Application of information and communication technologies in libraries, information centres and documentation centres have compelled the traditional library professionals to change into information professionals to develop their skills in collecting, organising and disseminating information to users. The emergence and establishment of specialised information and documentation centres, information systems and networks, library and information networks at local, national and international level further necessitated educational training on different facets of "Information". Considering all these aspects this paper emphasises that education for information which is already in existence needs to be further strengthened with adequate information components to develop the skills for the learners. Concludes that there is lot of scope to the information professionals in a variety of academic, corporate and government environment.

INTRODUCTION

Technological advances in recent years have transformed library and information studies into a more specialised discipline namely Information Science which is concerned with all aspects of collection, organisation and dissemination of information. Easy availability of accurate and appropriate information is recognised as a powerful and marketable commodity, an economic resource as well as social wealth. Information could be considered as a principal strategic resource of an information society. Developments in computers and communication technologies have created more possibilities in making an increasing amount of information more accessible to a greater number of people. It is now possible to access and retrieve information from sources across the globe through international networks, databases, mass media etc. The information professionals employed in different organisations act as intermediaries between users and their information needs. Therefore Education for Information or Information Science Education is of vital importance to face these challenges. Such a course is intended to prepare students to assume professional positions in a broad spectrum of national and international information agencies.

The aim of such a course is to:

a) have a thorough study and understanding of the principles and theory of information transfer process,

b) possess skills in collection, organisation and processing of information effectively,

c) appreciate that information transfer process is part of the wider environmental, institutional, or societal set up in which it operates,

d) view information technology as an integral part of the information transfer process,

e) recognise the role of management in the information transfer process,

f) develop the theory and technique of a particular specialisation within the information transfer process.
INFORMATION SCIENCE EDUCATION IN INDIA

In India, there are as many as 110 schools of Library and Information Studies offering Bachelors' as well as Masters' Course in Library and Information Science. Although these courses are quite traditional in nature giving much emphasis on conventional librarianship, hardly there is any component of modern information technology and its practice. Realising the importance of information technology and its application in libraries, information/documentation centres, the schools of library and information studies have started to incorporate more and more components of information in their curriculum. Many of the schools have developed their own computer laboratories for hands-on experience on different aspects such as library automation and networking, information processing, CD-ROM databases etc. There are three premier organisations of national importance who have developed their courses giving much importance to information and its various components.

These are:

1. Documentation Research and Training Centre (DRTC)
2. Indian National Scientific and Documentation Centre (INSDOC)
3. Indira Gandhi National Open University (IGNOU).

1) Documentation Research and Training Centre (DRTC)

The Documentation Research and Training Centre (DRTC) was founded by the late Dr. S.R Ranganathan, National Research Professor in Library Science in 1962 as a division of the Indian Statistical Institute. DRTC conducts educational and research programmes for information professionals. It also extends its facilities to information professionals from other countries, particularly African and Asian Countries. DRTC offers Associateship in Documentation and Information Science (ADIS) since 1962 which is considered as equivalent to Master's Degree in Library and Information Science. The course

i) Provides comprehensive instruction in the theory and practice of documentation and information science

ii) contributes development of manpower for information management and for advanced teaching in Library and Information Science.

The duration of the course is two years and consists of the following compulsory and elective papers.

Compulsory Papers

1) Foundation of Information Science
2) Information Sources and Communication Media
3) Information Systems and Programmes
4) Information Processing and Organisation
5) Information Transfer and Dissemination
6) Information Technology and Systems Design
7) Information System/Centre Planning and Management

Electives (Any one out of the following)

1) Industrial Information Systems and Services
2) Information System and Services for Research and Development (R&D)
3) Management Information System (MIS)
4) Health Science Information Systems and Services
5) Environmental Information Systems Services
6) Social Sciences Information System and Services
7) Application of Artificial Intelligence to Library and Information Science

Guided Research Project

Every candidate is required to submit two Research Projects for completion of the course.

2) Indian National Scientific Documentation Centres (INSDOC)

Indian National Scientific Documentation Centre, INSDOC, is a premier science and technology information organization of India providing efficient and comprehensive information services. It specialises in information management, develops human resources in documentation and information science and technology.

Recognising the need for well trained manpower to run the various information systems and centres in the country and taking into account the available infrastructural facilities and expertise, INSDOC decided to initiate a training course with emphasis on practical orientation in the early sixites. Consequent to this decision, it started offering an advance training in Documentation and Reprography since August 1964. In 1977, The course was renamed as Associateship in Information Science keeping in mind the changing context of information requirements. The course has been revised from time to time in the last thirty eight years to suit the changing needs of the country and ot incorporate the expanding dimension of documentation and information science. In the light of the new situation developing in the country and the region, from the academic session 1999-2000, one seat has been earmarked for each nation in the South Asian Association for Regional Cooperation (SAARC). In addition to information technology, the course pays special attention to information analysis and information systems in some of the rapidly developing fields like environment, biotechnology, etc.

Objectives

The objectives of the course are to provide the students with:

- an understanding and appreciation of the vital and pervasive role of information as an essential input in all developmental activities,
- a thorough insight into all techniques of information handling with special emphasis on the application of information technology,
- full comprehension of the global nature of information for proper cooperation and coordination among countries, and;
- necessary skills and information technology background for designing, implementing, operating and managing information systems.

The academic programme includes ten papers in the first year of the course.

These are:

Paper-1 Information and Society
Paper-2 Information Sources
Paper-3 Information Processing and Organisation
Paper-4 Information Systems and Networks
Paper-5 Fundamentals of Information Technology
Paper-6 Information Products and Services

Paper-7 Data Processing and Management Techniques

Paper-8 Computer Network: Technology and Services

Paper-9 Information System Management


The second year involves preparation and submission of a guided dissertation.

3. Indira Gandhi National Open University (IGNOU)

IGNOU launched its Masters' Degree program in Library and Information Science in 1994 to impart high level skills and training necessary for those who manage senior level positions in libraries, information/documentation centres. The chief purpose of the programme is to help those who are already employed in different types of libraries and information centres for their professional development and betterment of employment. The programme comprises eight courses out of which six core courses are devoted to information area and two are electives designed to impart specific skills required in a particular type of library and selected areas of discipline as given below.

Core Courses

MLIS-01 Information, Communication and Society

MLIS-02 Information Sources, Systems and Programmes

MLIS-03 Information Processing and Retrieval

MLIS-04 Information Institutions, Services and Products

MLIS-05 Management of Library and Information Centres

MLIS-06 Applications of Information Technology

Electives

MLIS-E1 Preservation and Conservation of Library Materials

MLIS-E2 Research Methodology

MLIS-E3 Academic Library System

MLIS-E4 Technical Writing

This programme has got compulsory components of computer practical, seminars, preparation of assignments etc.

FACTORS RESPONSIBLE FOR "EDUCATION FOR INFORMATION" IN INDIA

Several factors are responsible for moving towards Education for Information Science particularly in India. This is largely due to advances in computer and communication technologies, information systems and networks, library and information networks at local, regional and national levels, establishment of large number of information and documentation centres and finally Internet for library and Information professionals. Some of the national level networks, information systems, information and documentation centres are discussed below.

INFLIBNET

Information and Library Network (INFLIBNET) is a major programme of the University Grants Commission (UGC) initiated in 1991 with its headquarters located at Gujarati University Campus, Ahmedabad. The Programme is directed towards modernization of libraries and information centres and establishment of a mechanism for information transfer and access.
to support scholarship, learning and academic pursuits. It is also aimed at establishing a national network of libraries of information centre in universities, institutions of higher learning and R & D institution of India. It is basically a co-operative endeavor in resource development, sharing and its utilization at national level. Over the years, the programme has progressed steadily and since May 1996 it is an independent autonomous inter-University Centre under UGC to co-ordinate and implement the nationwide high-speed network using state-of-the-art technologies for connecting all the university libraries in the country. INFLIBNET is set out to be a major player in promoting scholarly communication among academicians and researchers in India.

Developing Library Network (DELNET)

Established in 1988 as the Delhi Library Network with the initial and continued support of the India International Centre, DELNET has been sensitive to the developments in information technology and has evolved innovative software to meet the emerging needs of scholars, students, researchers, administrators in government, universities, industries, commerce, planning, finance, project implementation in every sphere of science, engineering, intellectual property rights, culture, literature, performing arts, sports, communications, health, nutrition and welfare. Ready and easy access to worldwide developments is an indisputable requirement in a competitive world without borders for information flow in all languages. DELNET with nearly 250 members is enlarging its services, adding new sources and innovations in software beginning with entry into Indian languages.

Calcutta Library Network (CALIBNET)

CALIBNET has made significant stride towards fulfilling its dual objectives, i.e.,

(a) Launching its library network programmes, facilitating remote online access to the holdings data of Kolkata libraries, and other specialized databases as well a significant step towards bibliographic resources sharing amongst Calcutta libraries; and

(b) Providing electronic access to globally available information, imbibing its information centre approach.

Both are essential for advancing learning and scholarship. In the process, CALIBNET aims at covering a wide panorama of information and user interests, with diffusion of new electronic information technology as the primary concern.

Research and Education Network of National Informatics Centre (RENNIC)

National Informatics Centre Network (NICNET) offers network services to research, education and medical institutions at their very doorsteps through RENNIC with several objectives: 
- to promote creation and usage of online databases in the country,
- to facilitate more openness among academicians and researchers,
- to provide online access to vast expanse of international database,
- to facilitate library networking services,
- to setup countrywide computer network for the academic and research community spanning 8000 institutions accounting for about one million potential users.

Education and Research Network (ERNET)

Government of India, Department of Electronics offers network services to all academic and research community in India through ERNET-the Education and Research Network with the assistance from UNDP and the initial participation of eight premier institutions- IITs, IIsc Bangalore, NCST, Mumbai and Department of Electronics, Delhi. The major aim of the project is to coordinate capability in the country in the area of computer networking and set up a country wide computer network for the academic and research community to facilitate informal and frequent
interactions, sharing of computing resources and more cooperation in research activities. Some of the services available on this network are electronic mail, remote log-in, database access, file transfer, mailing lists, news groups and bulletin boards etc.

INFORMATION AND DOCUMENTATION CENTRES

(a) Indian National Scientific Documentation Centre (INSDOC)

INSDOC is a premier organization dealing with library, documentation and information science, technology, services and systems. It is a nation laboratory under the Council of Scientific and Industrial Research (CSIR) providing information and documentation services both at the national and the international level. INSDOC's activities fall under five broad categories:

1. Services, Products and Publications
2. Projects in Competency Areas
4. Education and Training
5. International Collaboration

Since its inception in 1952, INSDOC has been providing information services that aim at fulfilling the information needs of researchers and scientists in the country. Over the years, INSDOC has designed several information products and services for the corporate and business sector as well. Keeping pace with technological developments, new information products are being brought out on CD-ROM and floppies and many services are being offered on networks like the internet.

INSDOC's competency areas include: library automation, library networks, computer networking, electronic libraries, CD-ROM networking, design and development of databases, access to international information sources, online systems, feasibility studies, and design, establishments and operational management of library-cum-information centres.

With effect from September 30, 2002, INSDOC and NISCOM (National Institute of Science Communication) have merged to form a new entity, the NISCAIR (National Institute of Science Communication and Information Resources).

(b) Defence Scientific Information and Documentation Centre (DESIDOC)

DESIDOC functions as a central agency of DRDO to collect scientific and technical information from various published and unpublished sources, process it in various usable forms and disseminate the same not only to DRDO laboratories/establishments but also to other agencies of the Ministry of Defence such as the Department of Defence Production, the Department of Defence Supplies and the Defence Public Sector Undertakings. The information collected from various sources is processed into various forms like abstracts, indexes, digests, state-of-the-art reports, selective dissemination of information and current awareness services etc.

(c) S. P. Mukherjee Information Gateway of Social Sciences

Formerly known as NASSDOC (National Social Science Documentation Centre), is India’s leading information centre for research and innovation in social sciences. This institution is engaged in providing information and documentation services like bibliographical services, literature searches from machine readable format, document delivery services etc. to social scientists.

National Information System for Science and Technology (NISSAT)

NISSAT programme envisages promotion and support to the development of a compatible set of information systems on science and technology and interlinking these into a network.
Its objectives are:

1. development of national information services,
2. promotion of existing information systems and services,
3. introduction of modern information handling tools and techniques,
4. promotion of national and international cooperation in information,
5. development of indigenous products and services,
6. support to education, training and R&D in information.

A number of Sectoral Information Centres have been established by NISSAT to create information awareness and to meet information needs of academicians, scientists, technologists, entrepreneurs, management executives and decision makers. These are in the field of leather technology, food technology, machine tools and production engineering, drugs and pharmaceuticals, textile and allied subjects, chemical and allied industries, bibliometrics, crystallography, CD-ROM, management science, marine science.

FEEDBACK STUDY ON IGNOU MLIS PROGRAMME

The author of this paper conducted a feedback study of those students who successfully completed their MLIS programme from IGNOU. The study basically intended to know professional competencies achieved by the learners. There were 644 questionnaires distributed to students of which 315 were received. While analysing the feedback, the following comments were made by the students.

a) The curriculum designed for the programme and course material developed for the purpose improved knowledge on information technology.

b) Course material was quite informative covering latest developments in the field of library and information services and was suitable to meet the information needs of the users in the age of information explosion.

c) The programme is unique and different from other conventional universities which really helped in profession building in today’s changing environment and keeping in view the state-of-the-art technologies.

d) It helped a lot to working professionals since they get hands-on experience on library automation, CD-ROM, online, CDS/ISIS, Internet etc which carries more recognition in the work-place.

e) More emphasis is on Information Science rather than Library Science.

f) It is helpful for career developments and better prospects for library and information professionals.

CHALLENGES AHEAD

Impact of information technology on Library and Information Science Education has created new challenges whether to go for education for information to promote up-skilling of library professionals into information professionals. There are other dimensions also where the role of information professionals plays a pivotal role. These are:

i) The Government of India passed Information Technology Bill-1999 which provides Electronic governance and Electronic commerce.

ii) Government also introduced a Bill called ‘Freedom of Information Bill-2000’ to provide freedom to every citizen to secure access to information which he or she wishes to obtain from public authorities.

iii) Government is also seriously contemplating to evolve a National Informatics Policy (NIP).
All these are great challenges for the future library and information professionals. Besides application of information technologies in libraries and information centres such as library automation, CD-ROM, and CD-DVD, multimedia, OPAC, Internet, etc, demand a new type of workforce who have got both knowledge and skills on these areas. Therefore looking at the developments in USA, Canada, Australia, U.K and Singapore, there is a strong need for technology oriented education for information. Only then the information professionals can meet the challenges of the new millennium.

CONCLUSION

The need for well prepared information professionals will continue to grow so as to cope up with the complexities of the information explosion. These professionals could be innovative problem solvers and effective information managers, possessing a broad range of capabilities to meet the highest demand in traditional information sectors. Looking at the new emerging new information society, *Education for Information* will provide ample scope to information professionals in a variety of academic, corporate and government environments. Information Science as an academic discipline shall enable learners to get themselves acquainted with the various methods and techniques of information handling such as storage, analysis, retrieval, and over all organisation of information systems and their performance in transfer. There is thus an urgent need to revamp the entire Library and Information Science education in India and to name it as only Information Science. Of course this requires proper education and training for the faculty members and developing appropriate information infrastructure in Schools of Library and Information Studies to cope up with the fast-paced societal and technological changes.

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