CHAPTER-5

ICT AND UNIVERSITY LIBRARIES

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ICT AND UNIVERSITY LIBRARIES

5.1: Introduction:

India has actively promoted the use of ICTs in education sector ranging from radio to satellite based interactive television. Use of media for promoting education and development has always been a part of policy and plan documents on education. Presently the decision makers at both central and state level are favoring inclusion of new computer and internet based ICTs in education. The GOI has implemented several national as well as state specific schemes that run concurrent to large number of privately led ICT initiatives at school and higher education levels. Draft of National Policy on ICT in School Education is available in the MHRD’s website. 11th Five Year Plan has proposed for launching of a National Mission in Education through ICT to increase ICT coverage in more than 547 universities/institutions, 27000 affiliated colleges, 125 lakhs students and 5-6 laths teachers.(University News 49 (33), Aug.2011). The Mission aims to focus on digitization and networking of all educational institutions, developing low cost and low power consuming access devices, and making available bandwidth for educational purposes. Collaborative efforts of agencies such as MHRD-Department of Information Technology (DIT)-Department of Tele communications (DOT) would be utilized to ensure fully electronic universities and digital campuses. Although, advanced computational facilities will be provided in select institutions. Despite the fact that ICTs in education has gained recognition and place in national and state specific policy and plan documents yet it would be advantageous to have a focused national level ICT policy framework to provide the necessary thrust, direction and guidelines to strategies at all levels of education. Senhi, Neeru (2009).[1]

The initiatives taken by UGC to modernize University Campuses during the last few years need to be supplemented. Effective and efficient resource mobilization
interventions are urgently required. Pathways for private–public partnerships and collaborations with the commercial sector institutions need to be chalked out.

Today computer and related technologies has brought revolutionary changes in the whole world of information. Perhaps, this is the most exciting period in the history of human race when world's most population is shifting from 'techno-illiterate' to 'techno-literate'. The society is undergoing a kind of transformation. With the passing of each day, we find that 'Information and Communication Technology (ICT)' has affected almost every sector of our life, bringing a change in the case of people's think, interaction, etc. This revolutionary change is also true in the case of libraries and information centers. Libraries and information centers can hardly function today without computers and information technologies. In the modern world the library and information professions have been changed and adopted itself to the developments of Information and Communication Technology. These technologies have acquired the do-or-die prominence; those who go with the advances will survive and others will become obsolete. A well-equipped university library with the facilities of modern information infrastructures and technologies or ICT tools could satisfy the maximum demand of the present technology conscious users.

Now, University libraries are not the exemption from the impact of ICT. Such libraries are very much interest in incorporating the latest ICT in their administrative functions, technical works and user services. University Grants Commission liberally contributes the grants to the university and other affiliated colleges to install the ICT facilities and generate a digital environment. INFLIBNET is actively involved in the automation and digitization of university libraries. Really the encouragement and cooperation given by the INFLIBNET by its various activities like funding, training, orientation, workshops and publication made the university libraries equipped with all ICT tools for providing better services to the students researchers and teachers.

The shift from print to digital information has a high impact on libraries, information centers and other institutions directly involved in processing information. This shift is generally attributed to the merging of computing, telecommunications technologies
and other industries. Computers have permeated society because of their ability to perform high volume error-free repetitive tasks at speeds much faster than human beings, while recent and emerging developments in the area of computing; telecommunications, networking and resource sharing made access to information anytime, anywhere possible. Sampath Kumar, B. T., & Biradar, B. S. (2010). [2]

The advancement of science and technology has made a tremendous improvement and changed almost all walks of life. Especially, the magnetic word Information technology has been chanted in all corners of the global arena and been incorporate in organizational, managerial, developmental and marketing sectors. The services rendered with the help of ICT are faster and more effective. Moreover, it creates faith and confidence about the products and services of an organization among its customers. Researcher tried to highlights the changing dimensions of library services due to the impact of ICT.

5.1.1: Future of Libraries in ICT era:

We know that the use of ICT is increasing rapidly in the field of library and information centers. Users are becoming more aware to use the digital resources from the world to acquire the knowledge. Users are using paperless media to get there information. Electronic media and communication has reached in the mind of every human kind in one or another way in their daily life. Libraries are now also a part of human's daily life as it provides each and every kinds of knowledge to the mankind because every kind of libraries are now available in internet freely. Numbers of links and free sites are available for the users who wish to access the information as per their interest. Most of the libraries are now becoming automated; which provides the entire housekeeping facilities with the use of computer and internet. e-Books, e-journals, e-newspaper, online video lectures, CD/DVDs of different tools and
techniques, open source software, resource sharing with use of different communication media, use of social networking sites in libraries, networking, cloud computing, mobile computing and such kinds of numerous ICT tools will take the place instead of traditional libraries and the concept of paperless library is becoming executed in forthcoming days. The concept of virtual library, e-library, digital library, library without wall will be adopted by the ICT enabled librarians in the future. As a researcher, I believes that there is no alternative of physical books for reading, so there will be a fusion of library in which both the concept are being used as per the users requirement. Thus, we can say that the libraries and information centers of future are more advanced, more modern, more attractive as per infrastructure, more easy to access, more comfortable for users, any time accessible or 24X7 available, every kind of information at a one place, very interactive, cost effective and growing organism which really considered as powerhouse of knowledge which provides ICT enabled facilities and such conceptual traditional facility of library. Ultimately user can be able to acquire the material from the library, as digital and physical or both. Therefore, the future of libraries and information centers is full of knowledge with the adoption of new ICT tools and techniques.

Impact of digital information materials on libraries

- Digital information can be sent in multiple copies simultaneously over information networks in fractions of a minute or even of a second. There is no need for users with PCs attached to the network to physically go to the library. They can access information via their PCs.
- Digital information can be cut/copied and pasted from one document into another
- Digital information may be free or cheaper than print equivalents
- Digital information often modifies librarians’ roles in various ways
- Effects of these developments on the user community
- Increases the level of technology literacy
- Increases demand for better and faster access to information
Exposed to different applications of technology in their life, users nowadays are more adept at its use and are expecting to have access to it in their times of need. In libraries, users that are knowledgeable in using computers and the Internet for their research demand nothing less than a computer with Internet access. However, this may not be true and not applicable to those who have no access to such technologies due to financial difficulties. Thus, two different kinds of users have emerged that libraries must cater for: the "haves" and "have-nots". Ideally a balance must be maintained in providing services for both groups so that all users will have equal access to information. This can be effectively done through the use of powerful and appropriate technologies.

5.1.2 ICT and Libraries:

Libraries which were considered only as the storehouses of knowledge, have got a new outlook in the modern Information Communication Technology era. The activities which were carried out manually in libraries with so much of pain and strain are being carried out smoothly with the help of ICT with greater effectiveness. Library organization, administration and other technical processing have become easier and more quantum of work can be done in relaxed mood. ICT, which is the basis for the MBO, generates more results at a given time. The implementation of ICT in the libraries has demanded new forms of library services to get more user satisfaction. Digital library service has evolved after the implementation of ICT in the library and information centers. Here are the services of university library which can provide the maximum user satisfaction with the use of ICT tools.

Such useful services for University Library:

- Bibliographical service (compilation of subject bibliographies relevant to the topic of research);
- Literature search service (either manual or on-line service from various data bases depending on the availability of the facilities);
• Current awareness services and SDI services to keep researchers up to date with the current advances in the subject field of the researchers, by providing monthly list of articles or contents pages of journals recently received; new accessions lists; in house abstracting and indexing services etc.;

• Document delivery services i.e., delivery the physical document to the user either from the library collection or from other sources. It includes ILL, online ordering, photocopying services, support of translation and communication channels like telefaximile etc.

• Reference and information services both short range, i.e. providing specific pieces of information and also long-range reference services by searching for current and retrospective literature, i.e. complex queries;

• Translation services i.e. either to obtain the required translation copies of the foreign language documents from the translation pools or translation banks. Like International Translation Center, Delft, British Library Document Supply Centre (BLDSC), London, ASLIB, London, National Translation Centre, Chicago INSDOC, New Delhi and

• Referral services a method of service to the scholars by directing them to the most like institutions, libraries or individuals who possess the information / documents when they are not in the stock of one's institution library and cannot be obtained by ILL.

**Indian Scenario:**

Regarding library environment, the digital movement is yet to take off. In the absence of strong telecommunication channels, the Internet facility is yet to find its success. Financial constraints are the major hindrance for the growth at national, local and organizational levels. As a result the implementation of ICT facilities for libraries are not receiving adequate support from their parent body. Majority of libraries in India do not have computer facilities. The print media is still a major source of information in libraries. The Indian libraries will be deprived of digital information if they cannot find a mechanism to acquire such materials and a facility to read them. Sooner or later
the management authorities would realize the need of this vital change and start tuning to the present day requirements.

### 5.2: Developing role of ICT in university libraries

Information and communication technology has revolutionized the information handling activities in the university libraries during the past few years. The information society demands that all the relevant technologies, that are involved in information processing consolidation, repackaging and retrieval be merged so as to evolve an integrated system; capable of providing diversified services. In this direction the automation of individual university libraries is a first step rather a pre-requisite for the development of such an integrated university library and information system which is doing rapidly by the university library professionals in the different states of India to stay with the current development of the ICT enabled technology used in library. The promising trend in the development of information services with effective networking of these libraries will facilitate the optimum utilization of information resources. Here the researcher has try to explain such useful sources and services which is very useful in the development of university library in current ICT scenario. P. Balasubramanian (2011) [3]

#### 5.2.1: Contribution of such major ICT tools and techniques for the development of libraries and information centers.

As we all know that the contribution of ICT plays the vital role in the overall development of libraries and information centers in present scenario as well for future also; researcher has tried to explain such key functions of ICT tools and techniques which is being applied or to be applied to store, retrieve and disseminate the various resources through which library professionals can provide 100% satisfaction to their users.

Such functions and facilities are mentioned below which is used or may be used in the library for making the "state-of-art" library with the use of ICT tools and techniques.
E-Books:

An e-book is an electronic version of a traditional print book that can be read by using a personal computer or by using an e-book reader. (An e-book reader can be a software application for use on a computer, such as Microsoft's free Reader application, or a book-sized computer that is used solely as a reading device, such as Nuvomedia's Rocket e-book.) Users can purchase an e-book on diskette or CD, but the most popular method of getting an e-book is to purchase a downloadable file of the e-book (or other reading material) from a Web site (such as Barnes and Noble) to be read from the user's computer or reading device. Generally, an eBook can be downloaded in five minutes or less.

Some e-Books can be downloaded for free or at reduced cost, however, prices for many eBooks - especially bestsellers - are similar to those of hardcover books, and are sometimes higher. Most eBooks at Barnes and Noble, for example, are comparable in price to their traditional print versions. In short, we can say that,

An e-book is the electronic version of a book covering its full contents (text, tables, diagrams, illustrations, etc.)

An e-book collection is usually set up in an e-database, which supports full-text searching within and across titles, advanced search and bookmark functions. Users can view full text of e-Books in HTML or PDF format online.

some of the major book retailers and multiple third-party developers offer free (and in some third-party cases, premium paid) e-Reader applications for the Mac and PC desktops as well as for Android, Blackberry, iPad, iPhone and Palm OS devices to allow the reading of eBooks and other documents independently of dedicated e-book devices (such as the Amazon Kindle, Barnes & Noble Nook, Kobo e-reader, and Sony Reader).
Project Gutenberg offers over 42,000 free e-books: choose among free e-pub. books, free kindle books, download them or read them online. It is not so easy to find electronic books “scattered” all over the Internet. The philosophy of Project Gutenberg (http://promo.net/pg) is to make information, books and other materials available to the general public in forms a vast majority of the computers, programs and people can easily read, use, quote, and search. In this project you can find: light Literature, such as Alice in Wonderland, Through the Looking-Glass, Peter Pan, Aesop's Fables, etc.; heavy Literature, such as the Bible or other religious documents, Shakespeare, Moby Dick, Paradise Lost, etc.; references, such as Roget's Thesaurus, almanacs, and a set of encyclopedia, dictionaries, etc. Hardesty, L. (2010) [4]

e-lib programme (http://www.ukoln.ac.uk/services/elib) – The Electronic Libraries Programme is dedicated to accumulating electronic publications, searching the Internet for them and presenting electronic documents to the user.

**Websites of e-books:**

The On-Line Books Page (http://digital.library.upenn.edu/books/) – it is a directory of e-books that can be freely read right on the Internet. It includes an index of thousands of on-line books on the internet, pointers to significant directories and archives of on-line texts, special exhibits and much more. Prize-winning books on-line (http://digital.library.upenn.edu/books/prize.html) – in this exhibit we will find electronic copies of awarded books (works that won Nobel prizes).

- eBookNet (http://www.ebooknet.com) - eBookNet brings you the Web's most comprehensive eBook industry news, tips for writers and publishers, listings and reviews of the latest eBooks, and vibrant community discussion about the eBook business.
- The Internet Book Information Center (http://www.Internetbookinfo.com) – this project, which began in 1994, you can find a lot of information about Internet books.
Thus, e-Books are being popular to use in the libraries, as it is available 24X7, cost effective and ready reference tool.

➢ E-journals:

Simply we can say that E-journals is an electronic journal or a periodical publication which is published in electronic format, usually on the Internet. It is available free and in paid form also. Number of popular publishers like IEEE, Springer, ASME, Elsevier etc. is publishing e-journals.

Now in the most of academic libraries, educational government bodies like AICTE have made the rules mandatory to subscribe the e-journals in the libraries. There is an increasing demand of research scholars, teacher and students of such professional courses to have e-journals in their resources.

Thus, e-journals play a vital role in the libraries.

Electronic journals have several advantages over traditional printed journals:

- You can search the contents pages and/or the full text of journals to find articles on a certain subject.
- You can read journal articles on your desktop, you don't have to be in the Library.
- You can e-mail articles to yourself or download them for printing.
- The article that you want to read will always be available, even when the Library is closed.
- Hypertext links allow you to move to different sections within individual journals or articles and can link you to related resources on the Internet.
- Journals can include more images and audio-visual material.
- Journals can be interactive - you can e-mail the author or editor with your comments.

Thus, we can say that,
• An e-journal (electronic journal) is a journal published online.
• Full-text journal articles are available via a platform that provide both browsing and searching functions.
• Library users can access e-journals on the Library Website, within the campus network, or via remote access. It may be a paid journals or available free from the internet. For e.g. Intercultural Communication (http://www.immi.se/intercultural) - the goal of the journal is to promote research, also education and training in the area of intercultural communication. The journal is an outgrowth of the activities of NIC the Nordic Network for Intercultural Communication.

➢ E-publishing:

In the days of information society “traditional” book is not the only source of information any more. Electronic publications, which came with new technologies, create basis for fast and high quality information. Convenient storage, search and copying possibilities decide the strength of this new media. Electronic publication is arranged computer information. In electronic publishing, or e-publishing, material is produced and stored electronically rather than in print. Whenever users display, present or “post” any written, auditory or visual media on to the World Wide Web, it can be said they are “publishing” electronic content. Most traditional newspapers and magazines today publish in an electronic form on the Web where access is typically “free” or available through a free membership. Frequently electronic publishing is referring to production of electronic books. Then electronic publishing can mean:

a) Production and distribution of new works, which are appearing for the first time in electronic format.

b) Providing electronic text versions of previously published works (such as classic literature, non-copyrighted material, or works that have entered the public domain), either online or on CD-ROM, or offering an electronic version of a book that is simultaneously being produced in print. Electronic publications should have several important features:
• Convenient navigation;
• Information control;
• Search possibilities;
• Identification number (ISSN, ISBN, DOI, etc.)

Electronic publications are being registered in ISSN and ISBN agencies already. They have to be registered independently from their “traditionally” published analogue.

If you are interested in electronic publishing, and especially if you are publishing electronically, visit the websites of electronic publishers’ organizations: here you can find useful information, suggestions and support:
• Electronically Published Internet Connection (http://www.eclectics.com/epic/)
• Association of Electronic Publishers (http://welcome.to/AEP)
• Internet Professional Publishers Association (http://www.ippa.org/)

➤ **E-newspaper**

In the age of information explosion, e-newspaper is being used very widely in the world. Users are frequently using the e-newspapers in the modern libraries and knowledge centers.

E-Newspapers are newspapers which are published electronically. They can take the form of normal print publications published on the Internet; additional or complimentary content to print publications published on-line; or original publications published exclusively on the World Wide Web. Many news organizations require subscription to e-newspapers, just like regular print newspapers. E-newspapers run the gauntlet of newspapers, from serious hard news, to features, to arts and entertainment, to sports, and everything in between.

As a product and form of media, e-newspapers first emerged in the mid 1990s with the popularization of the internet. As more households gained access to the internet, people began to use the Web as a news source. With a demand for news media on-
line, many organizations used this opportunity for additional subscriptions, an expanded readership, and more advertising revenue. E-Newspapers, like most websites, utilize all of the tools of the internet. With web addresses similar to the name of the paper, hypertext and hyperlinks to additional stories or sections, uploaded photographs, and links to classifieds, e-newspapers follow the format of most print newspapers.

Indian newspapers have more than 400 years of history and the first newspaper was initiated in the mid of 1700, that is The Bengal Gazette. India has more than 2000 daily newspapers in 100 languages with a combined circulation of 88 million and some of leading dailies are Hindustan Times, The Mint, The Telegraph, Asian Age, Indian Express, Financial Express, The Pioneer and many more.

The demand for online newspapers has been increasing from the past few years with the growing reach of Internet. India's 60,000,000 Internet users comprise approximately 8.0% of the country's population and about 5,010,000 people in India have access to broadband Internet as of 2012 figures. E-papers provide the latest breaking news with a minute update. Some examples of e-newspaper are as below.

Hindustan Times : http://epaper.hindustantimes.com
Times of India : http://epaper.timesofindia.com
Divya Bhaskar : http://epaper.divyabhaskar.co.in
Rajasthan Patrika : http://epaper.patrika.com

➢ Open Source Software

Open-source software (OSS) is software for which the source code is freely available for anyone to see and manipulate. There are various licensing models to which the OSS label has been applied, but the basic idea is that the software’s “license may not restrict any party from selling or giving away the software as a component of an aggregate software distribution containing programs” and the working software must either be distributed along with its source code or have a “well-publicized means of
downloading the source code, without charge, via the Internet.” That is, anyone can access and manipulate the code that was used to write a program, as long as anything that person comes up with using that code is also offered to the public as OSS. This allows those who use the software to contribute to its further development fix bugs and tinker with it as they please.

The development of open source software was a reaction to the existing legal instrument on software copyright from the software developer’s community. Open source softwares are available free of cost and users have the freedom to run and distribute the software without any restriction. Normally small and medium size libraries feel automation of housekeeping operations as a financial burden due to the high price of Library Management Systems (ILS). Development of open source software gives effective way to create digital library operations without financial investment (Lee, 2009).[5]

The history of open source software began with the early stages of computer and software development. At that, time programmers and developers frequently shared their software freely. Advent of companies in software development with the aim of profit making restricted the culture of sharing source code of software. Milestones in the history of open source Software is: 1983 – Richard Stallman formed GNU project. 1985 – Creation of Free Software Foundation. 1991 – Development of Linux kernel by Linus Torvalds. 1998 – Open Source Initiative (OSI) formed by Eric Raymond. The two terms, “free” and “open source” has used synonymous for free distribution of softwares. Popular licenses used for this purpose are the GNU General Public License (GPL), BSD license, GNU Lesser General Public License, MIT License, Mozilla Public License and Apache License. All these licenses have some differences in their terms and conditions; they ensure users freedom to use, copying, distribution and improvement of software. Fundamentals of these licenses are similar to the philosophy of Free Software Foundation. “Free software is matters of the users’ freedom to run, copy, distributes, study, change and improve the software” (Kumar, 2008).[6]
There are various types of open source software available in the internet. Some of the important open source software to perform the various library activities are as under.

- **Library Management Software Package**: Koha. Website: [http://koha.org/](http://koha.org/)
- **Institutional Repository Software Package**: Dspace. Website: [http://www.dspace.org/](http://www.dspace.org/)
- **Content Management System (CMC)**: Joomla. Website: [http://www.joomla.org/](http://www.joomla.org/)
- **Learning Management System (LMS)**: Moodle. Website: [http://moodle.org/](http://moodle.org/)
- **Software for building and distributing digital library collections**: Greenstone. Website: [http://www.greenstone.org/](http://www.greenstone.org/)
- **NewGenLib is an integrated library management system**: [http://www.newgenlib.com/](http://www.newgenlib.com/)
- **Fedora Project, digital repository system**: [http://www.fedora.info/](http://www.fedora.info/)
- **E-Print for digital repository**: [http://www.eprints.org/](http://www.eprints.org/)
- **National level digital preservationsRepositories**: Catalysis Database [www.eprints.iitm.ac.in](http://www.eprints.iitm.ac.in), - Software Used: EPrints
- **Digital Archive of National Institute of Technology, Rourkela**: [http://dspace.nitrkl.ac.in/dspace/](http://dspace.nitrkl.ac.in/dspace/) - Software Used: DSpace
- **Electronic Theses and Dissertations of Indian Institute, of Science (ETD@IISc)**: [http://etd.ncsi.iisc.ernet.in/](http://etd.ncsi.iisc.ernet.in/) - Software Used: DSpace
- **Open Access Repository of IISc Research Publications, (ePrints@IISc)**: [http://eprints.iisc.ernet.in/](http://eprints.iisc.ernet.in/), - Software Used: EPrints
- **Digital Repository of IIT Bombay**: [http://dspace.library.iitb.ac.in/dspace/](http://dspace.library.iitb.ac.in/dspace/) - Software Used: DSpace

**Use of Open Source Software:**

- **Archives of Indian Labour: Integrated Labour History**
• India Education Digital Library www.edudl.gov.in, Software Used: Greenstone
• Vidyanidhi www.vidyanidhi.org.in, Software Used: DSpace
• Indira Gandhi Institute of Technology, http://202.159.218.126:8080/newgenlibctx/, Software used- Newgenlib
• BIMTECH Library,(http://210.212.115.113:8080/newgenlibctx/Opac2_0.jsp), Software used- Newgenlib

➢ E-marketing in libraries:

E-marketing is a way of marketing in which electronic resources are being used to promote the products. For library, we can say that e-marketing is an electronic media through which we can explore our library facility and services for our user community as well library professionals. Kotler, P. (1995). [7]

Can we do e-marketing for library?

• Raise awareness of the range of library services, projects and events and to encourage wider take-up.
• Promote the library’s online offer – the website, online renewals, reservations, account management and the range of reference resources at the 24 Hour Library.
• Encourage new members to join the library and lapsed members to return.
• Speak to users in a less formal way and open avenues for them to respond.
• Find communities of interest and share stories we know will be of relevance to them.

Such most famous e-marketing tools which can be used in library to explore the library activities are....
For Communication:

- **Facebook**: Another social media site frequented by students, Facebook is librarian friendly. You'll find a group just for librarian-centric Facebook apps, a JSTOR search, and much more.
- **Twitter**: Use Twitter, a microblogging application, to keep staff and patrons updated on daily activities, like frequently updated collections, or even just scheduling.
- **MySpace**: If you want to go where the students are, one of the best places to find them is MySpace. Other libraries have taken advantage of this site's calendar and blog features to improve their presence. With a little help from your IT department, you can also include custom catalog search tools.
- **Ning**: Use this networking tool to get connected with students, library associations, and more. You can also use it to share information with many people at a time.
- **Blog**: By creating a blog, you'll be able to disseminate information to lots of people at one time. Whether you're updating students on new collections, or just conversing with library staff, blogs are a powerful tool, especially when combined with RSS.
- **Meebo**: Network and assist students on Meebo, no matter what IM client they use. You can even embed a chat screen on any webpage using this tutorial.
- **LinkedIn**: This social networking site for professionals is a great way to get library patrons connected with the people that can help them find information. Whether that's you, faculty, authors, historians, or other sources, they can find them in your LinkedIn network.

To share information

- **Flickr**: This image distribution tool is a great way to share new image collections. You can create image sets with metadata, as well as take advantage of the many plugins available for Flickr users. Flickr users can also help gather missing information about images.
• YouTube: Spread the word about library events, share citizen journalism, and more on YouTube. You can see how other libraries are using YouTube by checking out the youtubeandlibraries wiki.

• TeacherTube: TeacherTube, which is a YouTube for teachers, presents an excellent opportunity for instructor-librarian collaboration. Instructors can guide students to helpful library resources, and vice versa.

• Second Life: On Second Life, you can create a virtual library with streamed media, discussions, classes, and more. For a good example of a Second Life library, visit themurdochsecondlife wiki.

• Wikipedia: Wikipedia is an online encyclopedia updated by users. You can use this tool to share your knowledge by editing, or simply point library patrons in the right direction.

• PBwiki: PBwiki is the world's largest provider of hosted business and educational wikis. It encourages collaboration from students, a way to showcase work, and offers a central gathering point for information. PBwiki offers controlled access, so you can give some editing privileges, while others can only read.

• Footnote: On Footnote, you'll get access to original historical documents, and can update them with your own content and insights. You can even find personal anecdotes and experiences you won't find in reference books.

• Community Walk: Community Walk offers a geographical way to interpret text and events. You can use it for instruction, such as showing someone where to find a book, or walk them through a historical and geographical timeline.

• SlideShare: Encourage faculty, staff, and students to share their slideshow presentations for the greater community to access on SlideShare. It's a great way to disseminate information.

**Organization**

Keep all of your information handy and accessible with these tools.
• aNobii: This site for book lovers is a place to share reviews and recommendations. You can also take advantage of due date alerts, lending, and discussions.
• Connotea: Connotea is a great reference tool, allowing you to save and organize reference links and share them with others. They can be accessed from any computer and offer integration with lots of other tools.
• LibraryThing: This social cataloging network is great for librarians, and you can catalog along with Amazon, the Library of Congress, and more than 200 other libraries around the world. You'll get recommendations and easy tagging as well.
• lib.rario.us: Another social cataloging site, you can put media such as books, CDs, and journals on display for easy access and tracking.

With these social networking tools, we can well connected with each other to explore our library as well to share the views and ideas.

➢ Other useful tools for e-marketing in library:

(1) Library Success: A Best Practices Wiki (http://www.libsuccess.org)
This wiki was created to be a one-stop shop for great ideas and information for all types of librarians. All over the world, librarians are developing successful programs and doing innovative things with technology that no one outside of their library knows about. There are lots of great blogs out there sharing information about the profession, but there is no one place where all of this information is collected and organized. That's what we're trying to do.

(2) Foursquare (https://foursquare.com/)
Foursquare is one of the newest forms of social media. Librarians are currently exploring, and folks are using it in a variety of ways. Generally, putting your library on Foursquare is almost guaranteed free marketing. Your students will be "checking in" to your library and, in many cases, sharing it with all of their friends on Foursquare, Face book, and Twitter. Since users can add tips/comments to any
location, Foursquare offers a chance to hear what your users are saying (even if some of it is bad), and to engage with them through response.

(3) Free SMS Service:

There is some free internet to Mobile SMS provider which provides SMS services much more better than our mobile service provider and the delivery of SMS is super fast through which we can able to communicate with our users.

How it can be used in library? As it is freely available on internet, we can use it in our library as we are using it for following purpose.

- SMS alert through which we can give the regular information about our new arrival books. We just have to send the SMS to the concern head of the department that "your new books has arrived", so he can contact us.
- We can promote our facility randomly through SMS to our users.
- We can inform about our existing facility
- We can inform about forthcoming event organized in library through future SMS.
- We can send SMS to the users to pay fine for late return of books.

The list of such services is as under.

- http://www.fullonsms.com: many people are using fullonsms which is very fast even before you close the window the message is delivered. Also you can create group of 10 people.
- http://www.isms.ibibo.com: if we registered on ibibo we can send free SMS by linking our mobile to it. We can also play free social games & many more things.
- http://www.160by2.com: the URL itself denotes that it provides 160 character free SMS to communicate with our group through internet SMS.
- http://www.way2sms.com: way2sms is also free SMS sending website it have many other services related to SMS sending. You can create your email ID youname@way2sms.
• http://www.youmint.com: youmint also have earning program by ads, referral.
• http://www.smsjunction.com: SMS junction have both free and paid SMS service & also bulk SMS.
• http://www.mysmsindia.com: provide fast SMS service on internet.

(4) Ask the Librarian: This is also a very important service we can use for our library users. In this service, we have to provide a link to our users in which they can give us suggestion to improve our library. The question or suggestion is comes directly to the librarian through email. Librarian has to solve their query with taking proper action with proper method as per their institution policy. We are doing the same.

(5) E-bulletin: In this service, we can publish our library activities, programs and college events and circulate it among the all staff and students through email. It is published regularly in researchr's VVP Engineering College named as "VVP GUNJAN".

(6) Video Conferencing: Through this tool we can interact with the multi national companies and their product which can be applicable to improve our library tools and techniques. Making video calls is now quite easy and not as expensive as it was before. You only need to invest on some cheap devices like web camera and headset before enjoying video conferencing with friends, peers, colleagues or business partners. Some examples are...

(7) Skype: Skype is the most popular of VoIP voice and chat applications but still lagging behind in terms of video. Only one to one communication is allowed, unless with some third-party plugins. But Skype comes with all its momentum and popularity.

(8) ooVoo: ooVoo allows free video conferencing with up to six users. It allows supports video mail. It runs its own P2P servers, and can therefore afford to offer good quality.
The other useful tool for video conferencing is Yugma, Vbuzzer, Ekiga, Tokbox, Evejot, Sightspeed, icht etc.

**(9) Marketing through emails:** This is a very familiar and easiest way to promote our library tools. There is a number of activities we can do through email to promote our library. Some of them are (i) we can mail the details of library facility to our end users (ii) we can inform them about new arrivals of books (iii) we can mail good thoughts everyday to our entire users (iv) we can send press cuttings and other photographs of events organized in the institutions.

**(10) Free Web Hosting:** First of all we should know about free web hosting and its features. Free web hosting stands for a web hosting service offered for free, so that one do not have to pay any money for the free web host service provided. Free hosting providers offer some free web space to store website's files on their servers as well as the other usual web hosting free features required to publish a free web site on the web.

How it can be useful in library? : Now in days everyone should have their own website to promote everything about their institution. For library, it is very important and essential so that we should make website for our library or we have to put the library details separately in our college or institutes website. There is a number of free web hosting companies through which we can make our web site. Some of them are as under.

**(11) FreeHostingEU.com:** Hosting.eu.pn offers the best free hosting: 200 MB of free web space, 4000 MB bandwidth per month.

**(12) Biz.ht:** Biz.ht offers ECO-Friendly Free hosting Green service plan: 250 MB of web storage, 5 GB of monthly transfer, 100% Green energy (wind power)

**(13) Google+ Hangouts:** Hangouts let you catch up with friends and family, whether you’re at home on your computer or using the Google+ mobile app on the go. Up to
10 people can join a hangout, and it’s easy to invite specific friends or circles. So share the latest news and see everyone’s reactions live, or add apps to your hangout to watch You Tube clips together, play poker with your buddies or doodle with your kids when you’re away from home. We can use this to share the ideas among our library professionals for development of our libraries. For example, Chief Minister of Gujarat has used this tool to address his speech to the society for noble cause of Gujarat.

Thus, we can say that e-marketing is a "stay in touch" tool for the librarians, library users and professionals. It can explore and promote the resources of library very quickly through which we can increase our usage. It is also a cost effective rather we can say most of tools available free if we could find it. So, "always do e-marketing, always stay in lightening."

Library Automation:

Library is a growing organism that requires constant positive changes to meet the need of its user. The invention of computer has brought in a rapid change in the society. Therefore, automation has become the need of the hour. Library automation not only improves the image of the library staff but also provides additional services to the users with the existing staff. The impact of automation on the library is quite obvious; it creates new environment where each function redefines the traditional organizational structure and transforms it into new institutional entries. In this unit a brief overview is given about library automation.

Automation is defined as a technique, a process, or a system which operates automatically. According to the Encyclopedia of Library and Information Science, “Automation is the technology concerned with a design and development of the process and systems that minimize the necessity of human intervention in their operation.”
Swihart, Stanley, S. and Hefley, Bery, F.[8] have defined the term ‘library automation’ as “the processing of certain routine clerical function in the library with the assistance of computer or other mechanized or semi automatic equipment”. It may also be defined as a process of mechanization of all the housekeeping operation of a library which is repetitive in nature. The housekeeping operation includes acquisition, cataloguing, circulation, serial control, references and administration work.

To go with the library automation, the willingness of the librarian, higher authority and library committee is a must. The library should also have proper planning and adequate finance. The availability of hardware (server, UPS, scanner, printer, storage media, etc.), software (operating system, system software, application software, library automation software, etc.), and also trained manpower together form the prerequisite for the library automation.

The first computer network was perhaps the OCLC (Online Computer Library Centre). Although the microcomputer made its first appearance in 1971 it was not before 1981 that they made an impact on libraries. The reason was limited storage capacity of the computer and scarcity of good software for library applications. The development of OPAC in 1980s is a remarkable addition to the field of library automation.

➢ Library Networks:

Library networking is an arrangement or a structure that links a group of libraries which have agreed to work together and / or share their resources in an organized basis to a certain degree. It can be defined as a “two or more libraries engaged in a common pattern of information exchange through communication for some functional purposes”. It is meant to promote and facilitate sharing of resources available within a group of participating libraries.

(1) Definition:

or more libraries and/or other organizations engaged in a common pattern of information exchange, through communications, for some functional purpose. A network usually consists of a formal arrangement whereby materials, information and services provided by a variety of libraries and other organizations are available to all potential users. Libraries may be in different jurisdictions but they agree to serve one another on the same basis as each serves its own constituents. Computer and telecommunications may be among the tools used for facilitating communication among them”.

(2) Precondition for Networking:

The agreements between library authorities of different libraries, building or developing required infrastructure, maintenance of standardization in terms of classification schemes, cataloguing schemes, uses of some common library management software and so on are some of the preconditions before developing any kind of network. Some other preconditions are....

(3) Automation of the Member Library: For the success of network in the long run, each of the member libraries must have a policy to automate every function of the library – acquisition, cataloguing, classification, serials control, circulation, SDI, current awareness services, etc. – in the shortest possible time. This helps the library to have a computer environment which is required to design, develop, maintain and to operate several databases, to reduce the cost of library operations as well as network operations.

(4) Hardware and Software: The network should be able to recommend to participating libraries the type of hardware and software they need for their in-house functions and for networking purposes. Hardware should be selected considering the number of entries the participating libraries can generate within the next 3-5 years.
(5) **Trained Manpower:** If there is no adequate trained manpower in each of the member libraries, attempts should be made to train or/and recruit new skilled library personnel.

(6) **Standardization:** For the purpose of creating databases, it is essential to agree upon a standard. All libraries should follow a standard MARC format, AACR-II, a standard thesaurus like Library of Congress Subject Headings (LCSH), etc. uniformly. Although efforts should be made to have one classification scheme for all participating libraries yet the use of different numbers should not become a hurdle as search requests are mostly about authors, titles, editors and subject descriptions.

Besides the above, it is preferable to have certain communication facilities such as Fax, Telex, Telephone, etc. as a part of the network system in each of the member libraries for the effective working of the network. E-mail and internet facilities should be available with the libraries and they should be able to access international databases, preferably individually or through the network host to begin with.

- **Advantages of Networking:**

The advantages of library networking are as follows:

1) **Cooperative Collection Development:** In the age of information explosion no individual library, however resourceful, can be self-sufficient in terms of documents. For a library, however rich it may be impossible to acquire and store all the documents within its four walls. Networking will help to develop collection in terms of books, periodicals, patents, standards, audio visual, CDs, etc. and share those resources.

2) **Meets Specialized User Demand:** User needs are varied and diversified. To meet the specialized need one has to approach such special collection or special service that are available in special libraries. Networking will help in the sharing of experience and expertise of the library personnel.
iii) \textit{Breaks Financial Constraint}: The library budgets are decreasing. With the provision of library networking a library can arrange for cooperative staff training, can exchange the staff for performing some technical works. Sharing of the finance for cooperative acquisition and collection development, processing, etc, can also be made.

iv) \textit{Reduces Unnecessary Duplication of Work}: The networking will remove the efforts in duplication of classification, cataloguing, and such others.

v) \textit{Barrier Breaker}: Library networking is needed to break the barriers of distance and time. Further, it will reduce the physical movement of materials.

vi) \textit{Sharing of Hardware Resources}: Expensive computer equipment, microfilming equipment, digitizing devices for newspaper, reprographic systems, etc. can be procured by a networking group for the benefit of all the libraries of the network. Networking is also needed to connect personal computer with the mainframe or super computer for problem solving.

vii) \textit{Sharing of Software Resources}: The software that is too expensive to procure by individual libraries can be procured and shared by the network for solving larger programmes, information retrieval, and so on. The software can be installed in the central computer and all other computers can be used as client.

viii) \textit{Development of Union Catalogue}: Network helps in developing union catalogue to refer the user to the documents in any of the other participating libraries and it can be consulted by the user in order to know which document is available in which library. For example, Union Catalogue of Social Science Serials was compiled and published by the NASSDOC (ICSSR), New Delhi in 1980s.

ix) \textit{Development of Database}: Library network helps in developing special database to meet some special need by the participatory libraries. Again, through networking the local information which is available over the network can be controlled locally that satisfies the accuracy. For example, National Union Catalogue of Scientific Serial in India (1988) was the result of the work of INSDOC in collaboration with several scientific libraries all over India.

x) \textit{Document Delivery Service (DDS)}: Networks enable librarians, faced with clients’ information needs beyond their local resources, to identify and obtain materials and
services for those clients. The interlibrary loan, Document Delivery Service (DDS) provides the user the required documents irrespective of its location.

**xi) Humanware:** Manpower training and refresher course facilities – stimulating, promoting and coordinating research and training programme for library staff- can be arranged by the network members.

- **Development of Library Networks in India:**

  At international level Joint Academic NET work (JANET), Online Computer Library Centre (OCLC), etc. are functioning properly. The examples of library networks in the western countries suggest that all networks based on a fee structure can be maintained without grant and are viable in the long run.

  NICNET, established by National Informatics Centre (NIC) in 1977 was started in the late 1987’s. It is one of the largest VSAT Networks of its kind in the world. It was launched basically for getting and providing information from/to district levels to facilitate planning process. It links for regional nodes at Delhi, Pune, Bhubneswar and Hyderabad and has established 32 nodes at state and union territory levels and 439 nodes at district headquarters.

  At national level INDONET is India’s first data communication and computer network that was started in March 1986 by CMC Ltd. It was launched as a solution to the growing need for providing timely, well processed data to various institutions. In the First phase, they have mainly network in Mumbai, Calcutta and Chennai. Later, Delhi and Hyderabad were also linked as additional stations. INDONET presently has an international gateway which provides access to the world wide pocket switched networks like USA’s Global Networks Systems (GNS) and Internet.

  Education and Research Network (ERNET) <http://www.eis.ernet.in/> was launched by the Department of Education (DOE), Govt. of India in late 1986 with financial assistance from United Nationals Development Programme (UNDP) to provide
academic and research institutions with electronic mail facilities. It is currently used by DSIR Labs, research centers and academic institutions.

Scientific and Industrial Research Network (SIRNET) was established by INSDOC in late 1989 to interconnect all the CSIR laboratories and other R&D institutions in India.

The success of the above networks and the initiatives taken by NISSAT, UGC, Planning Commission and other departments of Govt. of India have led to the establishment and development of library networks in India.

CALIBNET was established by NISSAT in 1986 in Calcutta. It was the first library network visualized. At present, it has become the centre for CD-ROM databases which are acquired from outside sources. DELNET was established in 1988 in Delhi by India International Centre with the initial financial support of NISSAT. It is the first operational library network in India. INFLIBNET was established by UGC in 1988 and its operations began in 1991. It is a network of university and college libraries. MALIBNET is the result of the need for interconnecting libraries and information centres in Chennai, which was visualized by INSDOC in 1991. INSDOC undertook a feasibility study which was completed in March 1992. MALIBNET was registered as a society in Chennai in Feb. 1993. Some other library networks in India are PUNENET (1992) in Pune, ADINET (1993) in Ahmedabad, BONET (1994) in Mumbai, MYLIBNET (1994) in Mysore (Chennai), and BALNET (1995) in Bangalore.

According to Allen Kent [10] "the success and survival of libraries will much depend on how much and to what extent the libraries cooperate with each other in future". Further, tremendous explosion of information, financial constraints, information in different forms, etc., compelling the libraries to form network and consortia is an essential facet of modern library practices.

In library network the particular focus is forming online networks by using computers and linking members to the computer resources by means of telecommunication
connections. When a group of libraries using computers decide to exchange information, a network is developed.

- **Areas of Computer Application in Library:**

A modern library cannot be imagined without the application of computers. In the library and information centers computers can be used for performing efficiently all sorts of jobs from the procurement of the reading materials to their organization and use. So, it can serve as a remedy for all the existing problems of libraries and information centers. But, till now computers have been used successfully in the following areas of library activities.

1. **Library House Keeping Operation:**
   - Acquisition
   - Classification
   - Cataloguing
   - Serial Control:
   - Circulation

2. **Library Administrations:** In case of library administration, the library automation helps in;
   a) Providing Access Right to Staff Members
   b) Providing Access Right to Library Users
   c) Exception Reporting
   d) Generation of Library Statistics / Report

3. **Information Retrieval:** Today, Online Public Access Catalogue (OPAC) or sometimes Web OPAC facility provided by the library and information centers helps in easy retrieval of information. Computers are also used for searching Library Database: eg. International Nuclear Information System.

4. **Building Digital / Virtual Libraries Collection:** Computers can also be used to build digital or virtual collection or for institutional repository of the library.
(5) **Resource Sharing:** In order to facilitate the provision of material request on interlibrary loan basis, the use of computers and other latest telecommunication devices is being put to use in almost all the countries of the world. The Online Union catalogue is also a product of computer application in library.

(6) **Library Network:** INFLIBNET, Developing Library Network (DELNET) is the example of taking library automation as its first step or base structure.

(7) **Information System:** World Science Information System (UNISIST), Medical Literature Analysis and Retrieval System (MEDLARS), illustrate the advanced stage of library automation.

(8) **User Services:** The library automation also helps to provide Current Awareness Service (CAS), Selective Dissemination of Information (SDI) Services, Indexing and Abstracting Service, Web Based Translation Services, Computer Based Indexing and Abstracting Services, and so on.

- **Library Software Packages**

In any endeavor in which we make a substantial investment of money, energy, and time or other resources, we like to know what kind of return we are getting. The ability to evaluate the return on our investment gives us the basis on which to choose between alternatives. So an evaluation is basically a judgment of worth, it is a matter of comparison of actual result with external standard, in the light of existing institutional realities which may be relevant to evaluating the future trajectory of the programme or services and provide an objective basis for decision making. Like any evaluative process, library software evaluation is also quite a difficult task. It mainly involves four basic aspects i.e.

- Whether software will be commercial;
- In-house developed software packages;
- Freeware
- Open Source Software
In case of commercial software, it will cost a huge investment. In case of In-house developed software packages, it will consume much of the library budget, time from the library staff (in the form of constant evaluation and modification to the library software packages to become stable) and create problem in retrospective conversion. In case of freeware, there is a problem with technical support. But the Open Source Software has not any major disadvantages, if it has a online community for technical support. But in all cases, we have to consider the following procedure, features and aids to evaluate the software package.

**Securities**

1. **Log on/off**: The software should provide the students and staff members the user id and passwords to log on/off facilities on their own. The system must also allow the administrator to provide access restriction to certain records/fields of importance.

2. **Power out Feature**: Is any power out feature included? The system should be with a manual hand scanner available to check the material in and out in the event of power failure that can later on easily be connected to the computer system.

**Cost Factor of the Software Package**

1. **Total Cost of the Software Package**: If the system comes in different modules (available in only circulation module, circulation plus cataloguing module) then the total cost of the system is to be considered whether the total cost is affordable or justified.

2. **Cost of Support**: Cost of training, on site support, etc.

3. **Cost of Upgrade**: Cost of future upgrades.

4. **Future Exist Cost**: In near future, if one wants to switch over to another package then the cost involved in such cases should also be considered.

5. **Warranty**: The software should come with performance and service warranty.
The technologies are shifting the horizon of library software packages every day, so, in choosing any software for library automation, if possible, we should look for the software package that has also the facility for federated search, and comply with the Open URL and Barcode and RFID technologies.

Today, the computers have entered each area of a library. The library automation is the application of modern technologies including the application of computer hardware and software, different storage medias, telecommunications, etc. which help the mechanization of any activity in the library. To implement the computer in the library, the selection of proper hardware and software forms an essential part. Such kinds of library software are as under.

(1) SOUL:

Software for University Libraries (SOUL) is the state-of-the-art integrated library management software designed and developed by the INFLIBNET Centre based on requirements of college and university libraries. It is a user-friendly software developed to work under client-server environment. The software is compliant to international standards for bibliographic formats, networking and circulation protocols. After a comprehensive study, discussions and deliberations with the senior professionals of the country, the software was designed to automate all house keeping operations in library. The software is suitable not only for the academic libraries, but also for all types and sizes of libraries, even school libraries. The first version of software i.e. SOUL 1.0 was released during CALIBER 2000.

The major in-house activities like Acquisition, Cataloguing, Circulation, OPAC, Serial Control, and Administration are designed well for smooth and easy going library routine work.

The latest version of the software i.e. SOUL 2.0 was released in January 2009. The database for new version of SOUL is designed for latest versions of MS-SQL and MySQL (or any other popular RDBMS). SOUL 2.0 is compliant to international
standards such as MARC 21 bibliographic format, Unicode based Universal Character Sets for multilingual bibliographic records and NCIP 2.0 and SIP 2 based protocols for electronic surveillance and control. Every in-house activities are performed by the SOUL 2.0 version software. Librarian can customize such functions also as per the need.

(2) LIBSYS:

It is a modular web-based library automation system with acquisition, cataloging, circulation, indexing and other modules. The main features of Libsys are as under.

- Client-Server model with options for server and client
- Multi-lingual support for Indian and International languages/scripts using Unicode, ISM Publisher (C-Dac) and GIST (C-Dac)
- A Web enabled option using JSP
- User-friendly Windows GUI
- Z39.50 compliance (Both search engine and LibSys Clients) facilitating Co-operative Cataloguing
- Web OPAC
- Conformance to international standards (MARC 21, UKMARC, UNIMARC, CCF)
- Incorporates state-of-the-art technologies (Barcode, Smart Card, RFID)
- Support for Electronic Resources

(3) LIBSUITE:

LIBSUITE has various modules catering to specific needs of every department. Cataloguing, Circulation, Acquisition, Serial Control, Budgeting etc. are the main modules of LIBSUITE. Apart from this there are many more modules like Stock taking, Bindery Control, Software Product Cataloguing and many more such modules are available. LIBSUITE is a Bar Code and Smart Card enabled software.
**Toolbars facility:** To directly navigate into the functional feature within a module. The frequently used features have toolbars which can directly take the user to that function.

**Tool tip text option:** All major options on the screen have a tool tip text associated with it explaining the functionality in detail.

**Context based On-line help:** Complete Context based On-line help has been provided to the User while working in any module or using any feature of the software.

**Tool tip text option:** All major options on the screen have a tool tip text associated with it explaining the functionality in detail.

**Multilingual Compatibility:** The package is compatible to multilingual fonts. The data content or information can also contain a mix of different languages at one time.

**Desktop background selection by user:** The on screen background image of Librarian is selectable by the user who would like to view it throughout the session.

**Security Features:** Data security is of prime importance in a networked environment and as such every Menu option has rights definable as per Users profile. The Login and Passwords may be assigned to groups of individuals depending on their designation or department. In addition, every User can have an individual password to access his personal information (e.g. Books outstanding etc.). The Members and Operators Photograph and Signature can be provided and viewed online during Front Desk Operations.

**(4) LIBMAN**

This Library Software is integrated with Barcodes, RFID and biometric identification technologies. We provide Barcode Printers, Barcode Scanners and Barcode Hand
Held Data Capturing Units. We also provide labels and thermal transfer ribbon. We also provide RFID Table readers, RFID Gate Readers and Hand Held Data Capturing Units. We have also linked Fingerprint reader for patron recognition for issue.

(5) LIBRARIAN

LIBRARIAN is a Library Management Software with all the international standards like MARC21, Z39.50, AACR2 etc. needed to manage a Learning Resource Centre of any type and any size. It has all the functional modules like Acquisition, Cataloguing, Circulation, Article Indexing, OPAC / Web-OPAC, Administration etc. It is multi-user, multi-currencies & multi-lingual using UNICODE technology. Bar-code & RFID options are also available.

(6) SLIM ++ (System for Library Information Management):

SLIM++ is integrated, multi-user, multi-tasking library information software for the Windows environment.

SLIM++ helps you catalogue books, films, sound recordings, drawings, clippings, articles, reports, letters, pamphlets, serials publications... all those things that contain information so vital to your organization. SLIM++ cataloguing adheres to popular international standards. This means you can exchange data with the world. Retrieval of the data is simple, fast and efficient. Even a catchy phrase in the description of the catalogued item can be used for searching.

SLIM++ is designed and developed in modules to take care of complete functionality required for automating libraries. You can configure SLIM++ software for your library by selecting one or more of these standard and add-on modules. These modules exhibit features that make SLIM++ a top class software.

SLIM++ modules work on the same data from different nodes of a network. They can be installed independent of each other on different desktops. SLIM++ works just as
well on a stand-alone machine as it does in a network of Computers. Moreover, your library can be browsed through the Internet/intranet with SLIM++. 

The above mentioned software is commercial software. There is also such open source software's available free from internet to perform the library in-house activates which is mentioned in this chapter earlier.

➢ Digital Library:

The terms such as ‘electronic library’, digital library’, ‘virtual library’, ‘web-library’, or ‘on-line library’ have been used synonymously to represent the same concept. Though the terms used synonymously to represent the same concept, the terms are used differently by different authors in the literature, the central theme of the terminology remains focused on digital content of the documents.

A digital library is a library consisting of digital materials and services. Digital materials are items are stored, processed and transferred via digital (binary) devices and networks. Digital services are services (such as reference assistance) that are delivered digitally over computer networks. It maintains all, or a substantial part, of its collection in computer-accessible form as alternative, supplements, or complement to the conventional printed and microform materials that currently dominates library collections. A digital library is nothing but a large database of organized collection of multimedia, data that are globally available directly or indirectly across a network and eventually act as a portal site providing access to digital collections held elsewhere for the people who are working on hypertext environment.

Digital libraries are essential to enable more people to create and use vast amounts of distributed information and to contribute to the quality and quantity available via the web and future access frameworks. Digital libraries remain closely linked to advances in high performance computing and networking and both contribute to and validate these technologies. Digital libraries are inertly international knowledge is recorded and stored in many forms, often using different languages and symbol systems.
The ICT has almost converted the whole world into a global village. The revolution in the IT sector is influencing the information industry at its peak and revolutionized the concept of libraries where it has been used extensively to record, store, and disseminate the information in the digital form. Each and every library step by step shifts over to this dimension to meet the demand put on it.

Electronic resources accessible on the web for free or for a fee are undeniably major and important constituent of a digital library. To build a digital library all these resources need to go through the process of selection, acquisition (by way of linking) and management. The information contents of a digital library, depending on the media type, may include a combination of structured / unstructured text, numerical data, scanned images, graphics, audio and video recordings. Different types of resources need to be handled differently in digital library environment.

1.: Definition

In 1938 H. G. Wells dreamed of a world encyclopedia in which all-human knowledge would be available elsewhere. Today Internet in collaboration with digital libraries is moving fast to fulfill the dream of H. G. Wells.[11]

The term "Digital Library" has a variety of potential meanings, ranging from a digitized collection of material that one might find in a traditional library to the collection of all digital information along with the services that make that information useful to all possible users. In simple a DL is a library having all it’s holding in the digital form or in a form that can be stored, processed by the computer system. It is nothing but a large database for the people who are working on hypertext environment. It is a system of organized collection of multimedia, data that are globally available directly or indirectly across a network.

According to Lesk (1997)[12] “Digital libraries are organized collections of digital information. They combine the structuring and gathering of information, which
libraries and archives have always done, with the digital representation that computers have made possible”.

According to Arms a digital library is a managed collection of information with associated services where the information is stored in digital format and accessible over a network.

A digital library is 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. It comprises digital collections, services and infrastructure to support lifelong learning, research, scholarly communication and preservation. It is an environment which supports full life cycle of creation, storage, preservation, dissemination and use of data, and information. It is a process of democratization of information.

Project Gutenberg, Google Book Search, Cornell University, The Library of Congress World Digital Library, The Digital Library at the University of Michigan, and CMU’s Universal Library are considered leaders in the field of digital archive creation and management.

2: Characteristic

A digital library is an organized collection of digitized material or its holding in the digital form which can be accessible by a computer on the network by using TCP/IP or other protocol. The main characteristics of digital libraries are as follows:

- The function of acquisition, storage, preservation, retrieval is carried out through the use of digital technology.
- Organized collection of information objects may be a digital text or any other.
- Resources are available in computer readable form.
- Access to the entire collection is globally available directly or indirectly across network.
- Support users in dealing with information objects.
3: Need for a Digital Library

Digital libraries are needed to provide quality based service at the users desktop.

- Easy to Understand: The visual or graphical information system of digital libraries is more popular as compared to text based information system.
- Shifting of the Environment: The new generation user becomes only happy when they will be able to read from the computer screen. The new generation whose demand for information is never met demands that traditional libraries should be developed as a well equipped and interconnected DL.
- Multiple Function of Same Information: In case of digital libraries by using hypertext it is possible to structure and organize the same digital information in a variety of ways which serve multiple functions.
- Information Explosion: Digital library is expected to be able to handle the problem of information explosion somehow. It will be able to handle and manage large amount of digital content by simply providing link, without actually procuring the document.
- Searching Problem in Traditional Libraries: By using digital library one will be able to retrieve information specifically for e.g. a particular image, photo, a definition, etc.
- Distance Learning: Time is a major factor for each modern user of the library which is otherwise spent in coming and going to the library, but digitization will facilitate learning from home, office or other places which are convenient to users.
- To Provide Access to Online Publication: As more and more information are published over internet, digital library needs to procure and provide link to the online publication and other important sources of information.
- Limited Buying Power of Libraries: The collection of every library is limited to only a fraction of the total. Introduction of digital library will help to enhance the collection considerably.
• Storage Problem in Traditional Libraries: Libraries are spending much of its budget by way of maintaining the collection in a usable form that also demands a huge physical space. Digitization hopes to overcome this. Digital Medias comes with a huge storage capacity.
• Low Cost of Technology: The cost of technologies is much more less than that of traditional libraries.
• Environmental Factor: The use of digital libraries is one of the cleanest technologies to fulfill the slogan “Burn a CD-ROM save a tree”.

4: Requirement for Digital Libraries

The internet and World Wide Web provides the technological environment for the development and operation of a digital library. The internet provides the TCP/IP and or its associated protocol for accessing the information and web provides tools and technique for publishing the information over internet. Still, for introducing any digital libraries, the following infrastructure will be needed:-

• Computer Hardware: Server, P.C. with multimedia, U.P.S. Etc
• Software: Any suitable software from GSDL, DSpace, etc which is interconnected and suitable for LAN and WAN connection.
• Network: LAN, MAN, WAN, etc.
• Printer: Laser printer, Dot matrix, Barcode printer, Digital graphic printer, etc.
• Scanner: H.P. Scan jet, flatbed, Sheet feeder, Drum scanner, Slide scanner, Microfilming scanner, Digital camera, Barcode scanner etc
• Storage Devices: Optical storage device, CD-ROM, juke box, etc. As in the digital environment it is reasonable to say that a central back up or archive should be created at the national level which will store information out put of the region as well as information from out side the country.
• Other Audio Visual Aid: Color T.V., V.C.R., D.V.D., Sound box, Telephone, etc.
• Humanware: Well trained manpower for online help.
The use of search engines, Optical Character Recognition and metadata will allow digital library to operate.

5: Advantages of the Digital Library

A digital library is not confined to a particular location or so called building, it is virtually distributed all over the world. The user can get his/her information on his own computer screen by using the internet. Actually it is a network of multimedia system which provides finger tip access. The spoken words or the graphical display of a digital library is again having a different impact from the words that are printed. In the new environment owning a document will not be problem for the library because the user will pay for its uses.

- No Physical Boundary: The user of a digital library need not go to the library physically; people from all over the world could gain access to the same information, as long as an Internet connection is available.
- Round the Clock Availability: Digital libraries can be accessed at any time, 24 hours a day and 365 days of the year
- Multiple Accesses: The same resources can be used at the same time by a number of users.
- Structured Approach: Digital library provides access to much richer content in a more structured manner i.e. we can easily move from the catalog to the particular book then to a particular chapter and so on.
- Information Retrieval: The user is able to use any search term bellowing to the word or phrase of the entire collection. Digital library will provide very user friendly interfaces, giving clickable access to its resources.
- Preservation and Conservation: An exact copy of the original can be made any number of times without any degradation in quality.
- Space: Whereas traditional libraries are limited by storage space, digital libraries have the potential to store much more information, simply because digital information requires very little physical space to contain them. When the library had no space for extension digitization is the only solution.
• Networking: A particular digital library can provide the link to any other resources of other digital library very easily. Thus a seamlessly integrated resource sharing can be achieved.

• Cost: The cost of maintaining a digital library is much lower than that of a traditional library. A traditional library must spend large sums of money paying for staff, book maintenance, rent, and additional books. Digital libraries do away with these fees.

7: Disadvantages of the Digital Library

The computer viruses, lack of standardization for digitized information, quick degrading properties of digitized material, different display standard of digital product and its associated problem, health hazard nature of the radiation from monitor, etc. makes digital libraries at times a handicap.

• Copyright: Digitization violates the copy right law as the thought content of one author can be freely transferred by others without his acknowledgement. One difficulty to overcome for digital libraries is the way to distribute information. How does a digital library distribute information at will while protecting the copyright of the author?

• Speed of Access: As more and more computer are connected to the internet its speed of access is reasonably decreasing. If new technology will not evolve to solve the problem then in near future internet will be full of error messages.

• Initial Cost is High: The infrastructure cost of digital library i.e. the cost of hardware, software, leasing communication circuit is generally very high.

• Band width: Digital library will need high bandwidth for transfer of multimedia resources but the band with is decreasing day by day.

• Efficiency: With the much larger volume of digital information, finding the right material for a specific task becomes increasingly difficult.

• Environment: Digital libraries cannot reproduce the environment of a traditional library. Many people also find reading printed material to be easier than reading material on a computer screen.
• Preservation: Due to technological developments, a digital library can rapidly become out-of-date and its data may become inaccessible.

8: Role of Librarian in Digital Environment

Though the digital environment is built as a system which can be used by its ultimate end user directly from their desk top PC but the role of librarian cannot be overlooked. In digital environment also the librarian and information scientist will be needed for packaging and repackaging of information, for electronic publishing, for reference purpose, to advice the user about the strategy to identify relevant electronic sources, etc. Thus the librarian will be more or less a hypertext engineer. In the new environment it will be very difficult for the librarian to decide what should be organized; how to give citation; how to organize the collection; etc because the new environment will be really challenging one for the librarian to decide who the authors are, who the publishers are and who the users are?

According to Akst, D. (2003), "digital libraries are not going to replace the physical existence of document completely but no doubt to meet the present demand, to satisfy the non local user digitization must be introduced so that at least libraries becomes of hybrid nature. The initial cost of digitization is high but experiment shows that once digitization is introduced then the cost to manage this collection will be cheaper than that of any traditional library. Day by day the cost of digitization is also decreasing, the online publication is increasing, the need of users are shifting towards a different environment so it is needless to say that after one or two years all library will shift over to digital mode, if not fully at least to some extent. So it is the pick time to all library and informational science professional to gear them in building digital library and taking it as a challenge."

Large scale digitization projects are underway at Google, the Million Book Project, MSN, and Yahoo!. With continued improvements in book handling and presentation technologies such as optical character recognition and e-Books, digital libraries are rapidly growing in popularity.
Here the researcher has tried to mention the Digital Libraries in India and abroad as below.

- **Digital Libraries in India:**

  Archives of Indian Labour was constituted with the long-term objective to act as a specialised repository of records and voices of the workers, and contain textual, visual and oral records on labour in India. At present in total 8 special collections comprising 40,000 printed pages, 100 hours of taped interviews are stored in digital form. In addition several special reports and articles on labour history of India are also available on this digital library. This library has been developed using Greenstone open source software at V.V. Giri National Labour Institute, Noida. Registration is required to access the library.

  Digital Library of India is a digital library of books, which are free-to-read, searchable, predominantly in Indian languages, available to everyone over the Internet. Very soon it is expected that this portal would provide a gateway to Indian Digital Libraries in science, arts, culture, music, movies, traditional medicine, palm leaves and many more. This project is a collaboration between different Indian institutes and Universities and Carnegie Mellon University under Universal Digital Library Project.

  Digital Library of Indian Institute of Management, Kozhikode is developed by IIMK library holds documents on management, economics, sociology, etc and IIMK staff publications. The number of documents included are less as the library is in development stage.

  ETD at Indian Institute of Science is the digital repository of Theses and Dissertations of Indian Institute of Science, Bangalore, India. You can search, browse and access theses and dissertations from this collection. This repository has been developed to capture, disseminate and preserve research theses of Indian Institute of Science.
Indira Gandhi National Centre for the Arts [IGNCA] Digital Library IGNCA digital library contains digital images, audio and video recordings, animations, electronic books, etc related Indian arts and culture.

Librarian's Digital Library [LDL] has been developed by DRTC, which contains full text of papers/articles related to Indian Librarianship. Presently it contains full text papers submitted in DRTC seminars, papers submitted by LIS professionals and Students Theses/Dissertations. In future it is having plans to include conference proceedings of Indian LIS associations.

Nalanda Digital Library is the result of the ongoing Digital Library initiative at National Institute of Technology, Calicut Library. Nalanda Project aims at a full-fledged Digital Library at NITC to cater to the increasing demand for information resources from the Campus User Community as well as from Remote Users from rest of the Country. Some resources are open to all; otherwise they are restricted to NITC campus and their recognised users. At present, it is in evolving stage.

Vidyanidhi: Digital Library and E-Scholarship Portal is planning to develop repository for Indian doctoral thesis. At present it provides access to metadata of Indian thesis and Universities. Few full text thesis [ETDs] are presently available in its database. It started as a project in 2000 with support from NISSAT, Government of India. Now with the support from Ford Foundation and Microsoft India it is evolving as a national initiative. It welcomes Universities and Researchers to participate in this programme. The project is based at Dept of Library and Information Science, Mysore University, Mysore, Karnataka.

➢ Digital Libraries in Abroad:

Here are some examples of digital library projects existing in abroad.

• Alaxanderia Digital Library Project

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California Digital Library contains digital collection of University of California campuses.

Cornell Library Historical Mathematical Monographs is a collection of selected monographs with expired copyrights chosen from the mathematics field.

Digital Library for Earth System Education [DLESE] is a geosciences community resource that supports teaching and learning about the Earth system. DLESE is funded by the National Science Foundation and is being built by a community of educators, students, and scientists to support Earth system education at all levels.

Digital Library of Historical Directories is a digital library of eighteenth, nineteenth and early twentieth century local and trade directories from England and Wales.

e-Scholarship Editions collection includes the full text of more than 1,400 books from academic presses on a range of topics, including art, science, history, music, religion, and fiction. Access is free to all.

History E-book Project is a searchable digital archive of historical books developed by University of Michigan Library. It is having over 500 books of high quality in the field of history and will be adding 250 more by the end of 2003.

Informedia: Digital Video Library Project has pioneered new approaches for automated video and audio indexing, navigation, visualization, search and retrieval and embedded them in a system for use in education, information and entertainment environments.

National Science Digital Library includes collection in the areas of Science, Technology, Engineering and Mathematics.

NYPL Digital Library will provide free and open online access to thousands of digital images from the collections of NYPL's Research Libraries.

Open-Video-Project.org its purpose of the Open Video Project is to collect and make available a repository of digitized video content for the digital video, multimedia retrieval, digital library, and other research communities.
• Networked Digital Library of Thesis and Dissertations [NDLTD] is a digital library of thesis and dissertations. Individuals and institutes can participate in it by making their thesis or dissertations available to the network in electronic format.

• Universal Library is proposed to create the Universal Library with a free-to-read, searchable collection of one million books, primarily in the English language, available to everyone over the Internet. Within 10 years, it is their expectation that the collection will grow to 10 Million books. The first major project of Universal Library is the Million Book Digital Library project. This project is a collaboration between different Institutes and Universities all over the world and Carnegie Mellon University.

**IndCat:** INFLIBNET has initiated the Online Union Catalogue of Indian Universities which is unified Online Library Catalogues of books, theses and journals available in major university libraries in India. The union database contains bibliographic description, location and holdings information for books, journals and theses in all subject areas available in more than 155 university libraries across the country. A Web-based interface is designed to provide easy access to the merged catalogues. The IndCat is a major source of bibliographic information that can be used for inter-library loan, collections development as well as for copy cataloguing and retro-conversion of bibliographic records. The IndCat consists three components available in open access to users and librarians.

Books: Over twelve millions bibliographical records of books from 155 university libraries.

Theses: Doctoral theses submitted to various Indian universities till date. more details
Serials: Currently subscribed journals by the universities and holdings information on serials available in various university libraries.
<table>
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</tbody>
</table>

For further details we can see from http://indcat.inflibnet.ac.in/

➢ Networking Libraries and Documentation Centers in India:

- Ahmedabad Library Network (ADINET)
- Bombay Science Librarian's Association (BOSLA)
- Calcutta Library Network (CALIBNET)
- Central Reference Library, Kolkata
- Defense Scientific Information and Documentation Centre (DESIDOC)
- Delhi Library Association
- Delhi Public Library
- Developing Library Network (DELNET)
- Documentation Research and Training Centre (DRTC), Bangalore
- Health Education Library for People
- Indian Association of Special Libraries and Information Centers (IASLIC)
- Indian Library Association (ILA)
- Information and Library Network (INFLIBNET), Ahmedabad
- Kerala Library Association
- Kesavan Institute of Information and Knowledge Management
- Madras Library Association
- Medical Library Association of India (MLAI)
- Mysore Library Network (MYLIBNET), Mysore
• National Center for Science Information (NCSI), Bangalore
• National Information System for Science and Technology (NISSAT), New Delhi
• National Institute of Science Communication and Information Resources, New Delhi
  (Formerly INSDOC)
• National Library of India
• National Medical Library
• National Social Science Documentation Centre (NASSDOC), New Delhi
• Pune Library Network
• Raja Rammohun Roy Library Foundation
• SAARC Documentation Centre
• Satinder Kaur Ramdev Memorial Trust for Advancement of Librarianship (SATKAL)
• Small Enterprises National Documentation Center (SENDOC)
• Society for Advancement of Library and Information Science (SALIS)
• Society for Information Science (SIS)
• Special Libraries Association, Asian Chapter
• Uttar Pradesh Library Association
• Virtual Information Center

➤ **Library Consortia**

A consortium is a group of organizations who come together with a combined objective that requires co-operation and resource sharing. A library consortium can be local, regional, state, national, or international.

Libraries need consortia because of

• Information explosion
• Diversity of user needs
• Financial crunch
• Impossibility of self-sufficiency
Important advantages of library consortia are:

- Consortia-based subscription to electronic resources provides access to a wider number of electronic resources at substantially lower cost.
- Optimum use of funds
- Facilities to create digital libraries
- Services like CAS and SDI
- Cost sharing for technical and training support
- Electronic journals demand neither library space nor shelving nor can they be stolen

Consortia have been offered better license terms, archival access, and preservation of electronic resources, which would not be possible for any single institution, and they are available 24 hours a day, 7 days a week, with economy in maintenance.

(iii) INDEST Consortium:

The Ministry of Human Resource Development (MHRD) has set-up the “Indian National Digital Library in engineering Sciences and Technology (INDEST) Consortium” on the recommendation made by the expert Group appointed by the ministry under the chairmanship of Prof. N. Balakrishnan. The Ministry provides funds for subscription to electronic resources for 38 institutions through the consortium headquarters at the IIT Delhi. Besides 60 government or government-aided engineering colleges and technical departments in universities have joined the consortium with financial support from the AICTE. Moreover, the INDEST-AICTE Consortium welcomes other institutions to join. The INDEST-AICTE consortium is the most ambitious initiative so far. The benefit of consortia-based subscription to electronic resources is not confined to 38 major technological institutions in the country but is also extended to all AICTE-accredited and UGC-affiliated institutions.

(iv) Council of Scientific and Industrial Research (CSIR):

CSIR has also formed a consortium with National Institute of Science, Communication and Information Resources (NISCAIR) (formed with the merger of
INSDOC and NISCOM) as the nodal agency. To augment CSIR research and development activities, NISCAIR implemented an agency for access to electronic journals. On behalf of CSIR, it has entered into an agreement with Elsevier to access its 1,500 e-journals and intends to subscribe to more. CSIR consortium has extended its access to other providers of e-journals.

➤ **Online Libraries in India:**

**Adugodi Libraries**
- National Institute of Animal Nutrition and Physiology

**Ahmedabad Libraries**
- Nirma University of Science and Technology
- INFLIBNET
- ICFAI Business School

**Bangalore Libraries**
- Indian Institute of Science - Bangalore
- HKBK College of Engineering
- Indian Statistical Institute, Bangalore Centre
- Information Centre for Aerospace Science and Technology
- National Centre for Biological Sciences
- National Institute of Mental Health and Neurosciences
- Raman Research Institute
- SJB Institute of Technology

**Bombay Libraries**
- Health Education Library for People
- Indian Institute of Technology - Bombay
Calcutta Libraries

- Saha Institute of Nuclear Physics

Calicut City Libraries

- National Institute of Technology - Calicut

Chandigarh Libraries

- Punjab University

Cochin Libraries(http://library.cusat.ac.in/)

- Cochin University of Science and Technology

Delhi Libraries(http://www.library.dce.ac.in/)

- Delhi College of Engineering

Dimapur Libraries

- Kendriya Vidyalaya

Gandhinagar Libraries

- Institute for Plasma Research

Ghaziabad Libraries

- Krishna Institute of Engineering and Technology
  - Rajkumar Goel Institute of Technology

Hyderabad Libraries

- University of Hyderabad
  - Nalsar Law University
- National Institute of Agricultural Extension Management

Jaipur Libraries
- Indian Institute of Health Management Research

Jamshedpur Libraries
- Xavier Labour Relation Institute

Kharagpur Libraries
- Indian Institute of Technology - Kharagpur

Kolhapur Libraries
- Shivaji University

Kolkata Libraries
- Future institute of Engineering And Management
  - Indian Statistical Institute, Kolkata

Kollam Libraries
- Amrita Vishwa Vidyapeetham Deemed University

Kottayam Libraries
- Mahatma Gandhi University

Madras Libraries
- Indian Institute of Technology - Madras

Mangalore Libraries
- Mangalore University
Mumbai Libraries

- Indira Gandhi Institute of Development Research

Mussoorie Libraries

- Lal Bahadur Shastri National Academy of Administration

Navrangpura Libraries

- Physical Research Laboratory

New Delhi Libraries

- Society for Information Science India
- Summer Fields School
- SAARC Documentation Center
- National Council of Applied Economic Research
- Jawaharlal Nehru University
- Indian National Digital Library in Engineering Sciences and Technology Consortium
- Indian Parliament Library
- Indian Institute of Technology - Delhi
- Centre For Science and Environment
- Developing Library Network
- Hamdard University

Ongole Libraries

- QIS College of Engineering and Technology

Pattom Libraries

- Kendriya Vidyalaya Pattom
Pune Libraries

- Inter-University Centre for Astronomy and Astrophysics
- Pune Library Network

Silchar Libraries

- National Institute of Technology - Silchar

Surat Libraries

- S. V. National Institute of Technology

Trivandrum Libraries

- Centre for Development Studies

➢ E-thesis:

We wrote a thesis, a doctorate or an essay? Undoubtedly the realization of this work was a huge job. It's a pity that only a few people can benefit from it. By putting our thesis on-line, we will reach a larger public. By putting our thesis online, we provide our research work in front of world with the internet for wider use. We prove our ability to explore such kind of research work to the academic community.

By publishing those thesis online with the copyright rules; we not only give them a wider, and well deserved, audience, but we also build a valuable scientific database for our students, and for the rest of the world. Thus, electronic version of our thesis may helpful to the entire academic world as well the relevant professionals. There is a number of organizations who keep such large database of thesis for wider publicity in the academic world which are as under.

- Electronic Theses and Dissertations of Indian Institute, of Science (ETD@IISc) http://etd.ncsi.iisc.ernet.in, - Software Used: DSpace
- Vidyanidhi www.vidyanidhi.org.in, - Software Used: DSpace
- http://shodhganga.inflibnet.ac.in
Video Lectures:

As we know that the information is now available in the digital form from the any corner of the world on the fingertips with the use of internet. Video lecture is also a one of the part of such learning resources which is available freely in the internet by various organizations. In the video lectures, there is purely academic information or lectures are available for the student community online. They can learn online from such video lectures which are delivered by the experts of their respective fields. User can download those lectures in their own PC or any external devices also for further use.

Some reputed organizations who are presenting such kinds of academic video lectures through internet are mentioned below.

NPTEL:

The video and web courses developed by IITs, under the NPTEL (National Project on Technology Enhanced Learning) project. These are all about various topics on engineering subjects, presented in HTML files and multimedia files. For more information one can search from http://nptelvideo

FreeVideoLectures.com:

It provides Free Video Lectures having collection of more than 740+ courses, 18,000+ video lectures from more than 20 top universities of US and UK. For more information one can search from www.freevideolectures.com

KhanAcademy.org:

Khan Academy is a Google funded non profit organization having only one goal of providing a free world-class education to anyone anywhere. This website supplies a free online collection of nearly 2,300 micro lectures via video tutorials stored on YouTube teaching mathematics, history, finance, physics, chemistry, biology, astronomy, and economics. For more information one can search from www.khanacademy.org
E-learning:

E-learning is defined as an interactive learning in which the learning content is available on-line and provides automatic feedback to the students learning activities. E-learning covers a wide set of applications and processes, such as, web-based learning, computer based learning, virtual class rooms, and digital collaboration. It includes the delivery of content via Internet, intranet/extranet, satellite broadcast, interactive Television, CD-ROM, DVD, audio and videotape, etc. E-learning can be defined as instructional content or learning experiences delivered or enabled by electronic technology. It is a structured, interactive approach to educating and informing the students, employees, etc.

Role of Library in E-learning:

Libraries are not the mere store house of books, the modern library with the explosion of information technology has led to a paperless society. The digital and virtual libraries as www (world wide web) has opened up electronic information and the users want that information in a refined manner. The traditional libraries occupy more space, but the documents are being digitized so, it occupies less space.

The reason for using digital libraries in E-learning is that it can store and manage large amounts of digital content such as full text, course materials, bibliographic databases, library catalogues, image and audio clips etc. Thus it provides an environment to bring together collections, services and people in support of the full life cycle of creation, dissemination and preservation of data, information and knowledge. Another reason to use digital libraries is that using various electronic tools, learners can search text materials and images easily and quickly, which can be applied broadly across all kinds of institutions. Advance intercommunication technology, sophisticated search engines, and affordable cost, large storage of digital content are the other reasons to implement a digital library in modern education. Other advantages of digital libraries in E-learning are:
• The library would allow learner to use electronic resources from anywhere, without even knowing where it is stored geographically.
• One copy of the documents could be viewed by any number of users simultaneously.
• It can be used for increasing course delivery for a large number of clients at a particular point of time.
• Study materials need never go out of print, and new editions can easily be created. One can carry several titles at once on a portable reader and, over time, build a personal library.
• It would be easy for non-specialist to use due to the simplicity of operation.
• Links to publisher’s sites for full text journals.
• It provides and facilitate online and on demand enrolment, study and examinations,
• Search result will be delivered to an e-mail box to the user’s choice.
• Protecting rare books that are rapidly deteriorating due to over use and poor storage conditions.
• It is cost – effective and cost-efficient for its ability of reuse.
• It provides faster learning, increased access, clear accountability and equal education for every body; the web is available on the desktop.
• It provides current information and helps in research work. To cope up with the advancements in technology, production of information in multidimensional forms, it became essential for a person to pursue additional knowledge at all times to keep him/her up-to-date in his/her field of interest. These factors are directing to the learning. The virtual conferences, collaborative work on projects, which are shared among institutions, exchange of useful material and experience among teachers provide up to date information for the research.
Biometrics:

Biometrics is the science of measuring physiological or behavioral characteristics that verify a person’s identity. Biometric identification refers to a technology that uses scanned graphical information from many sources for personal identification purposes viz., facial imaging, retinal and iris scans, fingerprint scans, voice patterns, facial recognition, hand geometry identification, etc. The application of biometric technology is limitless. Four to five years ago biometric technology was still considered too “fictional” for many. Now, these same individuals are asking where and how they can purchase biometric technology.

It is very interesting to know that Biometrics technology is not a very new one and its applications have existed longer than people believe. They have existed in commercially available products since 1968. The oldest ongoing general application of biometrics belongs to the University of Georgia which, in 1973, installed a hand-scanning system to restrict entry into its dining halls. The device measured the lengths of members’ fingers by scanning them with photoelectric cells. It is in the last decade that biometric applications have finally caught up with the technology that has been around for nearly 30 years. Biometric vendors feel that time and attendance is the biggest growth area for biometrics in the near future. Beyond time and attendance, computer and electronic commerce security offer the greatest promise for widespread biometric use. During 1990’s, fingerprint identification systems were the most popular and widely used form of biometric technology. But, today, a wide variety of biometric devices such as hand scans, voice recognition system, handgeometry system, eye-scanning system, and face recognition system are available in the market. The technological developments paved the way for the declining prices and the escalating fraud and security breeches are bringing biometric technology to market. For example, the Finance Minister of Government of India recently announced that the Income Tax Department will issue Biometric PAN cards to all Tax payers and now Aadhar Card Yojana for all the Indians.
**Biometrics in Library:**

A Library is a ‘temple of learning’, which plays a pivotal role in the overall development of a society. But, it is a known fact that libraries are not always safe and secure places and they are facing a variety of security concerns which includes the theft, mutilation of library materials and other unethical losses. But, it is the duty of the librarian to keep the library buildings, shelves and stacks open and free without losing items to make available or putting individuals at unacceptable risk from the malicious, avaricious or senseless acts of others. Further, the Library and Information professionals are now handling huge database, provide access to online journals and web-enabled online public access catalogues in the networked digital environment where there are a lot of scope for compute/cyber crimes.

Most of the libraries, especially the academic libraries follow open access system which allows its users directly to the stakes to ensure optimum utilization of the knowledge resources available in the library. Due to the open access system, books are often found on the library shelves with pages torn from the spine. Sometimes books are damaged beyond repair and almost all academic libraries including libraries in advanced countries are suffering from book or document theft by its members. Theft of library materials is not a new problem, not just an Indian problem. It is a universal problem which includes developed countries including USA, UK and European Union. Therefore, it is important to provide a safe and secure environment for library staff, library resources and equipment, and library users. In this regard, the biometric technology is really a boon for the LIS professionals.

**Advantages of Biometrics application in library:**

- Biometric traits can not be lost or forgotten while passwords can be lost or forgotten.
- Biometric traits are difficult to copy, share and distribute. Passwords can be announced in cracker’s websites.
- Biometrics require the person being authenticated to be present at the time and point of authentication.
• The systems are easy to manage and cost efficient
• It is convenient to the users as they no longer responsible for passwords, swipe or proximity cards, PINs or keys.

➢ Mobile Internet Library:

Mobile internet library is a new concept for the smart phone or mobile users. The use of internet through mobile phones and smart phones has increased very fast all over the world. There should be a awareness to create the websites for mobile phones and smart phones. The wire node website tool has been used on the basis of its simplicity and popularity to create the model website. The model will be useful for Indian library professionals to develop websites for their mobile phone users.

In the present age of digital information, websites have become major source of information for researcher, academicians, students and other users. In academic environment, now most of the information sources (online journals, online/CD-ROM bibliographic databases, OPAC, etc.) are available in digital form and delivered through websites.

In our country, mobile phones have become so popular and have reached to all most every corner of the country. Public and private telecom sector have been achieved to provide mobile phone facility to the poor at affordable cost up-to the remote areas of the country. In the present age of internet, most of the students of Indian universities have their personal mobile phones. Internet access on mobile phone is also becoming popular among students at affordable cost. These latest information and communication technologies (ICT) have provided the new ways to provide information services to the users. Looking to the impact of new ICT on library and information science, mobile internet access can play the crucial role for the users of this generation. So, we can say that in the current ICT trends at national and international level, it is expected that future of internet is mobile internet.

University library has been effectively supporting the teaching, research and
extension activities of the university by making efforts of acquiring, processing and organizing scientific and technical literature. The basic ICT infrastructure, i.e., Library Automation, library LAN, Networking, e-resources, web server, library server, digital library server, CD server, broadband VSAT internet connectivity, WiFi networking, video conferencing facility, etc., are the fundamentals of any ICT enabled university library.

- **Need of Websites for Mobile Phone users:**

Internet has revolutionary changed in the way of information generation, information communication, and accessing information. Today’s students are quickly using internet for searching information. Nowadays, most of the Indian universities and their libraries are maintaining websites for providing information to its users. These websites are developed keeping in mind to accessible through internet on desktop personal computers and laptops. Therefore these websites are developed for display of information on big screen (i.e. 14 inches or 15 inches or more) and maximum contents are available on these sites. Generally, the mobile screen size is about 3 inches to 5 inches and about 7-8 inches in case of tablet computer.

Mobile phone users have been increased tremendously in India. According to Telecom Regularity Authority of India’s (TRAI) report India has about more than 800 million mobile subscribers as on March 2011. Use of internet through mobile phones has also been increased very fast in India. As per report of August 2011, internet and Mobile Association of India (IMAI) (http://www.iama.in/), India has presently 35 million mobile internet users, out of which, 26.3 million users are classified as active users.

Mobile sites are useful because they are developed specially for mobile phones having many features like limited important contents, speed, fast access on mobiles, comfortable view on small screen etc. Internationally, web-based library services for mobile phone users have been offered by many academic libraries (http://www.libsuccess.org/index.php?title=M-Libraries) like Aalborg Libraries.
(Denmark), Boston University Medical Center Mobile Library, California State University (Fullerton, Pollak Library), Cambridge University Library, London School of Economics (LSE) Library, Mississippi State University Libraries, Michigan Technological University Library, University of Illinois Library, University of California (San Francisco), Universitätsbibliothek Heidelberg (Germany), New York Law School, etc. Another revolutionary event in Indian information technology history was held on 5 October 2011 with the launch of world cheapest computer tablet i.e. Aakash at affordable cost (approximately $35 per tablet) by Ministry of Human Resources Development of India. As part of the pilot run (http://indiatoday.intoday.in/ story/), the first one lakh units of Aakash procured by the government will be given to students for free. As per government plan, Aakash could be purchased by undergraduate and postgraduate students at a subsidised price. Government of India has targeted of delivering one crore Aakash Tablets. The screen size of the Tablet is 7 inches so websites for mobile phones will also be very useful for Aakash Tablet users. Tablet PC is notebook computer on which you can also write using a stylus. The handwriting is digitised and can be converted to standard text.

The main purpose of library is to maximize use of its resources. Leading publishers of online databases and full text online journals have already started to publish their content for mobile phone users. Looking the popularity and accessibility of mobile phones in India, it is high time to provide the access of university library websites on mobile phones and smart phones. Mobile websites are becoming important because in the mobile, the screens are small to read the too much information. So it will be very important and useful to develop the websites for mobile phone users with less content.

Nowadays development of websites for mobile phones is not a difficult task. It does not require programming skills. As for as content on website for mobile users is concerned, it is expected that one has to reduce the content of the present websites to optimize it for mobile phone users. There are free and commercial tools which provide the facility to convert website and blog into mobile phone user-friendly
websites. With help of free web tool wire node, one can create a mobile friendly website. It works on Android and other operating systems for mobile phones and smart phones. Presently, most of the applications for mobile phone devices have been developed on Android.

- **Benefits of Mobile Web:**

  New Generation is using the mobile phones and its applications in many numbers. If the library professional can join the library facility with mobile applications, Academic libraries all over the world are most affected by internet and digital technology. Indian academic libraries have been adopting new information and communication technologies. Websites for mobile phone users is beneficial because:

  - In India, mobile coverage has reached up-to the remote or village-level so the information from these websites can be accessed remote areas level at any time.
  - At university level most of the students and academicians have the mobile phones. Internet mobile users are also increasing every day in India.
  - It will increase the use of online resources without restriction of time, place, etc.

- **Suggestions from the researcher:**

  - Automation is essential for adopting latest technology like mobile internet. So, every university library should done library automation with suitable software through which facility of web OPAC can be accessed on mobile phones.
  - Training to develop mobile website and mobile services is need of the hour for Indian Library professionals. National Informatics Centre (NIC), National Institute of Science Communication and Information Resources (NISCAIR), Information & Library Network (INFLIBNET), etc., may provide the training to library professionals in this growing area.
  - The library services like reference service, Web-OPAC, etc. can be started to develop for mobile phones/smart phones users in Indian academic libraries.
  - Now third generation (3G) and fourth generation (4G) technology of mobile are coming in the market which provide very fast internet on mobile phones and smart phones. So internet-based libraries services on mobile phones will be useful in future.
Thus, mobile internet can able to access our library any where in the corner of world with the smart mobile instrument which can fulfill the requirement of user at any time.

**Libraries can do in ICT era:**

- Can provide unbiased access to information.
- Can promote community and civic engagement
- Can promote more users.
- Digital access available 24X7.
- Contribute to get people back into work/volunteering/increase skills/learning. This is "absolutely core".

Thus from the above points we can say that university library plays a pivotal role in ensuring the success of higher degree of research with the usage of ICT tools and techniques in the library. In all in-house activities, use of ICT can make the better output for the users need. The important activities of university libraries include the Collection Development, Reference Service, Circulation, Document Delivery, User Education, and Access to Electronic Resources etc. Universities libraries are expected to provide cost effective and reliable access to information using the state-of-the art information and communication technology tools which are the real need of the current scenario.

### 5.3: Impact of ICT on libraries and librarians

Computer has brought in a new impact to the library and information usage. In libraries, information technology has assisted library professionals to provide value added quality information service and give more remote access to the inter-nationally available information resources. Today's highly sophisticated information technology to facilitate the storage of huge amounts of data or information in a very compact space. Information technologies promise fast retrieval of stored information and
revolutionize our concept of the functions of a traditional library and a modern information center. Recently technological developments have dramatically changed the mode of library operations and services.

Modern ICT is impacting on various aspects of libraries and the information profession. Advancements in ICT and the widespread use of ICT is resulting in digital information sources and digital media replacing and becoming the dominant form of information storage and retrieval.

The term library no longer refers only to physical buildings located in a specific geographic location but also to electronic or digital or virtual libraries that can be accessed from anywhere. Library collections consist not only of physical information resources such as books, periodicals, videos, films and many more, stored in physical library buildings, but also include digital resources. Access to digital information resources is not restricted to specified hours and days of the week at one physical library building. The proliferation of digital information available over the Internet, intranets and extranets is resulting into libraries and information centers losing their former place as the focus of the information environment in many organizations. Libraries are becoming one of the many information systems available to information end-users.

ICT also survives and makes true the rules of Library Science-'Every reader his/her books/information,' 'Save the time of the readers' and 'Library is a growing organism'. ICT with its tremendous information sources, rapid transmission speed and easy access ensures the satisfaction of the user with complex demand, break down the distance barrier and shortened the time required and ensure the right information to the right reader at the right time. It also increases and solves the library's demand of collection development. It is really an excellent tool for the library and information centers.

In a changing environment when most of the library services are ICT based, it is important for library professionals to be well informed and updated regarding developments in ICT. The emergence of powerful technologies, vast amounts of
information in multimedia and other digital formats, more technologically proficient users, and the widening "digital gap" means that libraries and librarians in particular are faced with the great challenge of dealing with this information revolution. Furthermore, the recent developments in the capability of computers to store, locate, retrieve and transfer huge amounts of digital data at high speed have contributed to the evolution of an information-based society. Libraries must respond to this development in order to remain relevant and important to the society they aim to serve. However, libraries and librarians must first educate and equip themselves with the necessary knowledge and skills before they can deal with this enormous challenge.

- **New skills and knowledge required for information professionals:**

  Information sources and services being provided by libraries to their users need to adapt to the electronic information environment being experienced by most information end-users. In addition to the traditional library and information management skills, librarians now need to possess additional skills and expertise, more so in the use of modern information and communication technologies, automated information service, electronic publishing, digital information management and knowledge management. New informational professional should acquire technological systems thinking, commitment to continuous improvement of skills, techniques and strategies and sensitivity to network environment.

  In modern ICT based library services, the information professionals handle various types of activities in relation to the use of computers and other new information technologies. Some of these are: handling and developing information storage and retrieval systems of specialized/local data and materials, managing different types of housekeeping operations, carrying out on-line searches for information users using modern equipment, exchanging local databases and sharing of resources through networking.
For the modern information services, technically qualified personnel will be required to provide access to databases and databanks and to work in the exploitation of the resources of libraries. In a studyless system, the information personnel, who are familiar with the resources available in machine-readable form and with vocabularies, query languages, indexing and search strategies will be needed to exploit these resources most effectively and efficiently.

➢ **Role of librarians in an information society:**

Creators: developers and producers of information products and services

- Collectors: librarians, archivists and records managers
- Communicators: information workers, extension workers, subject specialists
- Consolidators: reference librarians, information brokers, analysts

The roles of librarians in an information-based society have changed from relatively passive "gatekeeper" to proactive facilitator of knowledge and information. The profession is continuously evolving into something that is not only concerned with the traditional practices of processing information but also actively involved in the application of ICT in libraries and the development of new services using recent and emerging technologies.

➢ **Trends in the development of libraries:**

The library will:

- be networked
- be stocked with a core collection that is multimedia
- have access to global information 24 X 7
- become digital
- become virtual
- become cost effective
- having good internet speed
- continuous adoption of emerging ICT tools and techniques
Libraries now and in the future will be quite different from the traditional libraries that we know today. We may still see books and other printed materials within the vicinity but many materials will be available and accessible in electronic format. These resources can be easily accessed and shared through LANs (local area networks), and WANs (wide area networks), of which the best example is the Internet. Most of the collections will be in multimedia and various digital formats. The libraries' collection will not be limited to what is inside the libraries since access to information globally is readily available. Eventually, digital libraries will become common and most of the resources will be digitized and available to anyone, anytime, anywhere. There is even a prediction of virtual libraries wherein all information resources and the library itself will no longer exist physically but will exist digitally in the virtual world.

➢ Need of ICT in libraries

Various factors have contributed to bring about change from traditional to ICT based library operations. Basically ICT is needed in libraries for the following two main reasons:

In terms of various problems faced by the traditional library systems: The manual performances of library functions were getting difficult because of the following main reasons:

• The size of recorded information is ever growing whereas space available at the disposal of each library is limited. No library can think of getting additional space every year, although the collection will grow continuously;
• Due to knowledge explosion, the society is faced with multifaceted and multidimensional information to such an extent that not only its storage has created challenge, but the organization of this bulk of information has also become unwieldy;
• Library operations, due to potential growth of information, could take many hours to perform manually;
• Due to information explosion, all sorts of house keeping jobs and information works can be performed by manually with less effective and less accuracy.
In terms of various facilities provided by computers and related technologies:
The advantages of using computers and other telecommunication media/devices in managing libraries are manifold. Some of the major advantages are as follows.

Speed: A computer can carry out an instruction in less than a millionth of a second. Searching of information, compilation of bibliographies, preparation of current awareness bulletins, indexing and sorting can be processed by a computer in a few hours.

Storage: Human brain can store pieces of information to some limitation whereas computers can store voluminous data.

Accuracy: Computers can perform functions very accurately.

Reliability: Computers and all related technologies have long life if maintained properly. The data gathered in it are reliable.

Repetitiveness: A computer can be used repetitively to process information.

Compactness: The present day computers are laptop/waptop/palmtop, which do not occupy more space.

Thus; ICT, if used creatively, can make a big difference in the way teachers teach and students learn and can help students acquire 21st century skills like digital library, digital literacy, innovative thinking, creativity, sound reasoning and effective communication. ICT can help in acquiring the knowledge from world with the help of skilled library professionals. ICT-enabled library can also be a solution to the growing demands for users in higher education in India. Library automation, internet and networking make the different and can able to access the required information by "3 A" i.e. “Anyone, Anywhere and Anytime.” ICT- enabled library can do wonders for satisfied the need of users of universities and colleges that no one can imagine.
5.4: Five laws of library science in current scenario

In, 1931 Shiyali Ramamrita Ranganathan has found the five laws of library science for the overall development of library and its professionals which has contribute tremendously in the 20th century. But, in the 21st century the rapid development of ICT has changed the whole scenario of the library. The use of computer and internet has changed the whole scenario of library and its users. The World Wide Web is an Internet system that distributes graphical, hyperlinked information, based on the hypertext transfer protocol (HTTP). The Web is the global hypertext system providing access to documents written in a script called Hypertext Markup Language (HTML) that allows its contents to be interlinked, locally and remotely. The Web was designed in 1989 by Tim Berners-Lee at the European Organization for Nuclear Research (CERN) in Geneva (Noruzi, 2004).[14]

We live in exciting times. The Web, whose history spans a mere dozen years, will surely figure amongst the most influential and important technologies of this new century. The information revolution not only supplies the technological horsepower that drives the Web, but fuels an unprecedented demand for storing, organizing, disseminating, and accessing information. If information is the currency of the knowledge-based economy, the Web will be the bank where it is invested. It is a very powerful added value of the Web that users can access resources online electronically, that for whatever reason are not in the traditional paper-based collections. The Web provides materials and makes them online accessible, so they can be used. This is the real difference between the Web and libraries. Therefore, webmasters build web collections not for vanity but for use.

The Web is interested in its cyberecitizens (users) using its resources for all sorts of reasons: education, creative recreation, social justice, democratic freedoms, improvement of the economy and business, support for literacy, life long learning, cultural enrichment, etc. The outcome of this use is the betterment of the individual and the community in which we live -the social, cultural, economic and
environmental well being of our world. So the Web must recognize and meet the information needs of the users, and provide broad-based services.

**The Five Laws of Library Science**

Shiyali Ramamrita Ranganathan (1892-1972) was considered the father of Library Science in India. He developed what has been widely accepted as the definitive statement of ideal library service. His *Five Laws of Library Science* (1931) is a classic of library science literature, as fresh today as it was in 1931. These brief statements remain as valid -in substance if not in expression- today as when they were promulgated, concisely representing the ideal service and organizational philosophy of most libraries today:

1. *Books are for use.*
2. *Every reader his or her book.*
4. *Save the time of the reader.*
5. *The Library is a growing organism.*

Although these statements might seem self-evident today, they certainly were not to librarians in the early part of the 20th century. The democratic library tradition we currently enjoy had arisen in America and England only in the latter part of the nineteenth century (Sayers, 1957). For Ranganathan and his followers, the five laws were a first step toward putting library work on a scientific basis, providing general principles from which all library practices could be deduced (Garfield, 1984).

Rettig, J.R. (1992), posited a Sixth Law, an extension of Ranganathan's laws. He conceived that Sixth Law "Every reader his freedom" as applicable only to the type of service (i.e., instruction or provision of information).

New information and communication technologies suggest that the scope of Ranganathan's laws may appropriately be extended to the Web. Nowadays the same five laws are discussed and reused in many different contexts. Since 1992, the 100th
anniversary of Ranganathan's birth, several modern scholars of library science have attempted to update his five laws, or they reworded them for other purposes.

'Book, reader, and library' are the basic elements of Ranganathan's laws. Even if we replace these keywords with other elements, Ranganathan's laws still work very well. Based on Ranganathan's laws, several researchers have presented different principles and laws. For instance, "Five new laws of librarianship" by Michael Gorman (1995); "Principles of distance education" by Sanjaya Mishra (1998); "Five laws of the software library" by Mentor Cana (2003); "Five laws of children's librarianship" by Virginia A. Walter (2004); "Five laws of web connectivity" by Lennart Björneborn (2004); and "Five laws of diversity/affirmative action" by Tracie D. Hall (2004).

Gorman's laws are the most famous. He has reinterpreted Ranganathan's laws in the context of today's library and its likely future. Michael Gorman has given us his five new laws of librarianship:

1. Libraries serve humanity.
2. Respect all forms by which knowledge is communicated.
3. Use technology intelligently to enhance service.
4. Protect free access to knowledge; and
5. Honor the past and create the future

Gorman (1998a,b) believes that S.R. Ranganathan invented the term 'Library Science' and beautifully demonstrates how his laws are applicable to the future issues and challenges that librarians will face. Crawford, W., & Gorman, M. (1995). [18]

Furthermore, based on Ranganathan's laws, Jim Thompson (1992) [19] in protesting against a library services, revised Ranganathan's laws to the following statements:

1. Books are for profit.
2. Every reader his bill.
3. Every copy its bill.
4. Take the cash of the reader.
5. The library is a groaning organism.
Whether one looks to Ranganathan's original *Five Laws of Library Science* or to any one of the many new interpretations of them, one central idea is immediately clear: Libraries and the Web exist to serve people's information needs. So, in the current scenario new five laws of library science can be explained as "the five laws of the web" which can further determined as under.

**The Five Laws of the Web in the current scenario**

The *Five Laws of the Web* are inspired by the "*Five Laws of Library Science*" which were the seed of all of Ranganathan's practice. These laws form the foundation for the Web by defining its minimum requirements. While the laws seem simple on first reading, think about some of the conversations on the Web and how neatly these laws summarize much of what the Web community believes. Although they are simply stated, the laws are nevertheless deep and flexible. These laws are:

1. *Web resources are for use.*
2. *Every user his or her web resource.*
3. *Every web resource its user.*
4. *Save the time of the user.*
5. *The Web is a growing organism.*

The Web consists of contributions from anyone who wishes to contribute, and the quality of information or the value of knowledge is opaque, due to the lack of any kind of peer reviewing. Moreover, the Web is an unstructured and highly complex conglomerate of all types of information carriers produced by all kinds of people and searched by all kinds of users (Björneborn & Ingwersen, 2001).[20]

This new revised version of Ranganathan's laws gives us the grounding for librarians' profession just as the 1931 original did. The Web exists to help users achieve success through serving user information needs in support of the world community. Information needs are met through web pages and documents appropriate to web users. In fact, the *Five Laws of the Web* are really the foundations for any web user-friendly information system. What they require is universal access as a right of
cybercitizenship in the information age. Like most laws, they look simple until you think about them. We explain each law here:

1. Web resources are for use

The Web was designed to meet the human need to share information resources, knowledge, and experience. Webmasters want people to interact with their web sites and pages, click on them, read them, print them if they need to, and have fun. So web sites are not statues or temples users admire from a distance. This law implies that the Web is for using and learning and information is there to be used. This law is very important because information serves no purpose if it is not utilized and at least available for people to attempt to learn. The role of the Web is to serve the individual, community and service, and to maximize social utility in the communication process.

- The dominant ethic of the Web is service to society in general. The question "how will this change improve the service that the Web gives better?" is a very effective analytical tool. Another aspect of this law is its emphasis on a mission of use both by the individual seeker of truth and for the wider goals and aspirations of society. So "information is for use and should not be hidden or altered from people" (Middleton, 1999).[21]

- Another aspect of this first law is that either the Web is about service or it is about nothing. In order to deliver and reap the rewards of services, the Web must identify the benefits that society can reasonably expect and then devise means of delivering those benefits. Service always has a purpose and of course, price, and the Web has a purpose. If web resources are for use, what happens to unused resources?

This law dictates the development of systems that accommodate the use of web resources. For instance, updating and regular indexing of web site resources facilitates the use of site resources and the Web in general.
2. Every user his or her web resource

This law has many important implications for the Web. This law reveals the fundamental need for balance between making web resources and the basic right of all users to have access to the web resources they need anywhere in the world. This makes diffusion and dissemination very important; each web resource should call to mind a potential user.

A web site must formulate access policies that ensure that the collection it is building and maintaining is appropriate and adequate to fulfill the expectations of its community of users. In other words, the collection must be appropriate to the web site's mission. A web site must contain resources appropriate to the needs of all its users. Any web site that limits access in any way must ensure that this restriction does not prevent adequate access to the collection by the users that web site was created to serve. Access policies also have implications for search engines.

However, there is an even more practical aspect to this law. Webmasters must know their users well if they are to provide them with the materials they need for their research or that they wish to read. A responsibility, therefore, of any webmaster is to instruct and guide users in the process of search for web documents they need for enjoyment, education or research. Clearly, it is the business of webmasters to know the user, to know the web resources, to actively help in the finding and retrieving by every user of his or her web resource, and to help search engines in the process of indexing web sites. Webmasters need to ask themselves:

- Who might want to access information resources?
- Who will or won't have access?
- What are the issues surrounding access to printing, passwords, etc.?

Webmasters must acknowledge that users of web sites, themselves included, use and value different means of communications in the pursuit of knowledge, information and entertainment. Web sites must value all means of preserving and communicating the records and achievements of the human mind and heart. This second law dictates
that the Web serves all users, regardless of social class, sex, age, ethnic group, religion, or any other factor. Every cybercitizen has a right to information. Webmasters and search engine designers should do their best to meet cybercitizens' needs.

3. Every web resource its user

When a web user searches the Web, or gains access to the Web's services, there are certain web resources that will meet his or her needs. It is webmasters' job to ensure that the connection between the user and the web resources is made and that connection is as practical, easy and speedy as possible. Appropriate arrangement of documents in a web site is also an important means of achieving this objective of the third law.

If a web resource is secretly published by a web site, but its diffusion and dissemination otherwise kept secret, the web resource may not be readily discovered and retrieved until the user has reached a crisis in his or her research. At such a time, a frustrated user may seek out a webmaster or someone else with knowledge of the needed web resource's existence, or may simply stumble upon it by serendipity. While either scenario may represent a happy ending for the user, they are not the preferred model of web service. And in the worst case, the web resource may remain invisible indefinitely.

How can a webmaster find a user for every web resource? There are many ways in which a web site can actively work to connect its resources to its users:

- Distribution of new web resources via mailing lists.
- Making new web resource list on the home page of the site, etc.;
- Submitting resources to popular search engines and directories, which is the most common way of indexing the new resources of a web site.

The use of a structured, well-organized and more categorized site map/index is a necessity, as it ensures uniformity of treatment of various web resources on similar topics. It should be simple, and easy to use. This is something most webmasters
probably feel that they already do, but their site maps are not always clear and easy to use. Web link of resources should be particular for the users with proper indexing. Website designers should use navigational link for better utilization.

This third law is the most sensible, and it is consistently broken by most webmasters and web writers on most subjects. This law stipulates that a web resource exists for every user, and that resource should be well described and indexed in the search engines' indexes, displayed in an attractive manner on the site, and made readily available to users. This law leads naturally to such practices as open access rather than closed files, a coherent site arrangement, an adequate site map, and a search engine for each site. "It should be easy for users to search for information from any page on a site. Every page should include a search box or at least a link to a search page".

4. Save the time of the user

This law presents the biggest challenge to the Web administrators, webmasters and search engine designers. Webmasters should always bear in mind that the time of users is very important and precious. A web site must always formulate policies with the information needs of its users in mind. Web site collection must be designed and arranged in an inviting, obvious, and clear way so as not to waste the time of users as they search for web resources they need.

This law has both a front-end component (make sure people quickly find what they are looking for) and a back-end component (make sure our data is structured in a way that information can be retrieved quickly). It is also imperative that we understand what goals our users are trying to achieve on our site.

Webmasters have helped save the time of the user by creating a user friendly web site. When a site has been finished, uploaded and tested with users, their experiences will be worth reading. Perhaps then, the question is that "is the web site user-friendly?" A webmaster should think about users and how to attract them, develop for them, cater to them, if s/he wants to satisfy the Web community. We need to remember that the
webmasters' job is to help web users research effectively and efficiently, to update web sites, and to make them easy to navigate. So user friendliness and usefulness are

In order to save the time of the user, web sites need to effectively and efficiently design systems that will enable the users to find what they are looking for quickly and accurately, as well as to explore the vast amount of collection of information available that could potentially be useful. This fourth law emphasizes efficient service to the users, which implies a well design and easy-to-understand map/index to the site.

5. The Web is a growing organism

The Web reflects the changes in our world and will continue to grow as we move along in life and contribute to its riches. It is indeed a growing organism. We need to plan and build with the expectation that the Web and its users will grow and change over time. Similarly we need to keep our own skill levels moving forward (Steckel, 2002). [22]

The Web presents an interesting dilemma for librarians. For while only about 50,000 books are published each year in the United States, the World Wide Web contains an ever-growing and changing pool of about 320 million web pages. When a book is published, it has been assessed by editors and publishers, and hopefully has some value. Moreover, when a web page is published, it has simply been uploaded to a server somewhere. There are no guidelines for the Web. Anyone can publish--and does. Librarians can play an important role in weeding through the dross and establishing annotated lists of links that patrons can feel confident about using. The boundless resources found on the Web benefit from a librarian's expertise in such areas as indexing and cataloguing, as well as search techniques; there will be an increased demand for these types of skills as users demand more value from the searches that they conduct (Syracuse University, 2004). [23]

Today, the Google index of the Web contains over 8 billion web pages and the Web is growing at a rapid rate, providing a huge source of information for users and a huge potential client base for businesses who have a web presence (Thelwall, 2000). [24]
Internet Archive is building a digital library of web sites and other cultural artifacts in digital form. Like a paper library, it provides free access to researchers, historians, scholars, and the general public. Its information collection contains 30 billion web pages. Its way back machine, which currently contains over 100 terabytes of data and is growing at a rate of 12 terabytes per month, is the largest known database in the world, containing multiple copies of the entire publicly available Web (Internet Archive, 2004). For better or for worse, the Web plays an important role in all countries and societies.

The fifth law tells us about the last vital characteristic of the Web and stresses the need for a constant adjustment of our outlook in dealing with it. The Web grows and changes and will do so always. Change and growth go together, and require flexibility in the management of the Web collection, in the use of cyberspace, in the retention and deployment of users, and in the nature of web programs. The Web collection increases and changes, information technologies change and people will change. So this fifth law recognizes that growth will undoubtedly occur and must be planned for systematically.

**Observation:**

The *Five Laws of the Web* helps to identify the Web as a powerful inspiration for technological, educational and social change. The user is rightly the center of attention in this process. So, it is only through understanding user needs and characteristics that webmasters and search engine designers can build tools to help users meet their information needs. Saving the user's time by providing convenient access mechanisms is a principal concern of the Web. Furthermore, some writers and webmasters like to share their information and knowledge with others through web pages. This is because the Web is for use, and can provide a dynamic source of information for all kinds of users.

The growth of userism in recent Web thinking can be understood partly in relation to the prevailing neo-liberalistic view of society. When human beings are reduced to
customers, consumers or users, society can be reduced to a market. (Suominen, 2002).\[26\]

What should we learn from these *Five Laws of the Web*? It is our hope that the reader has gained two things from this essay: first, a new appreciation for the work of the great Indian librarian; second, a renewed perspective on and appreciation of our work as information professionals and librarians. We started this paper with a question "What do these laws mean?". The first four of these reflect the way of thinking that we call userism. According to these laws, the Web's raison d'être lies in its relationship with users and use.

These laws are as applicable to the current practice of the Web as they will be to the Web of tomorrow. These laws are not only applicable to the Web in general but characterize the establishment, enhancement, and evaluation of online databases and digital library services as well. These five laws concisely represent the ideal service and organizational philosophy of the Web. Therefore, we can evaluate web sites by applying the *Five Laws of the Web*.

### 5.5: Challenges and Features of University Libraries in 21st Century

The basic objective of the university library is to be as a dynamic instrument for explaining the expanding the horizons of knowledge. The library endeavors to make the legitimate needs and demands of the patrons, from the senior academics engaged in advance research to the fresh entrant stimulate and encourage students to develop the life long habits of good reading, study and research and to be the centre of university for educational and scholarly pursuit.

A university library is no longer a part of an ivory tower world, it is a potential service oriented institution, accountable for every aspect of its performances. The fundamental role of the library is education. It should not be operated as a mere storehouse of books attached to a reading room, but as a dynamic instrument of education,
To acquire process. Organize and make available varied types of reading materials for meeting the needs of different levels of user;

To guide research scholars and provide them the resource useful for enhancement of research projects;

To keep the faculty members informed of the latest amount of resources through in their fields of specialization;

To establish a information centre in library and render readers advisory service as to enable them to make use of library resources;

To adopt new ICT tools and techniques, e.g. computerization in certain areas with a view to provide purposeful service in minimizing possible time, use of internet to provide web-OPAC etc; and

To keep to authorities informed of the achievement and literary output of the university, to seek support and financial assistance;

So, the role of university libraries is very crucial to build the library images in the mind of their user. The user is now becoming very smart and being adopt the latest ICT tools in their day to day life. The librarian and other professional staff has to give their 100% in the development of university library with the help of ICT tools as, ICT is used in each and everywhere in our daily life starting from early in the morning when we awake and up to night when we go to sleep. Without ICT, no library can became interact live with their users and there is no future of any university library without ICT adoption in 21st Century as technology is changing very fast and putting innovative ideas in the libraries to give something new, cost effective, speedy and informative resources or learning material to the users.

5.5.1: Various Challenges in Libraries related with ICT

The use of ICT in libraries has raised a number of challenges. These include

- Changing role of libraries and librarians
- Funding for libraries
- Copyright management
- Information access
- Preservation of digital information resources
- Legal deposit

**Changing role of libraries and librarians:** More and more library users are using digital technologies and have access to global information resources via the Web. Unfortunately, the huge amount of information available on the Web is generally overwhelming information users. Further, a large number of Web users are still not able to use the Web efficiently.

**Funding for libraries:** Due to severe budget cuts and high prices for books and journal subscriptions, libraries are faced with no options but to reduce expenditures on books and journal subscriptions.

The introduction and use of ICTs in libraries has not made the situation any better. Money is required to maintain and upgrade the equipment and software, pay software license fees, pay for access to electronic journals and online databases, pay for Internet connections, etc.

**Copyright management:** Digitization and provision of access to digital collections accessed via electronic networks, especially the Internet, is presenting bigger challenges to librarians. Unlike print-based documents, digital-based information resources can be accessed from anywhere via electronic networks, copied several times, manipulated (i.e. edited, modified, repackaged, etc) or deleted.

The ease at which digital information resources can be copied and manipulated may result in governments, under pressure from information producers, to put in place rigid copyright laws in which the rights of the right-holder are increased at the expense of users and this may affect the provision of access to digital information sources in libraries.

**Information access:** Whereas libraries generally contain and provide access to selected information resources, this is not the case with information accessed on the Web. Distribution of pornographic materials and information produced for deliberate disinformation is very easy to do on the Web and this presents problems to many
librarians on how to exclude access to such types of information, especially on Internet workstations located in libraries.

**Preservation of digital information resources:** The print-based library and archives environment, as opposed to the digital information environment, has evolved over centuries. Preservation methods and formats for print-based documents have also been developed and tested. There are print-based documents that are over 2000 years old in the world today and can still be read. The digital information era is in its infancy and already some of the information is stored in formats or media that cannot be accessed or read.

**Legal deposit:** In the print-based environment, producers of publications are required by law to deposit copies of their documents with the national library or national archives, or any agency designated to receive and preserve such publications. In the digital information environment, the situation in many countries is still not clear as to who is responsible for the long-term preservation of digital information resources.

**5.5.2: Challenges to overall development in libraries:**

- Collection development with adoption of new technology.
- Maintenance of traditional material with digital material
- Usage of innovative techniques for better satisfaction of users.
- Resource sharing through networking
- Faster direct communication among students, staff, and researchers or say for any users.
- Virtual vs. onsite reference service: push and pull technologies
- Better document delivery systems
- Better abstracting and indexing systems
- Availability of full-text materials on the Internet
- Information management vs. collection management
- Helpline should be available at any time to solve the users query.
Core Professional Competencies for Librarian

Continuing Professional Development is an essential part of the modern library information professional’s successful career planning & prospects. The LIS Professionals with better personal, professional and technological competencies have great opportunities and bright future in the modern libraries. Application of new ICT into the libraries immediately requires improvement of different kinds of skills and knowledge in library information science professionals. Continuous staff training on emerging technologies is essential to learn, improve and develop various kinds of professional skills, knowledge and competencies.

Professional competencies can be thought of as flexible knowledge and skills that allow the librarian to function in a variety of environments and to produce a continuum of value-added, customized information services that cannot be easily duplicated by others. They relate to the librarian’s knowledge in the areas of information resources, information access, technology, management and research, and the ability to use these areas of knowledge as a basis for providing library and information services.

The technology is complex and librarians have not developed the skills to understand it, exploit it or create it. Those few who do have such skills find they have a very marketable commodity and can make a better living elsewhere. There is an urgent necessity to learn a great variety of professional competencies to accomplish the role of professional librarian in the constantly changing challenging web environment. Professional competences enable librarians to respond effectively and efficiently to the constant development of new technologies. Some of the unique competencies of the LIS Professionals are discussed in the following sections.

1. Technical Skills
In the age of 21st centaury LIS Professional must be aware of emerging technologies. It has become increasingly important that librarians keep up with technology and have certain basic skills. In the current scenario library professional must have the knowledge of HTML, Networking, scripting languages, the ability to deal with the
back-end of the OPAC, the ability to translate library services into the online medium, the ability to troubleshoot basic computer and printer problems, or just a good healthy knowledge of emerging technologies.

1.1 Online medium: LIS Professionals need to do so much online these days, way beyond basic catalog and database searching (which sure isn’t easy either). Librarians have to be able to use search engines and use them well. They need to be able to find quality online resources. They need to help patrons set up e-mail and teach basic Internet skills. They need to be able to troubleshoot problems users are having accessing online library resources, at least to the extent where they can figure out if the problem is on the library’s side or the user’s side.

1.2 Ability to troubleshoot new technologies: It is just a part of the good user service we provide in libraries. Most of the time when we are working in library our user facing problem I using the scanner, fix the printer, and troubleshoot any other technology problems they may be having. As we get new computers, printers, scanners, etc. then we will need to learn how to troubleshoot those. The key is just being able to have a decision-tree in our head of what to ask or try when there is a problem. Many librarians cannot troubleshoot this stuff. Most of the time when we troubleshoot any technical problem, we would just throw up an “out of order” sign because we just didn’t have enough computer knowledge to figure out what the problem was. It was really bad user service. Librarians should be able to play with the technologies in the library, to learn what problems commonly come up, and to fix them if necessary, because it is often our responsibility to fix them.

1.3 Ability to easily learn new technologies: Most of the time people comment that there are so many new technological things at the library that they can’t keep up. Whenever we intimated to use new gadget in library we always asked to ICT team of that organization to send an expert to the library to teach library professional how to use it. It is hard to learn to use first time that when a user asking us to use it. Learning about new technology is definitely a skill. LIS professionals need to improve
themselves and learn new technologies with the recent development and innovative ideas used in library and information centers.

Here are some important skills through which any librarian may success in librarianship in the age of ICT era if they have:

- Time Management Skills
- Presentation Skills
- Communication Skills
- Customer Service
- Evaluation and Assessment Skills
- Managerial skills
- Knowledge of Policies, Procedures, Issues and Standards
- Skilled Knowledge of Information Sources & Services:
- Commitment to Life-Long Learning
- Other Skills Marketing and promotion of library services:

➢ **Innovative ideas to manage the library activities with the use of ICT:**

According to Ellyssa Kroski (2012)\(^{27}\), "Today’s hottest web and mobile technologies are offering libraries a new world of opportunities to engage patrons. Ultra-popular social media websites and apps combined with the availability of affordable cloud-based services and the evolution and adoption of mobile devices are enabling librarians to share and build communities, store and analyze large collections of data, create digital collections, and access information and services in ways never thought about before".

Libraries have become technology leaders by integrating cutting-edge tools to enhance users’ experience. It’s not enough to redesign the library website. Best practices mean developing user personas and following usability strategies to produce user-informed designs. New digital collections are stored in the cloud and mobile applications are developed around them. Libraries are claiming their venues on
location-based mobile social networks, developing bleeding-edge augmented reality applications, and participating in semantic web efforts.

Forward-thinking librarians are actively experimenting with and incorporating these new technologies into their digital strategies. Here are 10 ideas for us to leverage today’s most innovative tools and techniques.

(1) **Host a cloud-based collection**

As libraries increasingly deliver digital content, storage requirements may strain their local resources. Multimedia collections demand extraordinary precautions to ensure their integrity and preservation, especially in cases where the objects may be unique. In the absence of a full-fledged trusted digital repository that conforms to digital preservation standards and best practices, libraries will need to provide as much redundancy and security for digital object files as possible. Two options are Amazon’s S3 with Amazon Cloud Front\(^{[28]}\) and DuraSpace’s DuraCloud service.

For example, we could store content in Amazon S3 and use our library’s ILS to describe and present links to it. DuraCloud, based on open source software, provides an interface that would allow us to easily upload content. That information would then be distributed to one or more cloud-based storage services, including Amazon S3, Rackspace, and Windows Azure. It also includes services related to validating the integrity of each file, synchronizing versions as necessary, and creating any derivative transformations needed, such as converting TIFF master copies to JPEG.

(2) **Create a basic mobile website:**

Mobile sites and app generators offer everyone the opportunity to create a mobile view of their library data. Winksite is an easy-to-use tool that can create a mobile site using an RSS feed from a WordPress or Drupal content management system. The site is free and allows five mobile sites for each user account. Dashboard views and form wizards guide us through the setup of our site. The dashboard features many options for creating different mobile page views and customization. We can add our library logo, adjust the header colors to resemble our desktop library website, or upload a background image to replace the default white page background.
After saving our mobile site, Winksite will show a view of our finished page and the public URL for our patrons. Typically the address will be: winksite.mobi/our-username/our-site-address.

(3) **Start a location-based photo stream with Instagram:**

Featuring a powerful suite of location-aware technologies, Instagram claims more than 80 million registered users who have shared nearly 4 billion photos. Users shoot, manipulate, and share photos with their smart phones, associating them with location information through a mobile application. Following the lead of news outlets and other companies, libraries can expand social media campaigns and create a visual narrative around events, displays, collections, or projects. For a start, library staff can encourage patrons to snap photos of the library building and their friends at the library with Instagram.

Establish hashtags so we can gather a photostream from library staff and users around a theme, such as local history or a campus research project. We can also use QR codes to extend and market your Instagram program. Include a free-text QR code with photos or other image-based displays in your library and invite interaction. Through an RSS feed, we can showcase images, photos shared on library staff and user accounts, or thematic hash tags. By associating your Instagram and Foursquare accounts, we can manage the quality of the location information, enhancing topic resources with visual location elements.

(4) **Integrate LibGuides into Drupal:**

The Views module, developed for Drupal 7, enables access and interaction with library data—the catalog, for example—without having to export the data from its source and import it into Drupal before working with it. Like many data services, LibGuides—the popular web-based subject guide software package developed by Springshare—offers an on-demand XML export of your library’s guide content for a relatively low fee.
We might put this XML to work on our site in a number of ways. The University of Michigan Library adds research guides to its Solr-powered search index so that they appear in search results along with pages on the Drupal site. With a little programming assistance, you could convert the content you want from the LibGuides XML documents into an RSS-style feed, allowing each guide to be imported as, in essence, a blog entry. A third idea is to build a local database, import the XML data from LibGuides, and use it to present citations and links to the LibGuide from the Drupal site.

(5) Balance the library voice with the personal in social media:

“I’m a huge advocate for using a personal voice in any social media posts from libraries,” said Sarah Steiner, social work and virtual services librarian at Georgia State University, “but that personality must fall within reasonable parameters.” She suggests a “business-casual tone.” Useful internal guidelines for social media posting provide expectations and guidance to reach a level of consistency across the staff without stifling people. At Georgia State, a core team of social media managers meet regularly for conversations about how to address comments and complaints.

Not sure that a lighter tone is right for us or our library? Librarians in academia seem to struggle the most with informality, so here’s some academic proof. Kirsten A. Johnson, associate professor of communications at Elizabethtown (Pa.) College, released a study in 2011 showing that professors who use Twitter for personal information were found more credible and approachable than those who did not.” Learning, Media, and Technology, vol. 36, no. 1. [29]

(6) Use crowdsourcing to create a collection:

Crowdsourcing can be used as a great tool for archiving. For instance, that is how the New York Public Library has transcribed and categorized all of the menus in its extensive collection of historical restaurant menus. The “What’s on the Menu?” site encourages visitors to help transcribe dish descriptions on menus into a database. While some of the descriptions may have been transcribed via optical character recognition methods, the menus varied widely in their layout, presentation, and
legibility. Furthermore, the NYPL team wanted to create a searchable database of descriptions of dishes (as distinct from section headings and other descriptive text on the menus’ pages) complete with prices and currencies, so simply pulling all of the text in by automated means would not have been sufficient. After writing custom software for the task, NYPL “soft-launched” a beta version of the site in April 2011; within a month, more than 250,000 menu item descriptions had been transcribed from more than 5,000 menus. To date, more than 1.1 million descriptions have been transcribed from more than 16,000 menus.

(7) Make a quick screencast:

As librarians grow accustomed to screencasts, more ideas and possibilities emerge for their use in instruction. A great way to get started with screencasting is to dive in and use some of the software. With so many free recording and hosting options, all we need is a computer with internet access. Creating screencasts will be less daunting if you start by creating one for a small, targeted group. For example, a screencast project may support a group of students who need help with a database.

Screenr, a free program, works well for initial screen creation and experimentation. A brief amount of preplanning will help the screencast go more smoothly. First, go through the steps several times, and outline a click path to use for the recording. Checking the microphone level is as easy as speaking in a normal voice and making sure that the colored lights on the audio scale move and that the scale is not constantly in the red. Publishing the screencast makes it available to everyone via Screenr’s website.

(8) Create personas before you design your website:

Personas are fictional depictions of our website’s target audiences. As composite character sketches generated from researching our library users, they represent the cornerstone of our website planning process and have an ongoing role as the site evolves. Personas help to ensure that everyone is on the same page about our main demographic.
To develop a person, we should need to learn about our users, and interviewing is a good approach for the said purpose. Take a look at typical demographic audience segmentation to decide who to interview. Find distinguishing characteristics about our library’s patrons. Perhaps our community has a significant percentage of senior citizens or distance education students.

Much like reference interviews, user interviews are guided, open-ended conversations. Analysis of interview transcripts or notes, though time-consuming, is an invaluable opportunity to get to the heart of our users’ behaviors, needs, goals, and motivations. The output is a thematically grouped list of behaviors, which is the raw material for our persona.

(9) Use Google Voice to implement text reference:

Google Voice gives us a single phone number that rings all our phones, saves our voicemail online, transcribes our voicemail to text, and allows us to send free text messages. We can use Google Voice from our computer, tablet, or cellphone to respond to reference questions from patrons.

We simply have to enter the recipient’s phone number (which must be able to receive text messages as most all cellphones can), type our message, and click “send.” We can use the service to reply by text message to a voicemail, call, or text. Patrons can respond to our text from their phone, and we can respond from our Google Voice account and browser. Only one librarian can be logged in to the Google Voice account at a time. We can configure it to route text messages through its interface, where librarians can respond as they would to any other message.

(10) Visualize your Twitter relationships with Mentionmapp:

Mentionmapp displays connections among our followers, along with the hashtags we are using. The interface is simple, yet the information it provides can be significant. To get started, sign in with our Twitter account and enter our library’s handle into search. Mentionmapp scans our account’s recent tweets and hashtags, along with those of our followers, and draws a map of connections along with hashtag labels. Lines between two entities indicate a connection, with the line’s thickness proportional to the strength of the connection.
Once we get the hang of navigating these connections and interpreting the data, we can begin to draw conclusions. For example, if we notice several library followers using a hashtag, we know it’s a topic of interest. We may want to jump into the conversation, whether to participate in the meme or to suggest library resources.

The latest ICT tools and techniques will be used as shown in the picture in which the books are sorted automatically through machine. There will be no need for any person for sorting the books as per subject and title.

5.6: Conclusion

Today computer and related technologies has brought revolutionary changes in the whole world of information. Perhaps, this is the most exciting period in the history of human race when world's most population is shifting from 'techno-illiterate' to 'techno-literate'. The society is undergoing a kind of transformation. With the passing of each day, we find that 'Information and Communication Technology (ICT)' has affected almost every sector of our life, bringing a change in the case of people's think, interaction, etc. This revolutionary change is also true in the case of libraries and information centers. Libraries and information centers can hardly function today without computers and information technologies. In the modern world the library and information professions have been changed and adopted itself to the developments of Information and Communication Technology. These technologies have acquired the do-or- die prominence; those who go with the advances will survive and others will become obsolete. A well-equipped library with the facilities of modern information infrastructures and technologies with qualified and skilled librarian and other professionals of library could satisfy the maximum demand of the present technology conscious users.
End Notes:


References:


