Job opportunities and Career Options

There are many opportunities for a career in librarianship and those interested in careers in this field may find employment possibilities in the following areas:

- ◆ Public/government libraries
- ◆ Universities and other academic institutions
- ◆ IT/ ITES sectors
- ◆ News agencies and organisations
- ◆ Research and Development libraries / NGOs
- ◆ Private organisations and special libraries
- ◆ Large industries
- ◆ Foreign embassies or consulates
- ◆ Photo/film libraries
- ◆ Information centres/documentation centers
- ◆ Companies and organisations with large information handling needs
- ◆ Museums and galleries

Subsistence produced by ICT based LIS Courses

With the emergence of corporate houses and multinational organizations in India, the demand for LIS professionals in the country has drastically increased. The increasing number of engineering

colleges, private colleges, and business colleges had increased the demand for ICT trained librarians. The salary ranges Rs.10000 in to Rs.45000 per month for such librarians, considered to be well paying for a rewarding occupation and well paying one. Those who hold ICT skills and have a good knowledge of e-databases and technologies and modern search methods, digitalization of documents and the training to enhance in a networked environment, will have good opportunities to work in scientific and other specialized research organizations.

Conclusion

Pertinent, recent technologies and accomplishments on ICT have been infused in most of the syllabus of LIS schools in India. Where needed, restructuring revisions to syllabi in LIS schools in India should permit to include ICT. The ICT infrastructure in Indian libraries is good, and most of the libraries (large government libraries and special libraries) have already implemented many recent ICT technologies in their libraries. Some of the private libraries have yet to incorporate modern techniques and some of the libraries still have much room for development. For instance, real differences can be made in the empowerment of the LIS practitioners and students. It is of crucial importance to improve librarians' physical approaches, application and deployment of ICTs in the library's functions. In addition to this, LIS schools in India should fulfil their syllabus by utilizing the broad scope provided by ICT and positions made possible by the digital space and by expansion in the 21st century technologies. We conclude that ICT offers a major role in the LIS job opportunities in India. While basic ICT skills and training have become generally necessary in the LIS profession, there is drastically increased demand for advanced ICT skills in the LIS job sector. We recommend that LIS Schools in India should contemplate introducing advanced ICT courses to their syllabus in order to meet the employers' expectations and needs. Furthermore, Indian LIS schools and the libraries should sharpen formal and informal ICT education, skills and training in order to meet the stipulated demands of the current LIS job opportunities.

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