

Review Paper

Multimodal roles of library and information science professionals in present era

Sambhu Nath Halder

Department of Library and Information Science, University of Kalyani, Kalyani - 741235, India. E-mail: sambhu.scholar@gmail.com. Tel: +91 9733964714.

Accepted 30 September, 2009

Innovation and development of Information and Communication Technologies (ICTs) and different library software and its application in the field of Library and Information Science (LIS) create changes in entire library management system. The present study highlights the present scenarios of LIS profession and the professionals in this changing environment. The new roles of LIS professionals especially as advocate, consortia manager, consultant, content manager, facilitator, guide/teacher, intermediary, knowledge manager, researcher, sifter, web designer are discussed. Roles of government bodies, professional organizations and LIS schools to upgrade the managerial skills of LIS professionals to be fit for the changed situation are discussed. The study reveals the prospects and opportunities to cope with the changes in Library world from traditional to digital environment.

Key words: LIS profession, LIS professionals.

INTRODUCTION

Change is one reality with which individuals, groups and organizations must constantly cope in order to survive. The needs for progressive changes in people's attitudes and behaviors are essential for global acceptance. Nevertheless for Library and Information Science (LIS) professionals, a change is often linked with modern information technologies and management issues. Over the past few decades, the nature of library environment and mode of service has changed drastically.

With the development and application of information and communication technologies (ICTs), the library environment has shifted from the traditional library to hybrid library, then automated library and then digital library and virtual library and presently it is shifted to Library 2.0. With such changes, the structure and nature of library and side by side the LIS profession has also changed in a dynamic way. Now in this present situation the LIS professionals are playing all-round multimodal roles to satisfy the different approaches of the end users.

THE CURRENT TRENDS

Library is a vast storehouse of information. Emergence of Internet and Communication Technology (ICT) libraries has been acquiring different approaches of the same and mode of service is changed. Therefore, different types of

libraries have born in society, such as:

Hybrid library

The hybrid library is a term used to describe libraries containing a mix of traditional print library resources and the growing number of electronic resources. Hybrid libraries are mixes of printed books and magazines, as well as electronic materials such as downloadable audio books, electronic journals, e-books, etc. Hybrid libraries are the new norm in most public and academic libraries (Rai 2007).

Automated library

A library where access points and house keeping operations are computerized is called an automated library. The graphic records are still print-on-paper publication (Sharma, 2005), <https://drtc.isibang.ac.in/handle/1849/407>.

Digital library

A library in which a significant proportion of the resources are available in machine-readable format (as opposed to print or microform), accessible by means of computers.

The digital content may be locally held or accessed remotely via computer networks (Reitz: <http://lu.com/odlis/index.htm>, 2008).

According to Wiederhold "A digital library is popularly viewed as an electronic version of a library where storage is in digital form, allowing direct communication to obtain material and copying it from a master version (Wiederhold, 1995))." Digital library is not only digitization of physical resources, but also thoughtful organization of electronic collection for better access. Such organization provides coherence to a massive amount of shared knowledge base.

Virtual library

The access point as well as the graphic records are in electronic/digital form when these electronic/digital libraries are connected via various networks, particularly the INTERNET, this is called virtual library. A "library without walls" in which the collections do not exist on paper, microform, or other tangible form at a physical location but are electronically accessible in digital format via computer networks. Such libraries exist only on a very limited scale, but in most traditional print-based libraries in the United States, catalogs and periodical indexes are available online, and some periodicals and reference works may be available in electronic full-text. Some libraries and library systems call themselves "virtual" because they offer online services (example: Colorado Virtual Library) (Castelli, 2006).

Library 2.0

Library 2.0 is a loosely defined model for a modernized form of library service that reflects a transition within the library world in the way that services are delivered to users. The focus is on user-centered change and participation in the creation of content and community. The concept of Library 2.0 borrows from that of Business 2.0 and Web 2.0 and follows some of the same underlying philosophies.

Library 2.0 model gives library users a participatory role in the services libraries offer and the way they are used. Customers, should they desire, will be able to tailor library services to best meet their own needs. This can be done electronically, such as through the personalization of library web pages, or physically through new service options such as allowing customers to call impromptu book talks or discussion groups. Such collaborative efforts require librarians to develop a more intensive routine of soliciting customer response and regularly evaluating and updating services (Casey, 2006).

TOWARDS NEW PARADIGM

From the concept of custodian, the LIS professionals are

now engaged in different sector as content developer, knowledge manager, cybrarian and so on. This is due to the sea change in the Info-world. The Information world is now undergoing through a transitional period. Now the world is shifting from a Library-centered to an information- centered society. Resources are shifting from paper-based documents to predominantly digital documents, that is, using search engines, online databases, data mining, etc.

LIS professionals are facing three major changes, that is, the transition from paper to electronic and multimedia resources; increasing demand for accountability; and new forms of work organization. To cope with the situation, it has become imperative for the LIS professionals to get continuous exposure of new technologies, regular professional updating and greater control over the information resources.

MANAGERIAL ROLES OF LIS PROFESSIONALS

Presently, librarians are playing an integrated role beyond their traditional job. In a fast changing world, there are new demands and influences on libraries and information centers. Using modern technologies, libraries all over the world are now shifting their emphasis from traditional to multidimensional work force. As a corollary to this, LIS professionals are supposed to play versatile role in different areas of libraries and information centers to meet the expectations and needs of the present situation.

Advocate

LIS professionals act as lawyer when they deal with the issue relating to law such as copyright law, intellectual property right, etc. Librarian champion the cause of academic libraries through various advocacy programs to promote the library and resources. They can communicate news about the library through newsletters, web sites and memos to parents and staff. Their job is to keep principals and teachers up to date on what is happening in the library and to promote library activities and special projects. "Schools are learning communities encompassing students, teachers, administrators and parents (Baule, 1999)". Librarians must communicate the mission, goals and objectives of the resource centre to the entire user community (Scheirer, 2000).

Consortia manager

The LIS professional for Consortium operations is responsible for coordinating and overseeing consortium operations, including strategic planning, systems development and project management. Related responsibilities include facilitating communication among the participating libraries. In addition to these responsibilities,

the Librarian for Consortium Operations acts as the consortium's representative with vendors for contracted products and services.

Consultant

Generally speaking, consultants do not provide clients with existing published information, rather they advise to solve problems. The library and information professional often acts as an adviser who recommends both the best sources of information and ways in which to access information. This is a consultancy role which deserves recognition. Scattering of information is hindrance experienced by the users. These necessities the organization of information sources in a proper way that facilitates easy access to the users. However to be convincing, skills need to be developed to a high level in order to achieve the librarian as consultant role.

Content manager

The information science world has witnessed a major transformation in the content it has been dealing with. Digital and virtual libraries are a natural outcome of the movement of digitization and inter-networking. Library and documentation centres have increasingly used the technologies of intranets, extranets and portals for specialized techniques of content management and deployment. This information has been put to distinct business advantage by using the techniques of data warehousing, data mining, taxonomies, ontology and industry-specific knowledge maps. Use of Info maps and knowledge mapping are additional competencies for creating visuals for knowledge maps, which makes search and retrieval much easier and enjoyable. Available visualization technologies need to be employed for this purpose.

Facilitator

Rapid growth of electronic documents and their availability in the web now creates exploration of information. Even so many printed versions of books, journals have shifted their platform to Internet, which includes freely available and paid publications also. At the same time it is becoming very hard to locate necessary information within least possible time. In these circumstances, librarians are trying to acquire knowledge of different systems and software to manage the sea of information. Side by side s/he also gains a wide range of proficiency to effectively guide and train the information seekers in their usage.

The role of the facilitator is characterized by qualifications would be closely related to the ones of the librarian. It is likely to emerge that the traditional intermediary function of the librarian by its nature could create a

basis for the role of the facilitator in a networked community (Schreiber and Moring, 1997). This is the changing role of traditional librarian to ensure that user and/or staff knows how to access relevant sources of information. LIS professionals have not only to deal with greater quantities of information than earlier, but using ICT, have also to change their role from passive providers of information support to more proactive providers of information itself (Rao and Babu, 2001).

Guide/teacher

Most often LIS professionals are acts as a teacher to ensure that patron know how to access relevant sources of information. The shifted role of the teacher-librarian has evolved from "keeper of the books" to "information resource specialist." Teacher-librarians play a vital role in educating users to become information managers and lifetime learners. A big number of users need to be assisted to use the journal literature and different reference tools, like Chemical Abstracts, thesauri, etc. On the other hand, in the Internet era use of e-journals, OPAC and advance search option in using Search Engine, e.g. uses of Boolean operators are also needed to be instructed. Present day librarians have a big hand to assist user as and when required. Like classroom teaching, librarians can provide guidance to their user community with Information literacy programme. Information literacy is the ability to access and evaluate information that promotes both independent learning and social responsibility. It is the teacher-librarian's job to show users how to analyze information critically and use it wisely. Users must know how to plan, locate and retrieve information. They process what they find to create a product and the final step is evaluation (Lighthall, 1990).

Intermediary

Librarian is a person who functions between the end-user and an online bibliographic retrieval system to assist in database selection, establish telecommunication connections, formulate useful queries in correct syntax and evaluate the relevance of information retrieved. Mediated searching is provided on request in most academic libraries by a public services librarian specially trained in online searching.

An Intermediary is defined by Peter Ingwersen (Ingwersen, 1992) as "A person or mechanism placed physically between IR (Information Retrieval) systems and actual user with the purpose to transform interactively requests for information to query formulations that suit the retrieval components of one or several IR systems, to model and support the actual user as to his information need and underlying goals and to provide information of potential value to that user from IR systems". Traditionally a human intermediary is a librarian

or an information specialist. An IR system includes text-presentations, classification and indexing systems and IR techniques in catalogues and databases or other information sources. However, research in this field is directed towards implementing non-human intermediary functions into online IR systems through user interfaces and system setting. In addition to more efficient and more effective searches by librarians, research has determined that a single librarian or information professional can save the equivalent amount of time of three, or four, or even five end-users. In other words librarians are three, or four, or five times more efficient and more effective than end-users are at performing their own information searching activities (Rao and Babu, 2001).

Knowledge manager

Knowledge Management (KM) involves the identification and analysis of available and required knowledge and the subsequent planning and control of actions to develop knowledge assets so as to fulfill organizational objectives. Librarian as a part of KM system can effectively participate in the process of knowledge creation which includes mechanisms for knowledge capture, exploitation and protection besides in required infrastructure creation by the virtue of capabilities gained as Information Managers of the organization Librarians, in future, would move from the background to the center of the organization. They would shed their traditional role as a part of support group, uninvolved in any critical functions, to a prominent position to jointly hold the reins of knowledge management with users and the technology experts. They would help steer and shape the knowledge policies, structures, processes, and systems that will nurture organizational learning (Rao and Babu, 2001).

Some of the qualities of a librarian to become a knowledge manager:

- i. Providing services to the user community.
- ii. Sharing the information and understanding the user needs.
- iii. Theoretical and practical experience in designing and implementing information systems.
- iv. Analyzing the documents, classifying and storing them for easy retrieval.
- v. Knowledge of current advances in information systems and technologies and their application in libraries.
- vi. Building the index, using standard vocabulary.
- vii. Ability to effectively teach end-users, individually and in groups.

Researcher

LIS professionals have played a crucial role in research process. They are highly skilled in the research process

and possess a unique knowledge of both the breadth and depth of information resources in various subject specialties. Their active participations in research teams are very much important to critical analysis. By facilitating access to nascent information in the way to finding it, analyzing, synthesizing and packaging the LIS professionals would move to the beginning of the information production cycle, playing a more substantial role in the information creation process. Teams within an organization should have an information professional who is responsible for the information gathering skills of the team (Rao and Babu, 2001). To fulfill research work in least possible time the help of LIS professionals is inescapable. They are always happy to help by providing organized information in right time on the basis of research scholar's demand.

Sifter

The term sifter is well known in the field of computer science. Actually sifter or siftware is nothing but, it is "software programs to extract unknown, valid and actionable patterns, associations, changes, anomalies and rules from large databases". This process is also known as "Data Mining". The Internet and Web provide access to vast information resources. The term "sifter" may be used for the skilled librarian who helps users make sense and order of the resources. The future belongs neither to the conduit or content players but to those who control the filtering, searching and sense-making tools to navigate through the expanses of cyberspace. In other words, the librarian can be a key player in the emerging scenario (Rao and Babu, 2001).

Web designer

The use rate of Internet is increasing at a galloping stride. The Internet can now be accessed almost anywhere by numerous means and thus allowing users to connect to the Internet not only from the library. The traditional skill of a librarian in locating, evaluating and organizing the information would be of immense use in the creation, development and content filling of a Web site for the organization and library. Web site of an institution provides access point to external resources remotely, where Web pages specific to their disciplines is available. Frequently updating of an organization's Web site has become regular phenomenon. Managing organization's own information on the Web site includes details of course information, directories, statutes, annual reports, etc., The activities of the librarian while creating a web page is to deliver information about the library and its services like hours of service, location of services, details of library staff, library policies, an interface to the library Online Public Access Catalog (OPAC), etc.

A well viewed interface always attracts the users and increasingly relevant to the way people access and use digital technologies. A beneficial way for librarians to break out of their insularity is to become much more closely involved and collaborate in the work of computer and information scientists in tasks such as design, organization, development and maintenance of digital library repositories, interfaces, search engines, networks and Web documents (Rao and Babu, 2001).

CHALLENGES OF LIS PROFESSIONALS

There is always a debate on the roles of libraries especially in the present era. The frequently asked questions are:

- i. Are Libraries "inefficient, limited, obsolete".
- ii. Is there a need for Libraries and Librarians in the electronic age?

We have already discussed the various activities of LIS professionals in the light of present situation. But it should be kept in mind that professional and social acceptances of the profession depend upon the skills, attitudes and behaviors of the professionals.

Due to the changes in the working environment of libraries the LIS professionals are facing challenges day by day. Not only in the internal activities of the libraries but the demands of the user's expectations are also changing relating to information and communication technologies. The users' expectations always seem to exceed library's capacity in terms of documents, infrastructure facilities, finance, staff etc. So, the LIS professionals have to choose whether he or she will manage and/or control the events that impact their workforce and produce stress or to allow stress to manage them.

REQUIRED SKILLS FOR LIS PROFESSIONALS

The electronic environment of the 21st century will demand a range of skills from by Library and Information Science (LIS) professionals, including:

- i. Technical skills.
- ii. Information Technology (IT) skills.
- iii. Managerial skill (Sridhar, 2004).

According to National Knowledge Commission, India, skills required fulfilling the changing role of libraries are:

- i. Library and information handling skills.
- ii. Service orientation.
- iii. ICT knowledge skills.
- iv. Communication and training skills.
- v. Marketing and presentation skills.

- vi. Understanding of cultural diversity.
- vii. Knowledge mapping skills

SUPPORTS FOR DEVELOPMENTS

Government Bodies

The University Grants Commission (UGC) has initiated a programme to provide electronic access over the Internet to scholarly literature in all areas of learning to the University sector in India. The programme is wholly funded by the UGC. All Universities which come under UGC's purview will be members of the programme, and it will gradually be extended to colleges as well. The programme is being executed by Director, Information and Library Network (INFLIBNET) Centre, Ahmedabad which is an autonomous institution under the UGC. Access to various E-Journals has started from January 1, 2004 (Murthy et al., (2005).

INFLIBNET initiate a project as part of ongoing international efforts to construct a networked digital library of theses and dissertations, Indian University Libraries and it is presently accessible through its website.

The UGC has announced the Career Advancement Scheme (CAS) mandatory for the Assistant Librarian/ College Librarians (vide its letter no. F.3-1/94(PS)-7, dated 19.10.2006). Every Assistant Librarian in a University and a Librarian in a College, who is in the scale of pay of Rs.8000-275-13500, will be eligible for placement in a Senior Scale of Rs.10000-325-15200 through CAS. It is also applicable for the higher positions. 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 (Rath, 2006). The National Knowledge Commission, India has suggested the following points for LIS professionals realizing the changing roles in the society:

- i. Set up a National Commission on Libraries.
- ii. Prepare a National Census of all Libraries.
- iii. Revamp LIS Education, Training and Research facilities.
- iv. Re-assess staffing of libraries.
- v. Set up a Central Library Fund.
- vi. Modernize library management.

Table 1. The themes of different seminars / conferences of IASLIC.

2001	Content management in India in digital environment.
2002	Digital information system and services.
2003	Knowledge management in special libraries in digital environment.
2004	Information support for rural development.
2005	LIS profession in India: Vision for 2010.
2006	Open source movement: Asian perspective.
2007	Digital media and library information services.
2008	Library Profession in Search of a New Paradigm.

- vii. Encourage greater community participation in library management.
- viii. Promote Information Communication Technology (ICT) applications in all libraries.
- ix. Encourage Public Private Partnerships in LIS development

Professional organizations

Professional organizations should also play a great role to develop the professional efficiencies time to time by organizing seminars, workshops, hands-on trainings and refresher courses on new technologies. Professional organizations can keep up with changes in the profession and embrace it smoothly.

If we view the seminars / conferences that are organized by different LIS professional bodies of India we can definitely understand that the realization of multimodal roles of LIS professionals is well accepted. As for example, Indian Association of Special Libraries and Information Centres (IASLIC) has organized such topics since 2001.

IASLIC has been emphasizing the present trends of LIS profession through its seminar / conference themes in Table 1.

LIS schools

The preliminary tasks of LIS schools is to provide tactful teaching to make students of adequate knowledge and they also know how to develop a strategy for continuing their education once after completion their LIS school education specifically in real-field scenarios, how to develop skills for acceptance new technologies and how to develop a strategy for troubleshooting technologies.

LIS schools definitely offered classes on evaluating software and using Internet how can be provided the traditional library services from remote place in least possible time.

Studies pointed out as the minimum responsibilities of LIS schools in this aspect are (Rath, 2006):

- i. Need based curriculum.
- ii. Competent faculty.

- iii. Instructional technology support.
- iv. Learning resources (print, electronic and web based).
- v. Continuing education programmes.
- vi. System of continuous evaluation.
- vii. Adequate financial support from the sponsoring bodies.

The UGC Model Curricula (2001) recommended that “in view of the emerging network environment, in view of the fundamental shift in the goals of the library and in view of the changes in information storage and delivery mechanisms, the educational programmes should cater the needs of these changed settings by including in their course contents, the knowledge and skills required to function effectively in such an environment”.

This curriculum enumerated in detail the contents of each module along with objectives of the module and expected outcomes of the modules. Besides this, one important feature is that a part of the report contains a detailed syllabus for a 2-year integrated programme leading to MLIS along with the marking pattern, number of credits, number of hours of teaching theory and practice. Out of all the syllabi published so far, this syllabus seems to be useful and therefore, soon after its publication, majority of the Indian Universities have modified their course structure as per the recent report (2001). So now, almost all the University departments in India are having common syllabi for teaching the LIS subjects.

The following propositions are suggested for the LIS education in India:

- i. Provision of minimum infrastructure facilities by the controlling authority by giving sufficient funds.
- ii. Assessment and accreditation of universities by any controlling organization at the national level to judge the quality of the products.
- iii. Keeping a balance between the job opportunity and number of LIS products produced each year.
- iv. Introduction of e-learning techniques to improve the quality of the products with minimum qualified teachers.
- v. Developing the competencies and confidence among the professionals by giving knowledge of latest technology.
- vi. Keeping liaison between the LIS educationists and the

library professionals for providing training in specialized courses.

vii. Making provision of modular courses for the new developments in the field.

viii. Giving more importance in deciding the research topics which should be related to the current issues such as "Need of LIS professionals in electronic environment, etc".

FUTURE TRENDS

Since past decade or so, many philosophers have predicted severe consequences resulting from an aging workforce and technological change. LIS professionals have done a commendable job in seizing new technology, but they will need to become much more aggressive and proactive in the future as they face increased competition from a variety of groups who think they can do a better job in providing information to the user. So in the near future the LIS professionals should have to take necessary responsibilities in:

i. As providers of resources, they can help to enhance the amount of available resources by making stakeholders aware of the importance of sharing. In particular, as far as the sharing of content is concerned, they can operate by promoting digitization campaigns and the open access approach. These actions may result in a vast amount of new digital information accessible online which can be exploited by advanced services.

ii. Within a digital framework, libraries are certainly the best candidates for carrying out content description, maintenance and preservation of resources. By exploiting their large experience acquired in the past, they can contribute to the long-term availability and to the quality of the resources disseminated by the digital libraries (DLs).

iii. Long-term availability also requires the implementation of models able to support the sustainability of the resources provided. Libraries, either alone or as members of library consortia, can also act as the organisations deputed to define and put in place these models.

iv. As main resource providers, libraries can work jointly on the definition of common policies and standards. An agreement on these aspects would strongly contribute towards facilitating the design and development of the new complex services required to fulfill the emerging user needs.

v. In the future libraries can also play an important role as mediators between the infrastructure and the user communities. In particular, they can proactively promote and facilitate the creation of DLs that respond to the needs of the user communities. They can also assist users by providing, if necessary, the skills required to select, update and exploit the DL content and services (Castelli, 2006).

It is not hard to realize that in near future library and infor-

mation centres would be globalized and maximum services will be available from remote places.

CONCLUSION

Presumably the spirit of LIS professional should be elevated if he can better review his shady past and analyze more completely and objectively his present problems. Library and information professional communities are being affected by a range of ICT developments and so find their roles changing worldwide. A librarian with diverse talents and training, and who is flexible, will be able to meet the challenges of future library scene. The container of information is not only the print materials but this is the age we are living where a huge rate of information born in digital format. Technology alone cannot help bring about the required changes. Attitudes, practices, and policies need to change if libraries in India are to truly benefit themselves and their community of users by the application of new technologies.

LIS professionals have been playing a versatile role beyond their traditional job. They have to gather adequate knowledge of computer and communication technologies, networks and networking, operating systems, Internet concepts, database management systems, along with adequate practical exposure to handle technological devices. In mobilization of all kinds of information resources librarians are expected to work as pathfinders by assisting all users with varied backgrounds and abilities through information supportive environment and multiple strategies.

In single sentence, the core objectives of LIS professionals are unchanged whereas the mode of services is changing to cope with paradigm shifts.

REFERENCES

- Baule S (1999). Information power: Building partnerships for learning. Book Rep. 18(3): 42-43.
- Casey ME, Savastinuk LC (2006). Library 2.0 Service for the next-generation library. Libr. J.
- Castelli D (2006). Digital libraries of the future – and the role of libraries. Libr. Hi Tech. 24(4): 496-503.
- INDIA. National Knowledge Commission. Annexure to NKC recommendations on Libraries. <http://knowledgecommission.gov.in/downloads/recommendations/LibrariesAnnex.pdf>. visited on 18.06.2008
- INDIA. National Knowledge Commission. NKC recommendations on libraries: letter to the Prime Minister. <http://knowledgecommission.gov.in/downloads/recommendations/LibrariesLetterPM.pdf> visited on 26.06.2008
- Ingwersen P (1992). Information Retrieval Interaction. London: Taylor Graham p. 228.
- Lighthall L (1990). Pivotal role of teacher-librarians. The Canadian School Executive,
- Murthy TAV, Cholin VS, Vijayakumar JK (2005). UGC-INFLIBNET Initiatives in e-journal consortia and digital library of doctoral theses for Indian universities. In proceedings of National Conference on Digital Library and e-Theses (NCDLET) held on January 7 - 8, at Jadavpur University, Kolkata. Available at: http://eprints.rclis.org/archive/00005658/01/vijayakumarjk_09.pdf visited on 11.06.2008
- Rai AS (2007). Effective utilisation of hybrid library (digital & print media) in engineering colleges in Bangalore: descriptive study. The

- Indian J. Tech. Educ. 30(4).
- Rao KN, Babu KH (2001). Role of librarian in Internet and World Wide Web environment. Available at: <http://inform.nu/Articles/Vol4/v4n1p025-034.pdf>. visited on 24.06.2008, Informing Sci. 4 (1).
- Rath P (2006). Preparing library and information professionals for the 21st century: Issue and challenges for library and information science educators in India. In Khoo, C., Singh, D. & Chaudhry, A.S. (Eds.), *Proceedings of the Asia-Pacific Conference on Library & Information Education & Practice (ALIEP)*, Singapore, Singapore: School of Communication & Information, Nanyang Technological University. pp. 35-40.
- Reitz JM. Online Dictionary for Library and Information Science. Available at: <http://lu.com/odlis/index.htm> visited on 12.06.2008
- Scheirer B (2000). The changing role of the teacher-librarian in the twenty-first century Available at <http://www.usask.ca/education/coursework/802papers/scheirer/scheirer.htm> visited on 15.06.2008
- Schreiber T, Moring C (1997). The Communicative and Organizational Competencies of the Librarian in Networked Learning Support: A Comparative Analysis of the Roles of the Facilitator and the Librarian. In, 2nd International Symposium on Networked Learner Support: New Services, Roles and Partnerships for the On-line Learning Environment, 23rd - 24th June, Sheffield, England. Accessed April 5, 2001 at: <http://www.netways.shef.ac.uk/rbase/papers/moring.htm> visited on 22.06.2008
- Sharma PL (2005). Changing role of librarians in digital library era and need of professional skills, efficiency & competency. Available at: <https://drtc.isibang.ac.in/handle/1849/407>
- Sridhar MS (2004). Skill requirements of library professional in the Electronic Environment of Twenty first century. In Mahapatra, M. and Ramesh, D. B. *Information Technology application in libraries: A text book for beginners* pp. 597-606
- UGC model curriculum (2001). *Library & Information Science*, UGC, New Delhi.
- Wiederhold G (1995). Digital Libraries: Value and productivity. *Commun. ACM* 38(4).