Developing Library Resources for Cyberspace: The Effect of Information Technology and the Internet on Academic Libraries of India

Anjana H. Bhatt
Florida Gulf Coast University
E-mail: abhatt@fgcu.edu

**Keywords** (關鍵詞): Academic libraries in India; Resource sharing; Indian Libraries; DELNET; CALIBNET; INFLIBNET; Technical college libraries in India; Information systems; Digital libraries

【Abstract】

This article examines the effect of information technology (IT) on Indian academic libraries and traces the phenomenal growth of the IT industry and the Internet in India. Resource sharing and library automation activities of networking organizations like DELNET, CALIBNET, and INFLIBNET are discussed in detail. A brief review of the Indian academic library web sites indicates that preliminary efforts are being made to incorporate technology and provide extended access to usual web-based services. Finally, the article provides suggestions and examples for including hyperlinks to ready-reference shelves on the Internet, introducing digital reference services, providing personalized electronic resource consultations, and creating information literacy tutorials.

IT, the greatest achievement of the 20th century, has effectively changed the world to a global information society. It is the new buzzword for Indians (http://www.nasscom.org/template/indianitss.htm). The potential of IT to generate wealth, foreign exchange, and employment has created awareness among Indian businessmen, economists, bureaucrats, and politicians, and other citizens. Software-driven IT industry ranks first on India's national agenda, as an instrument and as a model for the modernization of the Indian economy. According to the National Association of Software and Service Companies (NASSCOM), the IT industry in India recorded a Compound Annual Growth Rate (CAGR) of more than 40.5%; almost double the growth rate of many developed countries. Since 1995 the IT industry in India has grown from 2.04 US billion dollars to 6.04 billion dollars and was projected to touch 8.39 billion dollars in 2000 (http://www.nasscom.org/template/indianitss.htm).

During 1998-99 networking emerged as a major area of operation in the IT industry, netting Rs. 9.8 billion worth of revenue, a growth of almost 37.06% over the previous Rs. 7.15 billion (http://www.nasscom.org/template/indianitss.htm). The rising popularity of the Internet among Indians has fueled the demand for personal computers thereby raising the installed base of PCs to 3.2 million. More than 81% sales of stand-alone PCs during the financial year 1999-2000 were driven by the need to access the Internet (http://www.nasscom.org/template/inetec.htm). Even though India is a late starter in the Internet arena, the country is experiencing an exponential growth and is projected to outgrow other Asian countries. There were 4.8 million Internet users by August 31, 2000, and this number is projected to reach 100 million by 2008 (http://www.nasscom.org/template/indianitss.htm). According to
a report published by the International Data Corporation (IDC) India limited, the Internet subscriber base in the country could grow at a CAGR of 95% during the years 1999-03 (http://www.idcindia.com/Pressrel/16Mar2000.html).

Adopting the unlimited Internet access model (pay a fixed amount for a period and use it for unlimited hours) by the majority of Internet Service Providers (ISPs) is bound to further influence the growth of Internet users in the country. Improvements in bandwidth and penetration of the Internet through PCs as well as cable TV are expected to result in a tremendous increase in the user base (http://www.idcindia.com/Pressrel/16Mar2000.html). At present, more than 200 cities and towns in India have Internet connectivity (http://www.zdnetindia.com/biztech/people/opinions/stories/958.html).

IDC (India) expects that by the end of 2001, most of the cities/towns will have access to the Internet through cable. Continuous decline in the prices of cable modem by 30% per year in the next two years would also help in the adoption of Internet access through cable modems in homes as well as small and medium businesses. India's Internet future is extremely bright and according to the eAsia Report published by eMarketer, India is expected to overtake even Japan and China in the Internet growth (http://asia.internet.com/cyberatlas/000522asia.html).

Growth of Internet in India

The Indian government has proved to be proactive, and is consistently providing the necessary boost to the country's Internet plans. Initiated by the Department of Electronics in 1988, Education and Research Network (ERNET), one of the most successful programs funded by the United Nations Development Program (UNDP), brought the Internet to India and successfully built up national capabilities in the area of networking and protocol software engineering (http://www.eis.ernet.in/main.htm). Over the years ERNET has succeeded in building a large network that provides various facilities to the research and education community. Connected to each other through leased lines, the prestigious five Indian Institute of Technology (IIT) centers in Delhi, Mumbai, Chennai, Kanpur and Kharagpur; National Center for Software Technology, (NCST), Mumbai; Indian Institute of Science (IISc), Bangalore; and the Department of Electronics serve as the “backbone nodes” of ERNET. Over 80,000 users from over 750 organizations representing a cross-section of universities, academic institutions, and Research & Development (R&D) laboratories use ERNET for E-mail, remote logging, file transferring, and for accessing databases, gopher and the World Wide Web (WWW) (http://www.eis.ernet.in/main.htm).

In 1995, Videsh Sanchar Nigam Limited (VSNL), a government monopoly, started offering Internet services to the general public and commercial establishments. In 1988, a new Internet Service Provider (ISP) policy allowing private and government agencies to serve as ISP was issued by the Department of Telecommunications. The entry of private vendors into the Internet business has enabled people to access the Internet at reasonable and competitive rates. At present, ERNET, National Informatic Center Network (NICNET), promoted by national Informatics Center of Planning Commission; VSNL, Government of India; Satyam Online, a private vendor; and Mahanagar Telephone Nigam Limited are providing Internet access to general public and commercial organizations (Kumber, 1999). More than 8,000 institutions use NICNET facilities in the country, whereas software-exporting organizations access the Internet through the Software Technology Parks of India.

Information Technology and Libraries

The Internet is one the major technological developments of last century, and there is little doubt that it will have a significant impact on the society and the future of library services (Dowlin, 1999). The Internet has become a major catalyst for libraries and can be considered as an international digital public library. Traditional ways in which academic libraries connect to knowledge and research have changed, unveiling deep concerns about the information explosion and technologies that are effecting library operations. The library community and organizations of higher learning are forced to adapt to these changes and seriously consider the future world of digital/virtual libraries. Rapid acceptance of electronic communication of research information, and the exponential increase in computer network connectivity has significantly changed the academic
library environment and raised the expectations of the users. Advanced information technology, emergence of the Internet, globalization of information, and availability of electronic information has given library professionals a unique opportunity for proving increased access and improved library services to information seekers (Pradeep, Ganesan & Reddy, 1999).

**General Library Scenario in India**

In order to maintain high standards of user services, academic libraries must continuously enhance their operations and services and understand how IT fits into the academic world. Common problems of libraries in developing countries are well known; and the problems in Indian libraries are no exceptions. Jambhekar and Pandian (1999) observed “In India, libraries have always been left behind and are given low priorities when it comes to application of technological development” (p. 11). Lack of cooperation among the libraries, availability of very few online databases and no proper infrastructure for library automation, are some of the problems faced by Indian libraries.

Although most of the academic, research and educational institutions have access to the Internet, they use it mainly for electronic-mail communication, and their web sites provide little information on their activities (Jambhekar and Pandian, 1999 p. 13). Very few academic libraries have incorporated basic services such as OPAC, access to online databases and full-text electronic journals through their web pages. Jambhekar and Pandian further state “while the Internet revolution is leading to big changes for librarians all over the world, it is still in its infant stage in the Indian Libraries” (p.13). Lack of a suitable library management software system in the country, difficulties in upgrading the existing systems, and inability to provide wider bandwidth to enable resource sharing are some of the major problems that have hampered complete library automation. However, it is heartening to note that library professionals in India are watching the Internet very carefully and are excited by the opportunities of enhanced capacity with new delivery mechanisms. The library automation efforts are slowly but surely changing the academic library scene in India.

**Indian Higher Education System**

India has a large higher education system consisting of 237 Universities, and 10,600 Colleges, coordinated by the University Grants Commission (UGC) (http://academics-india.com/ugc_main.htm). UGC, established by an Act of parliament in 1956, serves as a vital link between the Union and State governments and the institution of higher learning. Coordinating the states, UGC maintains standards of teaching, examination and research in higher education, frames rules and regulations for teaching and research, and disburses grants to the universities and colleges. Since 1984, UGC has set up an autonomous Inter-University Center (IUC) to provide common facilities for research and various services and programs (http://www.ugc.ac.in/Introduction.html).

UGC’s most desired goal is to enhance the quality of higher education through a broad-based information support. Major objectives of the UGC include modernizing the university and research libraries in the country and creating a mechanism for connecting all the university libraries for effective resource sharing to support academic and research activities (http://www.ugc.ac.in/Introduction.html).

**Networking Organizations and Their Activities**

In 1991, UGC initiated an ambitious program, Information and Library Network (INFLIBNET), a cooperative endeavor for developing and sharing resources at the national level. INFLIBNET has been in existence for the past ten years and during this period it has achieved significant results. Current activities of INFLIBNET include development of a union catalog of monographs, serial and non-book materials such as manuscripts, audio-visuals, and computer media, promotion of cooperation among participant libraries by encouraging cooperative collection development, formulation of uniform guidelines and standards to facilitate efficient network operations, and development of skilled manpower to handle automation and network related work (http://www.inflibnet.ac.in/). Under its manpower development program, INFLIBNET has conducted onsite-training sessions at thirty-one university
camps and has successfully trained 350 operational staff and 100 library executives. A state-of-the-art library management software entitled SOUL (Software for University Libraries) has been developed by INFLIBNET to create a database of the holdings and automate major in-house library operations (Kumar & Kumbar, 2000).

In order to facilitate the free flow of information to its end users and to develop interaction among its members, INFLIBNET subscribes to OCLC’s FirstSearch service for its member libraries, provides online access to its union databases and subscribes to more than fifteen bibliographical databases in CD-ROM in the areas of social science and humanities. INFLIBNET’s web site also provides access to the home pages of twenty-eight universities. Run by INLIBNET, a current awareness service called Contents of Periodicals in Science and Technology (COPSAT) provides access to more than 4,000 highly refereed journals of international reputation. (Kumar & Kumbar, 2000).

Future plans of INFLIBNET include activities such as shared cataloging, Inter-library loan, document delivery services, access to full-text publications, and organization of access to Internet resources by creating a virtual library. In addition, INLIBNET is waiting to set up a Very Small Aperture Terminal (VSAT) based Intranet covering 170 institutions including 150 universities falling under the purview of the UGC for providing services such as online access to union databases, discussion groups and e-mail services. Out of the 150 eligible universities, 105 have received grants from the UGC for subscribing to the network, acquiring computers, modems, direct telephone lines; and supporting automation and network access for its user community (Kumbar, 1999). In the near future, remaining university libraries will receive grants and start working towards automation and networking.

INFLIBNET has plans to offer membership to agricultural and technical universities along with academic institutions of national importance such as IIT and Indian institute of Management (IIM). In addition, five major academic and research libraries (University of Bombay, Banaras Hindu University, Indian Institute of Science, Jawaharlal Nehru University, and University of Madras) have been given extra grants from the UGC for retrospective conversion of their catalog into machine-readable form. Further plans include setting up document delivery centers at Banaras Hindu University, Indian Institute of Science, Jawaharlal Nehru University, Punjab University, Tata Institute of Social Sciences and the University of Hyderabad.

Other than INFLIBNET, many regional networks such as Delhi Library Network (DELNET), Bombay Library Network (BONET), Calcutta Library Network (CALIBNET) and Bangalore Library Network (BANET) have been established for resource sharing and creating union databases for these libraries (http://www.dsir.nic.in/vsdsir/division/nisstat/nisnat/nisnat.html). Other networks that deserve special mentioning are the Cancer Library Network (CANLIBNET) and the Astronomy Libraries Network. The Astronomy Libraries Network consisting of eight Indian libraries has the potential to become a Network of Asia Pacific region in the field of astronomy as the Astronomy Library from the Australian National University has expressed a desire to be a part of this network (http://www.stsci.edu/stsci/meetings/lisa3/louisc.html).

Since DELNET and CALIBNET belong to New Delhi and Calcutta respectively, two major cities in India, it is necessary to describe their activities in detail. The National Information System for Science and Technology (NISSAT), an organization of the Department of Scientific Research, established DELNET in 1988 with the prime objective of promoting resource sharing among the ninety-three libraries of New Delhi, the capital of India (http://www.dsir.nic.in/vsdsir/division/nisstat/nisnat/nisnat.html http://delnet.nic.in/vsdelnet/delintro.htm). Noteworthy objectives of DELNET include collecting, storing, and disseminating information, offering computerized services to the users, coordinating efforts for suitable collection development, reducing unnecessary duplication, and compiling union catalogs of the resources available at member libraries. Various databases including Union Catalog of Books and Periodicals, Union List of Current Periodicals and Video recordings, Union Catalog of Periodicals and Periodical Articles, CD-ROM databases, Database of Theses, Dissertations and Indian Specialists,
Books-in Print Database, and Urdu Manuscripts have been created under the auspices of DELNET (http://delnet.nic.in/vsdelnet/delintro.htm).

DELNET provides e-mail facilities, DEL-Listserv, online Inter Library Loan (ILL), Retro-conversion, Referral Services, and Document Transfer services to its member libraries. It has also launched DELSIS, a powerful library networking software for supporting its online databases. DEL-DOS, a DOS platform based system has been developed to create MARC records of books published in English as well as to create records in Indian languages. DELNET recently announced DEL-Windows, an efficient tool that helps in creating and retrieving bibliographic databases and catalogues (http://delnet.nic.in/vsdelnet/delintro.htm).

Calcutta Library Network (CALIBNET), a society under West Bengal Societies Registration Act, 1961, is responsible for CALIBNET, a project sponsored and supported by NISSAT. CALIBNET was launched to develop library network programs and facilitate remote online access to the holdings of the Calcutta libraries (http://itt.nissat.tripod.com/itt9904/calibnet.htm). A multi-user storage and retrieval software "SANJUKTA" supports CALIBNET's Centralized Database (CDB) and provides online access. CDB is hosted at the CALIBNET server and can be accessed from remote locations. PARAPAR, a conversion software package was also developed to support interchange of bibliographic data between US Machine Readable Catalog (USMARC), UNIMARC, and Common Communication Format (CCF) files. CALIBNET's efforts have led to the publication of the "Guidelines for Implementation of UNIMARC in Indian Libraries" (http://itt.nissat.tripod.com/itt9904/calibnet.htm). Many attractive services like ConFile (current contents of periodicals), CalibOrder (full-text delivery of articles), and ConAlert (Selective Dissemination of Information, SDI) are offered by CALIBNET. CalibLink provides e-mail connectivity from its ERNET hub installed at four institutions. CALIBNET's home page will shortly be launched for facilitating access to the bibliographic information resources available through the centralized CDB, and providing active links for accessing its databases and services (http://itt.nissat.tripod.com/itt9904/calibnet.htm).

Growth of networking organizations like INFLIBNET, DELNET and CALIBNET is an example of the growth of the information infrastructure in India. Although these organizations have faced many problems such as lack of standards for common communication formats, data in different languages, incomplete data sent by the participating libraries, usage of different library automation systems, lack of trained staff, joint responsibility for creating and correcting data, and lack of authority files for Indian names, they are committed to their cause and are making good progress.

**Review of the Web Sites of the Major Indian Academic Libraries**

It is interesting to note that none of the twenty-five universities, funded by the UGC to create and house their web sites, provide a link to their library. Review of the seventy-one university web sites linked from the INFLIBNET's home page showed that only three of them had a link to the library. Further investigation of these library home pages revealed that these universities neither have web-based Open Public Access Catalog (OPAC) nor do they provide any web-based service. Their web sites merely serve as an information brochure informing the user about ongoing library automation efforts and other activities. It is unfortunate to observe that even though these libraries have a campus wide network for accessing their OPAC, they do not enjoy a web presence.

However, it is heartening to note that several prestigious research and academic institutions have a dedicated library web site. Web sites of thirteen such academic libraries were reviewed for the purpose of writing this paper and as shown in Table 1, some of these libraries provide access to the web-based OPAC, but restricted access to the proprietary full text electronic journals and databases. Services such as databases restricted to on campus access via the library home page, and Current Awareness Services (CAS) were available from most of the library web sites that were reviewed. A few of the libraries go a step further and take the benefit of the free information available on the Internet by providing hyperlinks to working papers, selected subject specific resources and ready reference resources available on the Internet.
It is unfortunate to note that none of the libraries provides electronic reference or information literacy oriented library instruction programs.

**Brief Analysis of the Reviewed Web Sites**

**American Information Resource Center**

[http://americanlibrary.in.library.net](http://americanlibrary.in.library.net)

The AIRC in India provides information about the United States, its people, and its policies to promote mutual understanding, culture and information exchange between the United States and India. Located at Calcutta, Chennai, Mumbai, and New Delhi, the four AIRCs offer a range of resources, programs and services to provide accurate and up-to-date information on contemporary American politics and society, international relations, the U.S. economy and on global issues. Along with the general library information, AIRC’s web site provides access to the OPAC. Online databases like Dialog, FirstSearch, GaleNet, Legi-Slate, Lexis, Nexis Academic Universe, Public Diplomacy Query, ProQuest Direct, and State-USA are available at the AIRC library but unfortunately none of the databases can be accessed via the web. On campus access to these electronic resources is possible at the discretion of the director, but only through mediated searches.

**Indo-American Center For International Studies (IACIS)**

[http://www.asrc-india.org/library.html](http://www.asrc-india.org/library.html)

IACIS maintains a research collection of nearly 200,000 titles, including a complete set of the New York Times from 1851, on microfilm, and the 6,500,000 primary sources on Microfiche at the Library of American Civilization. IACIS's web site serves as a general library brochure and does not provide web access to any of its services. However, their catalog is available online and on-campus access to full text articles from 900 current periodicals on electronic disc is also available.

**Indira Gandhi Institute Of Development Research Library (IGIDRL)**

[http://www.igidr.ac.in/lib/library.htm](http://www.igidr.ac.in/lib/library.htm)

Aiming to be a leading research library in the field of development studies, development economics, energy and environmental studies, general economics and the Indian economy, IGIDR library has over 40,000 printed documents, and subscribes to over 460 national and international journals. On campus access to databases like Econlit, IMF International Financial Statistics, National Sample Survey, Social Science Citation Index, World Development Indicators, and UMI Book Vault is available. This library's web site is very effective with hyper links to Current Journals, Journal Holdings, OPAC, CAS, online working papers, free Internet resources for economists, union catalog and domain-restricted access to full text electronic journals. The IGIDR library also has plans to put up a web-based union catalog of journals available at selected Indian libraries in the field of economics, management and social science.

**Indira Gandhi National Center for the Arts (IGNCA)**

[http://www.ignca.nic.in/new_main.htm](http://www.ignca.nic.in/new_main.htm)

Launched in 1985 IGNCA aims to serve as a major resource center for the Indian arts, especially for the oral, written, and visual source materials. Besides the regular library Kala Nidhi, IGNCA has also established a digital library of its collection. The virtual library has more than 3,000 digital images and provides electronic access to the online research reports, papers and essays, public lectures, thirteen complete books, research reports, conference proceedings, video recordings, and bibliographies. Developed by Kala Nidhi, the web based OPAC allows users to check library databases and also view the list of reference books, monographs, periodicals, microfilms, photographs, slides, films, audio-visual materials, rare books, and personal collections. The Newsletter of the IGNCA is archived on its web sites and users can join a listserv to get updated with new developments at the web site. For further research, the web site provides hyperlinks to other Indian, Asian and international web sites on arts and culture.
Indian Institute of Management, Calcutta, B.C Roy Library. (IIM,C)
http://203.97.126.103/BCRoyLibrary/history.asp

Set up in the memory of Bidhan Chandra Roy, the architect of modern Bengal, the BC Roy memorial Library holds over 150,000 volumes of books, bound serials, corporate reports, theses, and working papers published by institutions across the world. The library subscribes to 570 periodicals in print and over 1,000 online journals. Even though the library claims to be the largest management library in South Asia, its web site is more like an information brochure, as it does not provide access to any of its services via the web site. Remote access to electronic databases such as Proquest, ScienceDirect, PROWESS (Indian companies information), VANS Electronic Library, the CompuMath Citation Index, EXIM Reference Collection, and Sociofile, is available only through the campus-wide network and shared CD-ROM tower. The Intranet allows users to access the Online OPAC, check the status of their account, and reserve library materials online.

Indian Institute of Science (IIS), JRD Tata Memorial Library. (IIS)
http://www.library.iisc.ernet.in/

J.R.D. Tata Memorial Library, popularly known as the Indian Institute of Science Library, is one of the best Science and Technology libraries in India. Established in 1911 as one of the first three departments in the institute, it has become a precious national resource center in the field of science and technology. The library's web site maintains hyperlinks to the web and Telnet access to OPAC, a virtual library tour, and collection of department libraries. Through the Electronic Journal Information Service (EJIS), this web site provides electronic access to free and paid subscriptions. While everyone can access the free journals, paid subscriptions can be accessed only by IIS users. Links to related E-journals, subject-specific free web sites, departmental libraries, and search engines are also maintained on this web page.

Indian Institute of Technology, Bombay (IIT, B)
http://www.library.iitb.ernet.in/

IIT Bombay is one of the five prestigious technology institutions in India. The web site of the IIT Bombay library provides access to their OPAC including full text access to electronic journals. The Circulation module allows users to check the status of their account and weekly additions to the new books and the journal collection. Hyperlinks to free technical societies and associations are also maintained at this web site.

Indian Institute of Technology, Madras (IIT, M)
http://www.iitm.ac.in/research/depts/cenlib.html

The IIT, Madras library has a total collection of over 312,000 documents covering all disciplines of science, engineering, technology, humanities, social science and general reference. The collection includes books, pamphlets, back volumes of journals, microfiches, theses, standards, atlases, patent specifications, and audio/video cassettes, etc. This library's web site merely serves as the library brochure. On-campus access to the CD-ROM databases such as Compendex Plus, Escape World, Findex, Grants Database, INSPEC, is available. Although the library is linked to Mysore Library Network (MALIBNET), DELNET and other IITs for resource sharing, it is not possible to search the union catalog through the library's web site.

Jawaharlal Nehru University (JNU)
http://www.jnu.ac.in/library/llibrary.html

Established in 1969, JNU library collects material in the field of sciences, social sciences and humanities. The library is part of a JNU wide area network and has its own local network connected via a server with forty-eight terminals inside the library, thereby making its databases available through the campus-wide network. However, the library's web site offers nothing more than the hyperlinks to free journals on the Internet and restricted electronic access to full text online journals.
National Center for Scientific Information (NCSI)

http://www.ncsi.iisc.ernet.in/

Established in 1983, NCSI is a premier information center providing services to the research and academic community in science and technology. The facilities at NCSI include two Unix host computers and fifteen IBM PC's inter-connected on a TCP/IP and Netware LAN to the FDDI campus network and Internet, CD-Rom work stations, online access to Knight-Ridder and STN international databases, scanning and optical character recognition (OCR) technologies. This is the most efficient library web site among all that were reviewed. It provides web access to the IIS catalog, NSCI's OPAC, and numerous in-house and commercial databases. Databases such as IIS Faculty Publication Database, IIS Dissertation Database, Indian Databases and Services in Science and Technologies, Directory of Numeric Data source Service, Database of sources in Electronic Industry are available and can be searched from the web site. Hyperlinks to services such as ADONIS- ILL, and online document delivery including free access to the content pages of leading biomedical journals are also included. Hyperlinks to free Internet resources in related disciplines, NCSI Newsletter, online reference desk, online document delivery services, online search services, networked information services including listserv and e-mail-based Profile Alerting Service, union catalog and other departmental libraries have added value to this library’s home page.

National Law School of Indian University (NLSIU)

http://mail.nls.ac.in/library/

The NLSIU library has a collection of over 30,000 volumes of primary and secondary materials, including both Indian and foreign textbooks, treatises, monographs, committee and commission reports, back issues of journals, reports, and digests, etc. The library is also a depository center for Council of Europe publications on human rights, and GATT/WTO selected materials. This web site resembles a library brochure though it provides access to the online OPAC and has hot links to other legal e-sources on the web. On-campus access to databases like SSC Online, Grand Jurix, All India Reporter on Supreme Court on CD, ILOLEX and Legal 2000 is available at the library.

Study Center for Indian Literature in English and Translation (SCILET)

http://www.scilet.org/scilib.htm

SCILET currently possesses more than 7,000 volumes of literature written by resident and expatriate Indians in the medium of English, or translated into English from Indian languages. SCILET subscribes to more than seventy-five journals related to Indian literature in English. The home page of SCILET's library offers nothing but the web based OPAC and serves the purpose of a library brochure only.

Tata Institute of Fundamental Research (TIFR)

http://www.tifr.res.in/~library/

The Tata Institute of Fundamental Research Library was established in 1945 and has a collection of over 100,000 volumes. The web site of this library provides access to Telnet and web-based OPAC, domain-restricted access to full-text electronic journals, current awareness services like "New Additions to the Library" and "Books under Consideration". On campus access to databases such as MathSciNet and Springer Link Service including a list of various CD-ROM databases is available at the library.

Conclusions

It is very encouraging to see the developments made by Indian academic libraries. However, Indian library professionals are yet to explore services such as electronic reference, personalized electronic e-source consultation, and work towards creating web-based information literacy tutorials. The Internet has revolutionized library reference services, and most American libraries have responded to this change by providing electronic reference service to its distant and on campus users. Providing reference service through the world wide web helps librarians find additional roles as navigators or trainers. Albeit most of the studies conducted on the subject of e-mail reference reveal a low volume of reference questions received via e-mail, it is becoming very popular.
The example of “Ask a Reference Service” from ninety American academic libraries is available at http://www.lis.uiuc.edu/~b-sloan/e-mail.html. Including hyperlinks to free Reference Shelves on the Internet can also help users find information on their own. The web site at http://library.fgcu.edu/Subjects/RefShelf/reference.htm provides hyperlinks to many such free Ready Reference Shelves on the Internet.

Personalized Electronic Resource Consultation (PERC) is another service that could greatly benefit Indian library users. Availability of increasing number of databases and electronic journals through the library’s home page is bound to require some instructional efforts on the librarian’s part, since the availability of sizable amount of information and different search mechanisms further complicate things for users. A busy library reference desk must generally attend to numerous questions, thereby making it impossible to take care of the instructional needs of patrons. Introduced at the University of Central Florida, PERC is a one-to-one reference assistance service. It is designed to let the librarians discuss patron’s individual information needs and to help them learn more about the electronic resources, formulate better research strategies, evaluate information received from various sources, and learn proper citation methods (Kisby, Kilman, & Carole, 1999). An example of the PERC service is available at http://library.ucf.edu/Line/Online%20OLD/OSSPERC.HTM. The purpose of this program is to work with a patron on a level of understanding that best matches their research skills.

Other useful additions to an academic library web site are hyperlinks to Internet resources such as government information resources, health agencies, and legal aid sources. Hyperlinks to suggestions forms, an audio or visual library tour, and access to free electronic books at http://www.netlibrary.com can also help increase the productivity of a library web site. Providing web-based basic library instruction tutorials to increase the information literacy levels of the users should be considered as a high priority. Florida Gulf Coast University Library’s web site includes an information literacy tutorial at http://ruby.fgcu.edu/courses/cslater/skunkape/menu.html. The University of California library at Berkeley has very effectively used web-based technologies to create online tutorials for finding information on the Internet, using the world wide web, evaluating web pages, using search engines, understanding search strategies and comparing well known search engines. An example of these tutorials can be checked out at http://www.lib.berkeley.edu/TeachingLib/Guides/Internet/FindInfo.htm. # Outline. Many American academic libraries have created interactive tutorials to facilitate better understanding of library resources and finding information. Such examples can be checked at http://home.sprintmail.com/~debflanagan/main.html and http://tilt.lib.utsystem.edu/.

Even though in its infancy, library automation is all poised to revolutionize the academic library scene in India. Indian library professionals are increasingly exposed to using IT and have a positive approach towards using the Internet to provide better services.

Reference


Ahmedabad: Information and Library Network Center.
