
**INTERNET AND WEB TECHNOLOGY FOR LIBRARY IN DIGITAL
ENVIRONMENT WITH REFERENCE TO COLLEGE LIBRARIES OF
GUWAHATI**

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Abstract

ICT is playing a major role in the all round development of society. Recent developments in the technologies have brought changes in the modes and methods of information, storage, retrieval and transmission. The Internet and web technology has open new dimension to the information systems. WWW has created a sound impact on the library and information centres to have access to different information sources and disseminate to the users. The paper mainly discusses about the importance of Internet and web technologies for the libraries in the digital environment. Web provides significant advantages by integrating different library and information services with a common user interface provided by web browsers.

Keywords : Internet, Intranet, WWW, Search Engines, Web Technology.

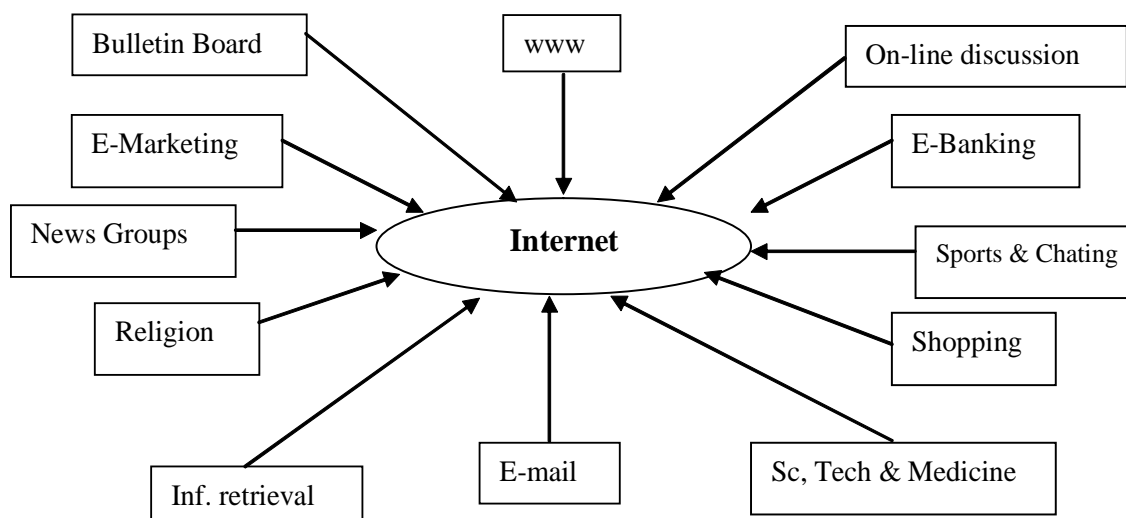
1. Introduction

The 21st century is said to be the Electronic Era. Today's world is digital world, which is concerned with creation, sharing and using information in digital form. Modern society is based on information. Information are floating in all directions and moving in the air around us. We have to catch the right information and make it available to right person at the right time, which is the aim of any modern library.

So, information is considered as fourth source after money, materials and manpower. Developments in ICT have brought revolutionary changes in the modes and methods of information storage, retrieval and transmission. During ancient days the functions of the libraries were simply the collection and preservation of the documents, but in the 21st century the books are not the means of preservation but also for dissemination of information contained in them. Now-a-days majority of the functions carried out by the libraries have been modernized with the latest technology. The national policy on education has also emphasized the need for a better library services in the near future. In this regard libraries play a vital role for the promotion of education and research, with the initiation of Internet and the advancement of ICT it became possible to have the access to various information sources and databases available in various parts of the globe. The Internet has emerged as important sources for different types of information users. Internet has become more popular for dissemination of information for its different features v.i.z. e-mail, telnet, ftp, www, etc. some of the valuable resources are freely available on Internet and has become an indispensable tool for the dissemination of information.

2. Internet Services

The emergence of Internet has changed the role of libraries. It reduces the task of the library in retrieving and disseminating the information. It is a substitute for the large number of reference tools like books, journals, encyclopedias, dictionaries, directories, yearbooks, etc. The total collections of a library can be located through web pages. Internet provides a variety of services to the different types of users. So a few of them are:



2.1 Electronic Mail or e-mail

It is the widely used service of the Internet. The messages can be sent to a single person or to a group of persons separately at the same time through this facility. Its speed is high and charges are low in comparison to postal service; owing to which, it enables one to be in touch with the rest of the world in most economical and efficient way. E-mail programs allow us to save, print or reply the messages and also to attach word processing documents, graphics or video images with our reply.

2.2 List Servers

This is a discussion group created to share ideas and knowledge on a particular subject. The discussion groups are created and monitored by someone with an interest in that subject and are open to anyone. One can join the list simply by sending an e-mail request to the list. The programme automatically reads e-mail message and extracts address and adds this to the circulation list. The message sent to a list is copied and then forwarded to every subscriber of the list. The first message tells that you have successfully subscribed to the list.

2.3 Usenet / News Groups

Unlike the list servers, the newsgroup servers provide access to thousands of topic - based discussion group services that are open to everyone. The newsreader software allows posting an article to any group for others to read. A comment to a message can be added to the thread of the article and one can find answer to a specific question.

2.4 File Transfer Protocol or FTP

This is a mechanism that allows placing and retrieving of files over the Internet. It allows downloading of software, product up gradation and other things. FTP servers also supply a small amount of text information. With the 'help' command one gets online help to know more about any doubts.

2.5 Telnet

This is used to denote the networking over the telephone. It is a simple programme created by the National Center for Super Computing Applications (NCSA) that uses transmission control protocol / internet protocol or TCP/IP to provide connection onto another computer. Using telnet one can contact a host machine by typing host name of IP member and can transfer files, from the TCP/IP host to own computer and can access databases.

2.6 Gopher

The Gopher was created by the Microcomputer workstation center of University of Minnesota to find information on the Internet in a user-friendly way. It is a menu driven programme that allows you to click with information servers or 'Gopher holes' on the Internet to retrieve the information including text, sound and images.

2.7 World Wide Web or www

The web is a large system of servers and combines many of the Internet applications, which offers all kinds of information to any one on net. This is a series of interconnected documents stored on computer sites. If any person uses their computer and a software program called browser to visit a site on the web, the screen displays a document called a home page. Home page gives the name of the organization or individual sponsoring the web site and displays a slot of highlighted words, buttons or pictures. It is the text and graphical screen display that welcomes the user and explains the organization that has established the page. Information using client/server architecture, graphical users interfaces (GUI) and a hypertext language enable dynamic links to other documents.

3. Internet Resources

Internet is the treasure of source of information for students, research scholars, professionals, etc. and is incredibly useful in performing literature searches in all academic activities. As information are updated at an regular interval from various fields, the volume of information on the internet is growing at a tremendous speed and has become the biggest resources of global information in

varied areas. A few of the relevant sources of information found on the internet are articles, e-journals, magazines, biographical, full text databases, newspapers, old books, patents, standards, preprints, full text document, educational resources, mailing list, library catalogues, organization websites, gateways, companies, institutions, associations, organizations, technical reports, directories, encyclopedias, dictionaries, share wares, biographical tools, open source software, etc.

4. Searching of Information

Internet has ocean of information. Retrieval of information is a tedious job because of huge amount of information resources available on it. To locate any information on the Internet requires skill. There are some tools and techniques that make resource retrieval much easier. Searching and browsing are the two main techniques for the retrieval of information. Searching involves choosing of keywords, words, phrases, etc. which indicate the information needed by the research scholars. The terminology is entered in the search box and the computer retrieves the items that contain words or phrases. It involves hyperlinks to move from pages to page with the aim of getting the information by chance. Any page on the web can be browsed at random. But some sites allow easy browsing via structured trial of links organized under subject headings. Browsing is done to get an idea of what is available on the Internet in a subject area, or when one fails to identify a suitable search term/terms or are getting inappropriate search results from a search or giving a chosen search terms.

4.1 Why Search Engines?

The tools for searching are subject gateways, web directories and search engines.

- a As the content of intranets increases so does the need for tools that help users locate the information they are looking for quickly and easily
- b Intranet users are much more demanding - they want more refined and quicker way of finding specific information on the intranet, unlike in a typical Internet search wherein thousands of items are retrieved
- c Intranet users do not show the same patience they have while surfing the giant Internet
- d User needs varies across a broad spectrum - ranging from access to a local file to the Internet websites

4.2 Search Engines and Library Websites

Use of search engines on library websites is closely linked to two factors i.e. content and processing strategy.

5. Internet and Web Technology

Internet is a boon for the information professionals whose main aim is to provide information to their users. It is the most widely used tools to get latest as well as retrospective information. Access to Internet has completely changed the concept of librarianship. Internet and web technology plays a vital role in library related activities for acquisition, classification, cataloguing, circulation, collection development, serial collection, resource sharing, etc.

5.1 Advantages of web technology

- a Web is a powerful medium to integrate multiple information sources & services through a common user interface (web browser)
- b Develop new applications and services
- c Deliver existing services more efficiently
- d Opportunity for delivering information to the desktops of users
- e Reach local and remote users
- f Extend information content to full text, animations and multi-media

6. Internet and Web based Library and Information Services

Internet created thoughtful impact on library and information services by offering new modes of information delivery and vast information source. The service include web access to catalogues, e-mail delivery of CAS and SDI bulletins, local web access to purchases databases, CD-ROM databases, remote information services, etc. information services are to provide required information to the user on demand or in anticipation and keep the user well informed and up-to-date in the field of specialization and in the related fields. Web provides significant advantages by integrating different library and information services. Some of the information services provided through internet are OPACs, CAS, SDI, DDS, ILL, reference services, abstracting services, database access, translation service, referral service, etc.

6.1 Web-based Library and Information Services & Information Sources

- a Locally owned resources:
 - i. OPAC (Access: Telnet, Web, Z39.50)
 - ii. CD-ROM
 - iii. Web access: Hard disc solution (e.g.: ERL, Ovid), CD-ROM solution (web launchers, e.g. Meridian's Slingshot)

- iv. Electronic journals (mounted on local server)
- v. Databases (e.g. publications, manuals, reports)
- vi. Reference sources (e.g. dictionaries, encyclopedias)
- b Internet sources - subscribed
 - i Electronic journals
 - i Reference sources (e.g. Encyclopedia Britannica)
 - Internet sources - free
 - Other sources / services:
 - iii Alerting services (new additions, content pages)
 - iv Discussion forums (listservs)
 - v Web-based book recommendation, reservation
 - vi Productivity tools/ techniques/ guides:
 - Style guides, teaching/ research guides

6.2 Library Website

- a Web server administered by the library
- b Usually operate via the institutional intranet
- c May be limited to the library LAN (private intranet), with dial-up Internet connectivity for information access.

7. Intranet

An intranet is a private computer network that uses Internet protocols, network connectivity to securely share part of an organization's information or operations with its employees. Intranets are in-house versions of the Internet - LANs set up to take advantage of popular Internet communication protocols such as TCP/IP and HTTP, and other Internet tools such as web servers, web browsers, and HTML. It strictly control access to content, allowing authorized users only, which consist of web pages, documents, databases, and other information that sit on a web server behind an Internet firewall. Employees use a standard browser to search and locate internal information and these web sites are devoted to providing access to internal information to employees, while keeping their content secure from the rest of the Internet community. In simple words, intranets are networks within the organization that use the Internet and web technologies for collecting, storing and disseminating useful information throughout the organization.

7.1 Intranets are Very Popular

- a Easier and cheaper to implement. Browser and server software are inexpensive - can be easily loaded and made operational on a TCP/IP network in a matter of hours
- b Intranets are scalable - start out small with just a few home pages and grow quickly to include a huge variety of information
- c Intranets are built using open standards allowing a variety of hardware/ software platforms to access the same information
- d Intranets can incorporate access to a variety of documents and media types including PDF, HTML, word processing, spreadsheets, sound, video, and graphics applications
- e Intranets empower employees to independently locate and use a variety of information ranging from online phone directories to HR information - can save time and foster employee satisfaction
- f Intranets allow corporate users to capitalize on their knowledge of using the Internet by using the same software to locate and access internal information

8. Easy Availability of Web-related Software

- a Web servers: Apache, NCSA HTTPD, CERN HTTPD, XITAMI, OMNI HTTPD, etc.
- b Operating systems, compilers: Linux, GNU compilers
- c Web browsers, plug-ins, helper applications:
 - i Netscape, Internet Explorer
 - i Real Player (audio/ video), Adobe Acrobat reader (PDF), Shockwave (Macromedia)
- d Web publishing tools : Netscape composer, free versions of HTML Assistant, Hot Metal
- e Indexing and search tools: MG, Free-WAIS, Excite, SWISH, GLIMPSE, etc.
- f Digital library toolkits
 - i TRSKIT: A simple digital library toolkit (<http://techreports.larc.nasa.gov/ntrs/xtrs.html>)
 - i Toolkits mentioned in Dlib magazine Web site (<http://www.dlib.org>)
 - iii NDLLTD: National Digital Library of Theses and Dissertations (<http://www.ndltd.org>)

- iv. Tools mentioned in the UC, Berkeley Digital Library Sunsite (<http://sunsite.berkeley.edu>)
- g CGI tools
 - i PERL (for Unix and 32 bit platforms)
 - i CGI libraries (C, PERL)
 - iii Java development kit
 - iv. Java Script
- h Web administrations software
 - i Link validators
 - i Server statistics (log analysis)

9. Anatomy of a Website

The following are some of the important information regarding website, components of website, Internet resource gateway, etc.

9.1 What is a Website?

- a Internet host computer providing access to a variety of web compatible documents using HTTP and other Internet protocols (web server)
- b Has a web site address - URL (e.g. <http://bclindia.org>, <http://www.inflibnet.ac.in>, <http://www.kcdcollege.com>)
- c Accessible over the Internet or limited to an intranet
- d Dedicated Internet connectivity

9.2 Components of a Website

- a Hardware
- b Software
- c Information content:
 - i HTML, PDF, databases, images, audio, video, etc.
 - i HTML pages integrate the information content served by the web site
 - iii Home page provides links to second level HTML pages which in turn link to third level HTML pages, and so on

- iv. These pages may contain images and provide access to databases through search forms, PDF files, audio and video, etc. or link to HTML pages on other servers

9.3 Internet Resource Gateway

- a. Most library web sites provide links to Internet sites (subscribed and/ or free)
- b. Types of sources, policy for inclusion, no. of sources
- c. Source description: style (formal/ informal), format (home grown, Dublin Core, others), consistency
- d. Link arrangement: by subject (classification scheme, subject headings), by source type (e-journals, patents, etc.)
- e. Access method :
 - i. browse by subject and source type
 - ii. search (integrated with site search or separate index)
- f. Link validation

10. Internet Usage

For Internet usage the following table reflects that among the first ten countries India is on 4th position (5%). USA is at no.1 (20.1%) followed by China (10.96%) and Japan (8.4%) where as Brazil (2.5%) is found to be last.

S. No.	Country	Internet Users	% users of world
1.	USA	2,05,326,680	20.1%
2.	China	1,11,000,000	10.96%
3.	Japan	86,300,000	8.4%
4.	India	50,600,000	5.0%
5.	Germany	48,721,997	4.8%
6.	UK	37,800,000	3.7%
7.	South Korea	33,900,000	3.3%
8.	Italy	28,870,000	2.8%
9.	France	26,214,173	2.6%
10.	Brazil	25,900,000	2.5%

Source: DLIBCOM, vol 2 (6), June 2007.

11. Resource Sharing Through Internet

Until, the emergence of World Wide Web, INTERNET surfing was not an easy task for the common man not having some skills and knowledge of commands and the ways of computers but www has made it possible to access this information just by clicking the highlighted terms and icons on the screens. Now, it is very easy to access the information from the net. It can be used to access the information from remote locations to read, download and print the electronic books and journals besides some of the housekeeping operations like acquisition and cataloguing etc. The following Internet resources are useful for the academic libraries:

11.1 Library Catalogue

The Internet gives access to the bibliographic records of millions of books and details on the holdings of academic and research libraries around the world. One can check the new titles and even order them from a number of libraries.

11.2 Electronic Journals

Hundreds of electronic journals are available in different fields of study; particularly in the library field on the Internet for the benefits of information users; as for example LIBRES (Library and Information Research Electronic Journals), MC (The Journal of Academic Media Librarianship), and Electronic Journal of Communication etc. All these journals also provide information on how to access the back issues and focus on a specific topic.

11.3 References Sources

A number of reference sources are also available on the Internet such as Martindales Reference Desk, which has sites of various science- (PAM) and Division of Special Libraries Association, which gives access to physics, astronomy and mathematics reference sources.

11.4 Discussion Groups

There are thousands of discussion groups available on net for various subjects, which act as forum for discussion and even as a media for exchanging information. The PRL library has subscribed to PAMNET, STS-L, LIBREFL and LISTFORUM for such purposes.

11.5 Discussion Lists

Thousands of electronic discussions lists and conference proceedings are available over the Internet. They give direct access to scholars in their field of interests with an opportunity of assistance in the form of online help.

11.6 OPACs

The OPACs or Online Public Access Catalogues are playing an important role in information retrieval. These can be broadly divided as

- OPACs, which are used in a particular library using either a multi-user system or a local area network.
- those, which can be accessed by other libraries through emergence of Internet.

These are very easily and quickly accessible on the Internet from any part of the globe. The availability of these catalogues on web allows any one to see the contents of various library collections at their home.

11.7 Newsgroups

There are many sites, which give news for various subjects and also bring out electronic newsletters as, Young scientist Network Digest, Yahoo Physics etc. In addition to these, there are thousands of Bulletin Board Services covering various subjects.

11.8 Databases

There are different types of databases, which are exceptionally useful; for example, Carl Uncover is a database that contains table of contents of over 17000 multidisciplinary journals published since 1988. The uncover database search is free for periodicals.

12 Scenario at Guwahati

Guwahati city is the gateway of North East India. It is the hub of major business and academic centres. There are more than 20 colleges in Guwahati, besides that one medical college, one engineering college, one ayurvedic college, one pharmacy college, one nursing college, one animal husbandry college, one IIT and many junior colleges, B.Ed colleges, Law colleges, etc. For this study only college libraries have been taken into consideration. The scenario of internet services offered by the college libraries are shown in the following table.

S. No.	Name of College	Year of Estd.	Internet	Collection		
				Printed	Non-Printed	Total
1	Cotton College	1901	Yes	119114	-	119114
2	Handique Girls' College	1938	-	38000	-	38000
3	B. Borooah College	1943	Yes	37000	20	37020
4	Pragjyotish College	1954	-	52100	-	52100
5	Arya Vidyapith College	1958	-	41065	45	41110
6	K K Handiqui Sanskrit College	1960	-	8680	-	8680
7	Gauhati Commerce College	1962	-	38499	-	38499
8	Pandu College	1962	Yes	35625	216	35841
9	North Guwahati College	1962	-	25897	-	25897
10.	Gauhati College	1964 [®]	Yes	32000	-	32000

11.	Lalit Chandra Bharali College	1971	-	12800	-	12800
12.	KRB Girls' College	1971	-	6935	-	6935
13.	Kanya Mahavidyalaya	1977	-	16271	-	16271
14.	R G Baruah College	1978	-	8684	-	8684
15.	Dispur College	1978	-	10000	-	10000
16.	K C Das Commerce College	1983	Yes	11500	120	11620
17.	S B Deorah College	1986	Yes	6500	25	6525
18.	Kamashree Hiteswar Saikia College	1988	-	2540	-	2540
19.	Narengi Anchalik Mahavidyalaya	1991	-	4200	-	4200
20.	West Guwahati Commerce College	1992	-	3820	-	3820

Table: Scenario of college libraries of Guwahati

The table reveals that Cotton College is the oldest college (1901) and West Guwahati Commerce College (1992) is the newly established one. Among collection, Cotton College has highest collection and Kamashree Hiteswar Saikia College (formerly City College) has the least collection. Regarding the use of internet only six colleges are providing internet service (i.e. only 30%) to their users. The remaining 70% colleges are planning to initiate IT in their respective libraries in near future. It further reveals that five colleges are having non-printed materials like CD-ROM, DVD-ROM, etc. Among them Pandu College Library has the highest collections (216) followed by K C Das Commerce College (120) and rest are having less than 100 collections.

12. Conclusion

Today Internet has become the single most powerful tool that ever existed. It is growing exponentially worldwide. A web page is a digital environment. A digital environment could be just any kind of environment made with a computer. It is an environment made of bits and bytes. The world is spinning fast and in recent years, more and more user-friendly solutions have been launched on the web. They all share the same goals to make our life online easier, and to create a community of people. Sometimes, people call these new applications social networks, and that's indeed what they are. It is very clear from the above discussion that INTERNET is a wonderful resource. It is not a substitute to the library, but rather a supplement to library. Although, we cannot find out some useful, alternate and supplementary sources of information not on the INTERNET, in addition to what we might find at our library or from learned people, yet it has become a part and parcel of our life. Certainly, there are some lacunae and problems in using INTERNET, but if some steps could be taken to overcome these hurdles, it will definitely be a best resource-sharing medium in the digital environment. College Libraries of Guwahati city are also gradually marching towards the use of this wonderful technology.

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