4.1 Introduction

The emerging knowledge society established and proved the fact that the “Brain Power” is more powerful than economic or defense power of a nation and the major driving force behind this society is Information and Communication Technology (ICT). Application of ICT in Libraries and information centers assumed utmost importance in today’s age of information. The objective of ICT application in libraries is to acquaint and develop skills and competencies of the processes and methods of computerization, networking and digitization of the library management functions and provide effective and efficient service to the users. A fully automated library could be the base and be able to join the library networks and consortia and get the opportunity of access to the library and information resources including databases available in other libraries. With the advent of Internet and World Wide Web, the concept of Digital Library emerged as an effective tool to provide easy and unlimited access with variety and plenty of information resources at less cost. “Libraries as Gateways to Knowledge” and its effective and efficient services have tremendous impact on educational, economic and social sectors leading to national and global development.

In a changing library and information environment the professionals have been confronted with a number challenging areas such as Automation, Networking and Consortia, Digital Library, Content Development, Preservation and Management of Digital Resources, E-Learning, Open Source Movement, Information Literacy, Knowledge Management etc. All these changes have compelled the LIS professionals to develop their professional skills and competencies to compete in the national and global job market in the following two areas.

- Information Management Skills (Library Automation, Networking, Design and Development of Information System, Internet, Digitization, Content Development)
- Competencies of Information Professionals (Managing and Organizing Digital Information Resources and Services, Applying Information Tools and Technologies)
To cope up with these challenges as Professional Obligation, both LIS educators and practitioners should play an important role and develop ability or capacity in the creation, organization and dissemination of knowledge in a digital era.

### 4.2 Issues Confronted by LIS Educators

The schools of library and information studies in general and LIS educators in particular play an important role in design, development and delivery of library and information science programmes in providing appropriate education and training to create appropriate human resources befitting to the changing in formation scenario and global market. The library and information science educators are confronted with a number of issues that should be reflected while designing a need based curriculum and syllabus in the digital era as explained below.

- **Academic** issues involved in developing a need based curriculum and syllabus to form a strong theoretical base on the subject there by enriching professional knowledge, in the emerging information and knowledge society.

- **Management** issues focused on understanding modern management methods and techniques and skills associated with management of digital technologies and communication skills as well,

- **Technological** issues emphasized on developing a high level of technological competency particularly in an automated, networked, digital/virtual environment and

- **Legal** issues associated with an increasing awareness among all categories of Library and informational professionals to understand and practice Copyright laws, Intellectual Property Right in a digital environment.

### 4.3 Professional Trends in Digital Era

The library and information profession both national and international level have taken a sea change which has necessitated to restructure and revamp library and information
science education integrating both knowledge and skills (technology, management and communication). The changes are quite visible like:

4.3.1 Information Society to Knowledge Society

Transformation of society from agriculture based to information and knowledge based is an important dimension and leading towards “Knowledge society”. Information and knowledge considered as essential constituents and endeavors to empower and enrich its people. Knowledge is used as a powerful tool to drive societal transformation. A learning society is committed to innovation and has the capacity to generate, absorb, disseminate and protect knowledge to create economic wealth. “Libraries: gateways to knowledge” and Library and information professionals as knowledge managers are expected to play a vital role in collecting organizing and disseminating information to users at large.

The initiatives of UN at the World Summit on the “Information Society” (WSIS) held in Tunis (15 November, 2005), a programme titled “Connect the World by 2015” aimed to ensure the benefits of the digital revolution reach every country and every part of each country by the year 2015 which is also a bench mark year for achieving the UN Millennium Development Goals. During this occasion the International Telecommunication Union recognized India’s mission 2007: Every Village a Knowledge Center”, as the flagship of the “Connect the World Movement”.

4.3.2 Library Professionals to Information and Knowledge Professionals

Technological advancements and its application in libraries and information centers have changed the information management skills of the professionals. Professional competencies in the emerging areas like Library Automation, Database Creation and Retrieval Techniques, Multimedia Applications, Networking, Design and Development of Library Website and Digital Library, adoption of Formats and Standards (CCF, UNIMARC, UK-MARC, MARC-21, Dublin Core), Content management, Knowledge Management have compelled the library professionals to be reoriented as information and knowledge professionals thereby collecting, organizing and disseminating information to users effectively and efficiently. The informational professional harnesses technology as a critical tool to accomplish goals and not limited to librarian
alone but knowledge manager, information officer, web developer, information broker, content manager etc. The major professional competencies required for information professionals relate to the practitioner’s knowledge of information resources, access, technology and management, and ability to use this knowledge as a basis for providing the highest quality information services. The major competencies/skills required for information and knowledge professionals are a) Managing information organizations, b) Managing information resources, c) Managing information services and d) Applying information tools and technologies.

4.3.3 Traditional Library to Digital Library

Growth and development of libraries and application of information and communication technologies have renamed the traditional libraries through functioning, management and services as “Automated Library”, “Electronic Library”, and “Digital Library”. The growth and popularity of “Digital Library” has been primarily for three reasons. A) Access: The unlimited access to information resources by the users anywhere, any time and any format, B) Content: Variety and huge quantity of contents, C) Cost: Eliminating duplication of money, manpower and material.

The Digital Library initiatives undertaken by NISCAIR (Traditional Knowledge Digital Library), Parliament Library, Indian Institute of Technology- New Delhi, Indian National Science Academy (INSA), New Delhi are very much commendable in providing information resources and services to users at large and at times free of cost. This also confirms the Open Archives Initiatives by individual institution in providing free access to information resources.

4.3.4 Library Cooperation to Resource Sharing Library Networks/Consortia

Information explosion, paucity of financial resources, variety of information requirements of the users and problem of space necessitated libraries and information centers to go for resource sharing among the participating libraries. In 1980’s a number of Library and Information networks were established namely Information and Library Network (INFLIBNET), Ahmedabad 2. Developing Library Network (DELNET), New Delhi followed by many other local library networks such as Calcutta Library Network, Madras Library Network, Bombay Library Network, Ahmedabad Library Network etc. The objectives of all these networks were supposed to provide
information resources to its clientele through OPAC, Database, Document Delivery and other network based information services.

UGC-Infonet- E-Journals consortium has been set up by UGC to promote the use of electronic databases and full text access to journals by the Research and academic community in the country (http://web.inflibnet.ac.in/econsortia/faq.htm) and provides more than 5,000 full text e-journals. The Ministry of Human Resource Development (MHRD) has set-up the Indian National Digital Library in Engineering Sciences and Technology (INDEST) Consortium (http://paniit.iitd.ac.in/indest/eresources.html) to provide e-resources to scientific and technical libraries. National Center of Science Information (NCSI) provides electronic journal gateway service (http://e-jis.ncsi.iisc.ernet.in/abtframe.htm) developed as a joint effort by NCSI and IISc library, for IISc researchers. Using E-JIS, a user can select and access from over 10,000 online full text journals. HELINET by Rajiv Gandhi University of Health Sciences, Bangalore, provides the first resource sharing network and e-journal consortium in the medical education. CSIR has also developed its own E-Journal consortium “Access gateway to Global Knowledge” (http://202.54.99.7/ e-journal/ ejournalhome1.htm)

4.3.5 Collection Management to Content Management

Libraries once upon a time emphasized on acquisition/ collection development/ information resource development have turned in to content development in the age of digitization. Libraries today are giving more emphasis on website development and uploading their information resources to provide better access with more contents and less cost. Content development in electronic environment is a challenge for information professionals not only to build up professional competencies but widening scope of information management, identifying information sources and providing effective information services. Content managers/developers make use of this technology to deliver the best services provide the most relevant and accessible resources, develop and deliver teaching tools to maximize client’s use of information and capitalize on the library and information environment of the 21st century.
4.3.6 From Conventional Learning to Web Learning/E-Learning

A dramatic sea change is taking place around the globe with regard to teaching and learning process. The traditional mode of imparting education is being replaced by web based/online education supplemented by multimedia educational resources. Web based education provides:

- increasing access to learning resources
- improving interactive teaching and learning environment
- increasing student convenience
- reducing educational delivery cost
- developing a scholarship of web-based pedagogy, and
- providing 21st century learning environment, supported by the latest information and communication technologies.

4.3.7 Libraries as Gateways to Knowledge

Establishment of “National Knowledge Commission” is another achievement in this direction. While formally launching the “Knowledge Commission”, the Prime Minister of India (October, 2005) said that it is the”Brain Power” which would be more powerful than military and economic power of a nation to determine a nation’s place in the world now in making. The ability of a nation to make best use of its brain power will shape its place in the world in the present century. Building a knowledge economy and knowledge society was the only way to meet the challenges of Globalization and 21st century. Going beyond universities, colleges and schools, there are other elements of “Knowledge Economy”. Public libraries are an extremely important element of the foundation of a knowledge economy. Think Tanks and specialized institutions are equally important, especially facilitating informed policy making. NKC clearly emphasized that the modernization of libraries is a prerequisite of knowledge society facilitating access to information and knowledge.

4.3.8 Open Access, Open Source and Open Library (O3)

Open access provides opportunities to promote open exchange of ideas and information among the scientific community and society at large thereby removing the limitations of subscription costs, licensing agreements and copyright. Open access has led to
institutional repositories and promotes equity. Open source is development technology which offers practical accessibility to a product (information and knowledge). Libraries and open source software promote learning and understanding through the dissemination of information. Open source offers opportunities, but poses a number of challenges for the LIS professionals and for its suppliers. Open library provides free and open access to knowledge.

4.4 LIS Schools to Focus on Skills and Competencies

Capacity building through skills and competencies of library and information professionals is a major challenge. The library and information professionals have to recognize and understand the broad context of the information environment, demonstrated by the ability to:

- understand and interpret the contexts in which information is originated, stored, organized, retrieved, disseminated and used;
- comprehend the legal and policy issues that are associated with,
- visualize future directions and prepare a roadmap to provide the most effective and efficient library and information services to the users in the 21st century.

Skills and competencies need to be developed in the areas like:

- **Information seeking**
  - understand and investigate how information is effectively sought and utilised;
  - identify and investigate information needs and information seeking behaviour of the users community.

- **Information infrastructure**
  - understand the importance of information architecture to determine the structure, design and flows of information;
  - forecast, plan, facilitate and evaluate appropriate resource management to library and information services.

- **Information organisation**
  - enable information access and use through systematic and user-centred description, categorisation, storage, preservation and retrieval.
Information access

- provide and promote free and equitable access to information and client services;
- facilitate the acquisition, licensing or creation of information in a range of media and formats.

Information services, sources and products

- design and deliver customised information services and products;
- assess the value and effectiveness of library and information facilities, products and services;
- market library and information services;
- identify and evaluate information services, sources and products to determine their relevance to the information needs of users;
- use research skills to provide appropriate information to clients.

Information literacy

- understand the need to develop information skills of the user community;
- facilitate the development of information literacy and the ability to critically evaluate information.

4.5 Generic skills

The generic skills for library and information professionals include:

- effective communication skills;
- professional ethical standards and social responsibility;
- project management skills;
- critical, reflective, and creative thinking;
- problem-solving skills;
- ability to build partnerships and alliances;(Public Private Partnership)
- effective team relationship skills;
- self management skills;
- a commitment to life-long learning;
- relevant information and communications technology and technology application skills;
appropriate information literacy skills.

As all the areas of library and information practice will continue to evolve and develop over time, the overall framework of core knowledge and skills needs to be able to encompass the changing nature of the profession to ensure an acceptable, adaptable and accountable profession.

4.6 Areas on Priority for Competency Development

LIS schools in India and world over have a clear mandate to create human resources befitting to national and global job market. Some of the emerging areas in which the present and future LIS professionals should develop their competencies are listed below.

- Library Automation and Networking
- Design and Development of Information System
- Library Networks and Consortia
- Design, Development and Maintenance of Library Website
- Digital Library
- Internet and Internet Resources
- Content Development
- Open Archives Initiatives
- Information Literacy
- Knowledge Management
- Institutional/ Knowledge Repository

4.7 Issues Confronted by the LIS Schools in India

Library and information science education in India is confronted with a number of issues and challenges unlike other discipline of studies. These issues and challenges are mainly related to curriculum development, quality assurance, compatibility with global standards, competent faculty, ICT infrastructure, learning resources, financial constraints etc. Some of the issues faces by these schools/ departments of LIS in India are discussed below.
4.7.1 Need for National Accreditation Agency:

For quality assurance and maintenance of standards, there is a need for national accreditation agency for each country to achieve standards of excellence at national and international level. An accreditation body will ensure adopting best practices by developing norms, standards and guidelines for schools of library and information studies to offer LIS courses at par with national and international standard. This will further allow the LIS degree holders of one country to be accredited by another country. Presently a number of such councils are in operation in other disciplines like Medical Council (legal education), Bar Council (legal education), National Council of Teacher Education (teacher education), and AICTE (technical education). A similar national body namely National Council for Library and Information Science is the need of the hour to maintain standards and assuring quality in library and information science education in India.

Although National Assessment and Accreditation Council (NAAC), an autonomous body of the University Grants Commission is responsible for institutional accreditation (Universities and Colleges), has recognized the functioning and assessment of “Library” as an essential component and vital sub-unit in assuring quality in higher education. For this purpose NAAC has developed “Guidelines on Quality Indicators in Library and Information Services: Affiliated/Constituent Colleges”.

4.7.2 Internationalization of LIS Education:

Changes at work place in a digital/virtual environment have compelled library and information professionals to reorient themselves and compete in the global market as well. This has necessitated a radical change in LIS curriculum and syllabus keeping in view the need of information work force required in the international/global market. This will eliminate the wide disparities of LIS education, practice and research between the developing and developed countries. IFLA Education and Training Section is also emphasizing much on issue of equivalence and reciprocal recognition of academic qualifications. The goals of these efforts are to facilitate mobility of students and to increase employability. An emphasis on quality assurance on LIS education internationally cloud give the opportunity for improving the skills of individual students and to increase the quality of national LIS higher education system.
4.7.3 Need Based Curriculum:

There is a worldwide phenomenon of convergence of library, documentation, information and knowledge areas and a new curriculum design needs to take this fact into account. An up to date curriculum integrating professional knowledge, skills (managerial, technological and communication) and specializations reflects much on the learners to compete in a national and international potential job market. The appropriate teaching learning pedagogy is planned at this stage to provide and an effective learning environment to the learners.

4.7.4 Competent Faculty:

Faculty members play an important role in capacity building (creativity, innovations, transfer of knowledge and capacity to use high technology). Faculty members as innovators could create innovative organizations, competition in the global market and more over the success of the students considered as testimony of faculty members.

4.7.5 Instructional Technology Support:

The technology which can support the effective delivery of LIS courses including new media technology. The present day Information Science discipline incorporates a variety of software requirements to teach Library Automation, Networking and Internet Technology, Multimedia, Digitization, Content Development and other areas of information management.

Both print, electronic and web based information resources supplement the teaching curriculum, students, faculty members and researchers. The LIS educators require to keep themselves up to date with latest publications including e-books and e-journals available in the subject. Learning resources through Library Website could provide unlimited access to all categories of users with wide variety and less cost.

4.7.6 Continuing Education Programmes:

The schools of library and information studies and particularly library educators need to organize continuing educational programmes to provide latest developments in the profession and practice in the work place. The programme will provide both exposure and develop professional skills to the participants through refresher courses, orientation
programmes, workshops, seminars etc. A rigorous hand on experience aiming at skill
development may be undertaken by the schools of LIS as “Training to the Trainers”.

4.7.7 System of Continuous Evaluation:

A mechanism of system evaluation has proved to be an accepted parameter to know the
strength and weakness of the professional competencies of LIS educators in the
changing information scenario. The faculty members could get the feedback from the
management to improve their competencies and cope up with emerging areas of
specialization.

4.7.8 Adequate Financial Support:

The quality in imparting higher education and more specifically professional education
like library and information science warrants developing appropriate
infrastructure/resources (physical, human). Building these resources require adequate
financial support to maintain standards of excellence and assure quality in delivering
library and information science education.

Conclusion

Schools of library and information studies will continue to face the challenges of digital
era. These challenges can be met only when the educators, practitioners and researchers
of library and information profession work together and bring qualitative improvement
through curriculum which has a great impact on work places. The LIS schools not only
to aim at balancing traditional librarianship and technology but to do a lot to make the
students exposed and develop expertise on different areas of information and
communication technology and its application in library and information centers. The
emerging areas of ICT are compelling the library and information schools to revamp
LIS education in the country, draw a road map to achieve its mission and prepare a
vision for 21\textsuperscript{st} century. UGC in this regard have a very limited role, but many things
depend on the individual departments to keep themselves up to date with changing
information scenario, understanding the fact that the present national and global job
market require a different kind of LIS professionals what it was to provide earlier.
Therefore the changing information scenario demands multi skills and competencies of
library and information professionals to cope up and contribute to emerging knowledge society.

The kind of traditional and ICT skills acquired by the pass out students of four universities in the North East region with the availability of physical, ICT, human, intellectual and financial resources are analyzed and findings are drawn in the following chapter entitled “Data Analysis and Findings”.

Based on the discussions, factual positions of LIS education at national level including North East Region, professional competencies required in the changing information scenario in the preceding chapters, the following chapter entitled “Data Analysis and Findings” analyses and interpreted the data received from the respondents and derives appropriate findings.

REFERENCES


