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EVALUATION OF e-RESOURCES

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EVALUATION OF e-RESOURCES

Throughout the twentieth century, libraries integrated few formats into their collection management strategies, including microfilm in the 1930s, audio-visual materials in the post-World War-II era, and CD-ROMs in the 1980s. During the last decade, electronic journals, electronic books, the World Wide Web, and full-text databases have emerged as important formats that present numerous challenges to librarians.

A voluminous amount has been published concerning electronic resources in recent years. A search of the Library Literature and Information Science database retrieved 1,026 items pertaining to electronic journals, published between 1992 and July 2002.

4.1 Web Site and Internet Resource Evaluation

Librarians should capitalize on the patron trust they have earned from their book recommendations and apply “well-developed and tested principles of reference reviewing” to Web resources. Collins criticizes Web-based reviewing tools, such as Magellan, as “mostly ingenious variations on the concept of “cool”.

Six Web site evaluation standards are proposed:

1. Content—uniqueness, usefulness, and accuracy are listed
2. Authority—the credibility of those responsible for the site.
3. Currency—how often is it updated?
4. Organization—the “three-click rule” (are more than three clicks necessary to find something useful?) is noted
5. Search Engine—does it include Boolean and keyword searching plus relevance ranking?
6. Accessibility—is it consistently available?
The paper is organized around five major “considerations”, outlined below:

1. Authority–ideally “an internationally known not-for-profit organization or expert”.
2. Agenda–is the sponsor selling something or advocating an “idea or philosophy”? 
3. Scope–historical, cultural plus geographical coverage and limitations, as well as whether “unauthorized abridgement” us used.
4. Currency–the date the site was last updated does not indicate the extent of the changes.
5. Accuracy–are there “glaring” factual errors or obvious bias? King implies that complete objectivity may be impossible.

Few guidelines for evaluation and selection of Internet resources were developed at the Houston Academy of Medicine-Texas Medical Center Library to be used as an addendum to their collection development policy. Six general criteria, with supporting points under each, are outlined: quality and content, relevancy, ease of use, reliability and stability, cost and copyright, and hardware and software. The most developed criterion, “quality and content”, lists four sub-headings:

1. Credibility through peer review, or electronic achieving.
2. Importance as indicated by availability through multiple Internet sites or in multiple formats.
3. Content is comprehensive or unique.
4. The Internet version’s content is complete or meets client needs.

Brief summaries of seven online services for rating Web sites (Excite; GNN Select, Magellan, CyberHound, iGuide, Yahoo! Internet Life, and Point) reveal the descriptive rather than evaluative nature of these services. Four services provided by librarians “Internet Reviews,” *Library Journal’s “WebWatch”,* his own “Retting on Reference”, and the Infofilter project—the later two on the Web)
offer more in-depth evaluations “rooted in the long-established criteria of print reviewing traditions”. Familiar criteria applicable to Web evaluation include accuracy, authority, completeness, illustrations, and reliability. Only one of these criteria, “durability”, which relates to quality of paper and binding, is judged “moor” for the Web. A search engine for a Web site is considered the equivalent of indexing for a book.

There are eight criteria posted on the web by librarians:

1. Parentage and provenance
2. Authority
3. Audience
4. Content
5. Creation and currency
6. Design
7. Usability
8. Medium

Alastain G. Smith proposes a set of criteria for evaluating Internet information resources. Following a well-done literature review, the author offers a “toolbox of criteria” organized in outline format under seven headings:

1. Scope, further subdivided into breadth, depth, time, and format.
2. Content, organized into accuracy, authority, currency, Uniqueness, links to other resources, and writing quality
3. Graphic and multimedia design
4. Purpose and audience
5. Reviews
6. Workability, which includes user friendliness, required hardware and software, searching capability, browsability and organization, interactivity, as well as connectivity.
(7) Cost, for both connecting to the resource and use of the intellectual property

Ann K. Symons, ALA president, this entry describes, in alphabetical order, twenty-two Web site evaluation criteria. A majority of these are traditional collection evaluation/selection criteria, such as accuracy, attention from reviewers, audience, authority, clarity/readability, content, cost, currency, curriculum support, depth/breadth, diversity of viewpoint, duplication, purpose and uniqueness. Other criteria include design, navigation, performance, and search ability.

4.2 Internet rating systems:

(1) Site access and usability
(2) Documentation and resource identification
(3) Author identification
(4) Author’s authority
(5) Information structure and design
(6) Content relevance and scope
(7) Validity of content
(8) Content balance and accuracy
(9) Navigation
(10) Link quality
(11) Aesthetic aspects

Five to eighteen indicators are listed under each heading. For example, the six points under relevance and scope consider user need. Provision of new information, and obvious omissions, while the nine criteria under content validity include peer review, bibliographies and footnotes, and statistics to support conclusions. In summary, this work is noteworthy for its systematic approach to the development of Web evaluation criteria.
4.3 Evaluation of Full Text Database

A method for evaluating full-text database periodical content, developed in 1997 and pretested by the University of Hawaii at Manoa library, is explained by Brier and Lebbin. Three measurements were created:

1. Full-Text Value—the number of titles in the database not subscribed to by the library but listed in Magazines for Libraries.
2. Abstract Value—for titles abstract in the database, the number in the collection in proportion to the number of titles not in the collection.
3. Interlibrary Loan Value—for abstracted titles not in the collection, the number in Magazines for Libraries in proportion to the number not included.

Periodical Abstract Research II ranked highest in full-text value, Expanded Academic Index in abstract value, and Expanded Academic Index or Periodical Abstract Research II in interlibrary loan value.

Glavash reports that at MIT, retrieval from hardcopy or microform for photocopying takes “ten minutes or more per request” and two to five days turnaround time. A survey of end-users (generating a 10 percent response rate) found that all respondents preferred full-text to a photocopy, but about one-third indicated full-text would not be acceptable unless it included graphics and photos. Because most of the requested items were owned by the MIT Libraries, this investigation addresses electronic full-text retrieval versus photocopying rather than “access versus ownership”.

4.4 Evaluation Electronic Journals

National Online Meeting N.Y. (May, 1999) for comparing Web-based electronic journals with the print counterpart of the same title. Using an outline format, seven criteria are described:

1. Design and presentation, including search options and graphics
Ease of access

Coverage

Pricing

Archiving

Licensing terms

Other features, including usage statistics tools and trial access

The Collection Development Department of Oregon State University Library decided that after selection based on coverage and currency, the following hierarchy would be used for adding e-journals to the collection.

1. “Print plus free online version”
2. “Online only and free”
3. “Print or online, either one paid”
4. “Print plus paid online version”

4.5 Digital Libraries

In UK during the corresponding period, the British Library was one of the key players in developments and initiatives in digitization. The British Library’s Strategic Objectives, published in 1993, stated that by the year 2000 it would be a major centre for the storage of, and access to, digital texts. This led to the launch of the initiatives for access programme, a series of projects and experiments using ICTs to facilitate access to collections. For example, one of the first projects resulted in the production of a digital version of the Bowulf manuscript, now available on the British Library’s website. The programme was regarded as an overwhelming success and is documented in the 1998 publication towards a Digital Library (Carpenter et al., 1998). In developing the digital library, the British Library sought to improve access, for all users, to their collections. The Library also hoped digitization would have benefits for the conservation and
preservation of collections, in particular those which are fragile, of high value or heavily used.

Digital libraries which have a number of machine readable facilities for remote access to many digital databases. There are many projects being undertaken in different parts of the world. Yet there are many problems being faced in developing digital library. Challenges of digital libraries on the library profession as well as users are at large. Digital libraries have evolved through a period of fast technological development so as to meet the needs of individuals with varying interests fields. The change of the term “Electronic Library” to Digital Library is mostly due to the growing interest in digital network, digital audio and digital video relative to electronic publishing. The preservation, search and access, content creation, storage and retrieval are essential functional attributes of digital libraries.  

Digital libraries are defined as the new way of carrying out the function of libraries encompassing the following:

- New types of information resources;
- New approaches to acquisition; and
- New approaches to classification and cataloguing, intensive use of electronic systems and network, and dramatic shifts in intellectual, organizational and electronic practices;

Thus it is clear that the emergence of digital libraries will definitely effect the traditional function of libraries, library staff, authors, etc. The existence of the libraries of the future depends largely on the decisions of the present generation.

Integrated virtual libraries of the 21st century will definitely provide integrated access to an increasing number of resources including existing library collections achieves collections, scientific databases and multimedia presentations.
The impact of digital libraries will perhaps be greatest in areas that lack the infrastructure of the developed world. Access to the world’s knowledge will soon be available to anyone with a phone line, eliminating the need for expensive and incomplete local collections. As a few institutions suggest solutions to the questions of format, content, and preservation of the information, digital libraries will become unbounded resources in the universe. The research in digital library is continued to attract the digital information researchers that could lead us to a highly structured collections.4

4.5.1 Multimedia and Hypertext Environment

Information can be said to be human mind in action. When man starts thinking, a number of thought pass through his mind in some sequential order, with some relationship between the topics and subjects, the through and action. This may be because of the relation that exist between every little thing in the universe. Hypertext, is non-sequential way of arrangement so, as to represent things in a more natural way. On the other hand multimedia is the information accompanied with graphics, sound, video, etc. put together to have a understanding and meaningful approach towards the required information.

The term hyper means over, text refers to the contents of a book and a media is the medium through which the test and the subject are interlinked. Hypertext is a text in natural language which allows computer to display non-sequential information (text). It allows the reader to link the various blocks of the text. Thus it is a higher form of text. Multimedia is a further extension of hypertext, with the author creating link between the information and the graphic, sound, music, video, etc. thus leading to the information a combination of a text, sound and visual images.
Multimedia can be rightly understood on the synthesis of interactive computing with full motion video and high quality sound as stated by many authorities in simple terms.

### 4.5.2 Electronic Publishing

Publishing has undergone momentous change. With the increase in the generation of information, millions of articles are being published every year. Thousands of books, magazines and pamphlets will be available electronically. When purchased as data transmissions from the publishers as magnetic or optical media, the available material will lose their discrete identity that the tangible form would give them. When published materials were available in tangible form, publishers had a great control on their use. Copyright gave them the authority to enforce their rights on the material, because the sources were identifiable. Today, where information can be converted into transmittable data, sources are available anywhere and everywhere and the control exerted by the publisher over dissemination is being challenged.

Materials can be stored in the library electronically. Publishers can sell directly to users by data transfer. In other words the technologies widen the horizon to expand the scope and quality of information based products. Any person with an access to internet has a potential of being a basement publisher. He can display the work, go through, read and republish in his way.\(^5\)

The electronic resources, which are available in libraries today is an outcome of the advances in both computer technologies, with powerful computers the information storage and delivery mechanisms, such as CD-ROMs and user-friendly interfaces. In most of the academic libraries in the western countries. Online Public Access Catalogues (OPAC’s) have almost replaced card catalogues, offering enhanced search capabilities for accessing the local collection and often
expand coverage to include the holdings of other area of regional libraries. Many libraries also provide a web interface to their library and information system. The library and information system with a web interface often includes direct links to electronic journals, books and internal resources.

Access to electronic journals and full-text data is another important component of an integrated library system providing access to full-text resources in an electronic library setting. The consortia models help to provide better access to scholarly literature. The access to electronic resources enable the researchers what they want, when they want it, where they want it. Full-text electronic resources offer access to resources unrestricted by either location or library hours.

4.6 **Electronic Resources**

The electronic resources of information are proliferating at an alarming proposition in the last decade. Several types of electronic resources have been noticed with the advantages over traditional resources. These are increasingly acquired in libraries, particularly those are available in web enabled medium. Hence, a knowledge on the-resources is essential to those who are in information handling profession.

The introduction of electronic resources can be traced to the 1960s with the development of machine readable files such as ERIC and an early version of the National Library of Medicine online database. In the 1970s OCLC and third party online database vendors, such as Dialog, BRS, and Orbit, became standard sources. The 1980s saw the arrival of personal computers, online public accesses catalogue (OPACs) to replace the card catalogue and databases on CD-ROMs, housed on standalone workstations. The early 1990 saw the arrival of local area networks (LANs) to replace standalone workstations. The mid 1990s brought the latest changes are Windows and the Internet. By the late 1990s many OPACs and
CD-ROM based databases became available in Web-based systems, and many services became available via remote access to patrons outside the library. The increased reliance on electronic resources was accelerated by decisions to cancel subscriptions to the print versions of sources that became available electronically and the increase of technical to access them.

4.6.1 Why e-Resources are required?

Many developments have been noticed over the years with respect to the electronic resources publishing. Publishers are interested in the issues such as publishing costs, changing readership, changing user expectations, right management and archiving. Authors and corporate institutions are now resorting for self-publishing, new models for scholarly publishing, quality assurance, rights management and archiving. In universities researchers prefer to have easy access to complex information space, including easy access to full text and reference linking. Abstracting and Indexing services have started to manage the impact of electronic publishing on their print-oriented practices, and to implement reference linking and other value-added services. Aggregators, a relatively new industry, have the problem of managing content from multiple sources, providing reference linking not just within their own service but to other content providers, ensuring completeness, and rights management and archiving. University libraries have the challenges of keeping up with the flood of new content and new options, providing their users with easy access to information wherever it may happen to reside, rights management and archiving.

There are several reasons to justify the collection building of the electronic resources in libraries. These can be summarized as follows:

- Ever increasing price rate of the print journals
- Irregular publication and the long time gap between publication of a journal and its availability in the market
• Problems related to conversion rates of foreign currencies
• Technological developments
• Easy to access and easy to search
• Lower price per user or free access
• Low searching time
• Availability of vast amount of the e-resources in every field of knowledge

The electronic resources on magnetic and optional media have a vast impact on the collections of university libraries. Initially it was started with secondary databases and gradually accepted for primary resources are available only in electronic forms.

Lakhmana Moorthy and Karisidappa opined that the impact of electronic publishing in general and e-journals in particular are four fold. These are more useful due to inherent capabilities for manipulation and searching, providing information access is cheaper to acquiring information resources, savings in storage and maintenance, etc. These offer a variety of capabilities to enhance the quality of services offered by library and information centres.

Type of e-Resources in academic libraries

The e-resources of a library basically includes e-journals, e-books, e-theses and dissertations, databases both on line and off-line), which should be acquired by library as per its needs, infrastructure facilities, financial provision etc. different types of e-resources in libraries are as discussed below.

CD-ROM

CD-ROMs are chief e-resource of a library, which is used in the storage of a large amount of data with user-friendly search software. It can be networked through a CD-Server or exist as a standalone units with both specific and general
in coverage. There is a developing trend to use the CD-ROMs for specialized collections of full text materials.

**e-Journals**

The advent of electronic full text journals affords the opportunity to take a fresh approach, recognizing that any risk to publishers in new electronic age is likely to fall on small and medium size libraries, which are operating on restricted budgets. Many e-journals are now available on-line. Some publishers provide free or line access to journals published by them against print subscription of library.

**Online Database**

More and more e-databases in bibliographic ands well as full text sources are available and also added up frequently with the growing demand of users. Some databases are web enabled and some are networked solutions. Web enabled data ashes are easily accessible from, the user desktops through the web browser exile the networked solutions may enquire special installation at client side.

**e-Books**

Since 197s, the development of electronic versions of printed books (e-books) has become as a part of the whole e-publishing phenomenon. A good number of e-books are available in most of the subject area on-line which can be accessed from the internet either free or on payment some e-books are available for browsing on in some cases titles are down loaded from the Internet.

**Abstracting and indexing databases**

The collection and acquisition of abstracting and indexing databases depend on the need of the users also a library has to choose the required data from a large number of such databases available in the market. Some examples of abstracting and indexing database providers are as follows:
- Dialog
- Cas- Cambridge Scientific Abstracts
- OCLC First search
- Ovid

E-mail and list servers

It provides a means for formal and informal communication. Many list servers are discussion lists that allow discussions to take place on a variety of topics and others provide access to electronic titles such as newsletters or serial pricing issues. E-mail is now a days not only used for transmission of messages but also used for the discussion of ideas, news features etc.

e- Reports

Scientist, research scholars, etc now a day’s consider as an important e-resources of a library, which contains reports, publish e-reports. These reports are scanned and converted to searchable PDF documents. Then these are classified according to subject categories and archived in a server class machine and a detailed entry is made in a database for facilitating search.

e-content pages

The idea behind it is to provide desktop access to the digitized content pages of books, conference proceedings, journals etc. It helps the users to browse the content pages to library documents due to excessive physical browsing. The textual information on content page can be processed using OCR method in order to provide full search option on content pages of document to represent e-content pages many file formats are available such as PDF, JPEG, GIF, TIF etc. Among which PDF is faster and economical for online viewing and archiving.
**e-clippings**

The main objective of e-clipping is retrospective search and comprehensive analysis of news items. It facilitates the users to retrieve the news clips by simple clicks. The news items are archived into server and the users have the option to view them by specific date, duration or news source.

Another type of Electronic Resources may include:

- **Bibliographic Indexes**: These files contain information that leads the user to other material, rather than being an end in themselves. Often, these are electronic versions of existing print indexes.
- **Full text and primary indexes**: Unlike bibliographic indexes, these files contain most of the material references. Often they will be a combined bibliographic and primary index. Examples include Lexis Nexis and Periodical Abstracts.
- **Journals**: This includes those available directly through the publisher or an electronic aggregator, such as JSTOR.
- **Application Software**: This includes all other types of electronic resources including computer assisted instruction, interactive multimedia, and educational games. Examples include Hyper Studio and the Oregon Trail series.
- **Electronic Book**

### 4.7 e-Books

The term ‘e-books’ is defined broadly to include electronic reference works, monographs and textbooks. They may be delivered via the Web or a handheld device.

E-Books offer some unique advantage over printed equivalents. Several reports by consultants have predicted that the most successful e-books ventures are
those that offer a relevant interactive experience. User studies seem to indicate that the technology may not be sufficiently mature and still developments are reported in the e-book world.\(^6\)

The potential advantages of e-books have been described in comprehensive: importability, instant access, search-ability, annotation, linking, multimedia long-term preservation of the material, multiples titles in single book, includes online dictionary and link to other sites, old titles cannot go out-of-print, readers can add several chapters from several books (e.g. course reserves), update textbooks with minimal cost to user, lower publishing and distribution costs, reduction of papers and physical space. So too, they have the disadvantages; the expense of technology, inadequate screen resolutions, non-availability of titles in the right format etc.

Today, e-books can be read with a variety of devices, including handheld readers (mainly used for diaries, note-taking and e-mail), dedicated e-book readers or, of course, by desktop access i.e. a personal computer or notebook. There is a great range of reading devices on the market. Some can support images and technical materials. There are varying screen sizes, different weights and memory/storage capacities.

### 4.7.1 e-Book Software

An ideal screen technology for e-books should display 200-300 pixels per inch before quality matches paper. Current e-book devices offer only just offer 100 pixel per inch. Both adobe and Microsoft have been working too produce a more comfortable reading experience by producing software that smooths out the jagged edges of characters and makes text appear sharper. The adobe e-book Reader software features the Cool Type font-technology and two-page layout. Microsoft has an equivalent using Clear Type technology. Besides the major e-book producers have their own software and they are essential when users go for their publications.
4.7.2 Standards

A number of surveys of e-book standards and formats are available in the public domain. While the OEB provides a specification for the content of e-books, EBX focuses on rights management. Representatives of the Open e-Book Forum and the Electronic Book Exchange Working Group have developed a plan to combine the efforts of both organizations.

4.7.3 EBX

The Electronic Book Exchange System is supported by the ALA, Adobe, Versa ware and others. It is a technical specification for the copyright protection and distribution of e-books.

4.7.4 ONIX

The ONIX (Online Information Exchange) System is now widely adopted as a standard defining how to describe e-books for the book trade.

4.7.5 Preservation

E-Books is the natural priority of libraries for preservation. As information professionals are interested in developing an ideal e-book collection, the preservation generates more debate. The act of keeping a copy such as back up is not permitted as per copyright and many ways of preserving digital content is not applicable or e-books. Digital content is fragile and prone to have many other problems. Losing the e-book due to system factors may not lead to get another copy of them.

The global effort to have better preservation of e-books is addressed and discussed by many bodies such as JISC Preservation Strategy, DNER, Digital Preservation Coalition, a group of ten organizations committed to the development of a UK digital preservation etc.

It will take time for teachers to work out how to integrate e-books into their teaching and how to exploit the medium’s capabilities. Student many also need time to work out how e-books are advantageous. Many aggregators at present
offer study tools alongside their e-book material, such as highlighting, note-taking and book-marking. Although there has not been any specific study on the use of these features, the students in the major Cranfield study showed a strong preference for traditional methods of pen an paper, or entering notes straight into essays or project work online.

To understand the effectiveness many e-books users studies are conducted in the recent past.

4.8 Indian Computer Technology and Users in University 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.

4.9 Role of University Grants Commission (UGC)

UGC, established by an act of parliament in 1956, coordinates and monitors the higher education system in India and provides grants to the universities and colleges. Two hundred ninety four universities/institutions in the country are directly under the purview of UGC. It also advises the union and state governments on measures to university education. It frames rules and regulations for overall teaching and research at higher education. As a result, it also looks after the academic libraries, i.e., sets various standards for library education, library staff, library services, etc.\footnote{7}

A number of committees have been set up by the UGC for the support of higher education in general and the library services in academic libraries in
particular. UGC has also set up three information centres covering different disciplines-the National Centre for Science Information (NCSI) at Indian Institute of Science Bangalore, SNDT Women’s University Mumbai, and National Social Science Information Centre at M.S. University at Baroda, to provide the document delivery services to students, teachers, and researchers.

4.10 Information and Library Network (INFLIBNET)

The University Grants Commission has set up an autonomous Inter-University Centre in 1991 called INFLIBNET. It is involved in modernizing university libraries in India and connects them through a nation-wide high-speed data network. It promotes automation of libraries, develops standards, creates union catalogues of serials, theses, books, monographs and non-book materials; provides access to bibliographic information sources; creates database of projects, institutions, specialists; provides training, etc. \(^8\)

Almost all academic libraries, especially university libraries, are members of INFLIBNET. It has also developed library automation software called SOUL (Software for University Libraries) and has distributed the same free of cost to its member libraries. In U.P. only 4 universities are members of INFLIBNET other are in process.

Besides INFLIBNET, a number of other national networks and various library networks have also been developed including NICNET (National Informatic Centre’s Network), INDONET, ERNET (Education and Research Network), CALIBNET (Calcutta Library Network), DELNET (Developing Library Network), etc. ADINET is associated with INFLIBNET, DELNET with NIC and MALIBNET with CFTRI.

A number of educational institutions are members of such networks. These networks, especially DELNET (which has 752 members libraries including 742 from India and 10 from outside), are engaged in compiling union catalogs,
creating various databases of experts, providing training to library staff, ILL, online facilities, reference service, assistance in retrospective conversion, etc.

4.11 Library Consortia in India

Due to a financial crunch and the rising costs of journals, many Indian university and college libraries cannot subscribe to all the required journals and databases. To overcome this problem, libraries are forming consortia. Some special libraries and organizations like the Indian Institute of Astrophysics (IIA) Library, Inter-university Centre for Astronomy and Astrophysics (IUCAA) Library, National Centre for Radio Astrophysics (NCRA) Library, Physical Research Laboratory (PRL) Library, Tata Institute of Fundamental Research (TIFR) Library, Council of Scientific and Industrial Research, Department of Atomic Energy, etc, have established consortia to share electronic access to journal literature. NISCAIR (formed by the merger of INSDOC and NISCOM) is developing a consortium for CSIR labs for accessing e-journals.

Consortia in University Libraries of U.P. are still a new concept that requires proper guidelines and methodologies. In a survey by UGC in 2001, it was noted that although 142 university libraries had computer and Internet facilities and were interlinked to INFLIBNET, they were subscribing to printed journals only. In order to solve this problem, UGC launched a major initiative called UGC-INFONET that provides high speed Internet connections so as to have electronic access to professional literature including research journals, abstracts, review publications, and databases from all areas in science and technology, as well as in social sciences and humanities.

Today, a number of professional journals are available over UGC-Infonet to all universities. The e-subscription initiative under UGC-Infonet is an important portal for sharing print as well as electronic resources amongst university libraries. INFLIBNET functions as a resource center with an aim to cater to the needs of its
members for resources not accessible to them in electronic media or are available in print media.

4.11.1 INDEST Consortium

The Ministry of Human Resource Development (MHRD) has set up the “Indian National Digital Library in Science and Technology (INDEST) Consortium”. The ministry provides funds required for the subscription to electronic resources for 38 academic institutions, including the Indian Institute of Sciences, Indian Institute of Technology, Regional Engineering Colleges, Indian Institute of Managements, and about 60 centrally-funded/aided government institutions through the consortium.

The INDEST consortium is the most ambitious initiative so far in the area of engineering and technology disciplines. The primary objective of libraries is to organize and provide access to information, and it remains the same although the format and methods have changed drastically. Under the present scenario of declining budgets and higher subscription costs of journals in India, it is becoming very difficult to meet the demands of library/information users.9

The only solution to the problem is the pooling and sharing of resources-print as well as electronic-by way of consortia. New technology has provided great opportunities for delivery of services within consortia. More and more libraries must unite, which of course requires a change in the attitudes, practices, and policies to get the maximum benefit.

In U.P. University libraries there are three universities sharing the resources and have consortia connectivity. Bundelkhand University is utilizing DELNET consortia while Deen Dayal Upadhyay University library, Gorakhpur has connectivity with ERNET. VBS Purvanchal University has joined DELNET recently. Other universities are still to have connectivity.
The information technology progress is so penetrating and pervasive that it is now possible to obtain basic information on any topic by accessing databases across the world within reasonable time and cost. The not so distant future homes of tomorrow would have a minimum of a 100 computers embedded in all kinds of appliances and amenities. In such a highly computer mediated society, the routine work of libraries and librarians would be taken over by computer programs. Such programs will find information no matter where it is stored and will match it to the needs of the user, and further correlate it with other information to make new and useful synthesis.

The form and quantum of information that can be shared anywhere on the globe has naturally raised the issue traditionally perceived in the form of brick and mortar structure. Libraries have no doubt made use of the advances in information technology right from a standalone computer system to computer networking to the web and Internet and also modified the services accordingly. It is clear that libraries will have to remain relevant by meeting the demands of patrons in the forthcoming information plenty era.

4.12 Cyberinfrastructure

With the advent of digital technology, libraries are required to balance the collection development of print, non-print, and digital material and to redesign the services accordingly. The basic change this new technology has introduced is in reducing the physical material component of information while increasing the message part. The question is: where the spiral of technological development would lead? In this regard, it is noteworthy that each succeeding technology development has helped the preceding one to consolidate and that is how it would continue. The evolutionary role played by technology in the library in general is depicted in the figure.

- Phase – I : Handwritten manuscripts
- Phase – II : Paper based books and journals
- Phase – III: Non-print material like microfilms and audio-visual films
- Phase – IV: Digital CD/DVDs and web pages.
- Phase – V: Open access initiative and grid computing

These are the glimpses of Phase-V depicted in figure that would be characterized by the Open Access Initiative (OAI) and Grid Computing. Physical infrastructure that is embedded and hidden in our usage of high-speed networks and advanced computing forms one layer. Intangibles like software, design processes, data, information, and knowledge constitute another layer. The cyber-infrastructure layer in the broadest sense constitutes the in-between layer of enabling hardware, algorithms, software, communications, institutions, and personnel. By integrating both these layers, the cyberinfrastructure layer develops and deploys applications that contribute to enhancing total quality of information processing.

The cyberinfrastructure thus makes possible more ubiquitous, comprehensive knowledge environment to enable individuals to have access to quality information and facilities for discovery and learning. They would contribute to the universal education too by providing rich material resources, sharing experiences and expert mentoring to students, faculty, and extension workers located anywhere, subject to requisite access.10

Digital resources, tools and networks have influenced not just the way scholars make sense of human cultures and societies, but also the way these understandings are communicated to students and the general public by employing powerful information envisioning tools. The coming decade would see further transformations as masses embrace a digitized cultural heritage in new and sophisticated ways. The arts, humanities, and the social sciences have vital contributions to make in designing, building, and operation of such digital knowledge spheres. The significance of these disciplines is realized because they
represent the human infrastructure that is necessary to drive the technology-based
applications further.

Social scientists have therefore an important task of understanding the way
human beings behave, formulate and bring to practice, policies, tools and
resources essential for the realization of any infrastructure. Discussion on the
cyber infrastructure would also be incomplete without thinking about structures of
knowledge, of the academy, and of the society at large.

While much early adoption of computation resources did come from the
sciences and engineering disciplines – “e-science” was a shorthand term for
changes related with information technology in the scientific disciplines. More
recently, the terms e-research and e-scholarship are also being used in recognition
of similar technological and transformative shifts sweeping across the humanities,
the social sciences, and the arts.

4.12.1 Global Cyberinfrastructure

e-Research cannot reach its full potential without cyberinfrastructure. The
conduct of science and research is a global enterprise that transcends geographic
boundaries, disciplines and educational levels. The routine ability to work with
experts from all over the world, to use resources distributed in space across
international boundaries, and to share and integrate different types of data,
knowledge, and technology being generated in real-time from all around the world
is becoming more realistic. It is the development and deployment of compatible
cyber infrastructure linking together computers, data stores, and observational
equipment via networks and middleware that form the operative information
technology backbone of international research teams.

There are three intertwined strands of a global cyber infrastructure:
(i) **Cyber environments**: that provides researchers with the ability to access, integrate, automate, and manage complex, collaborative projects across disciplinary as well as geographical boundaries.

(ii) **Cyber-resources**: that ensures that the most demanding scientific and engineering problems can be solved and that the solutions are obtained in a timely manner.

(iii) **Cyber education**: to ensure that the benefits of the national cyber infrastructure are made available to educators and students throughout the world.

GARUDA is India’s national grid initiative. It is a collaboration of physical and natural science researchers and experimenters on a nationwide grid of computational nodes, mass storage, and scientific instruments. In its Proof of Concept phase, Garuda (eagle, and in Hindu mythology the mount of Vishnu, the preserver of the universe) will connect 17 cities across the country to bring “Grid” networked computing to research labs and industries.

The cyber infrastructure program offers an exciting opportunity to reformulate many information processes both at an individual and institutional levels. A possibility for a ‘universal, omnipresent and uniquitous’ library that empowers access to and the understanding of, the breadth and depth of human culture and experience is thus envisioned. An insight into the response by the libraries in modifying their services over the years and what role they would play in future needs consideration as given below.

Library and information services have always been seen as part of a wider provision of research and learning support. In the last decade or so, infrastructure development to create system-wide efficiencies included creation of systems that brought together services and data holdings from different libraries. Focus was on integrated library systems, more openly available abstracting and indexing
services and electronic journals. In the web environment, the common pattern of provision became multiple websites, each with a standalone interface, and databases that were hidden behind these interfaces.

These efforts had always been on enhancing the effectiveness of technologies in libraries, however, the long-term issue is how technology will influence the way library users behave and what they expect. This follows from the fact that more and more applications are now web based, which allows a free flow of data from users, by users, to users. Organizations are using a central web-based application to create workflows that pivot around the web. People and organizations are sharing components, problems and work. Social networking through blogs, wikis, and IM (instant messaging) is increasing.11

In this milieu, when analog media are being replaced or overtaken by digital media, an increasing number of users are finding the web more than just a form of creative expression. There is an increasing expectation by the web users and the younger generations in particular, to find resources of interest “on web”, where by ‘on-web’ means being found on one of the major search engines. All this is leading to a creative renaissance where relationships between the humans and their web-experience are being enriched and extended by co-creation and on demand services and supplies.

Libraries traditionally have provided themselves at nurturing relationships through registering the borrowing habits of users on the one hand and selective dissemination of information services and current awareness services for them, on the other. To this extent, libraries have been successful in establishing a symbiotic relationship. In contrast to the prevailing seamless information environment, library resources even to this day remain fragmented both within and across libraries. For example, on the contrary to the above web experience of a user, the links in discovery – locate – request – deliver of a library resource are still not
clear, making it impossible to track the status of an item easily. Library services and resources have failed to bring library content in workflows and on web (as RSS for example), making them inaccessible or un-discoverable.

The ecosystem of resource sharing amongst libraries that we see in shared cataloging platforms, messaging and document delivery systems, are not flexible, though virtual reference services and the recent experiences with FRBR are an exception. They do not allow the library data to be moved out of the library systems or to be placed in user-systems. This is also due to the stringent copyright controls enforced by content owners, ever since the rise of the digital media.

Libraries, therefore, need to build on services that save time, and are built around user workflow. The library requires playing a more active role in user environment for example, in ways that supports their learning and/or research objectives. A lot of information services are being bundled, re-mixed and pushed on networks. Libraries need to investigate and implement new technologies that may enhance the library system’s practices is something that libraries need to understand and evolve practices around. Once synchronous with distance learning, it primarily includes not only courses that are online and taught over a distance but those traditional classroom activities with electronic elements.

e-Learning is changing the way faculty and students access, create, and use information. It is providing the library community collaborative opportunities to bring learning resources via podcasts or multimedia webcasts to a student’s personal web-home. Libraries with functional institutional repositories or OAI complaint services can enhance services and usefulness in such e-Learning programs. The cyber infrastructure also, can play an important role, by providing the necessary infrastructure to, not only mount, integrate and disseminate the course materials over networks but to be intelligent enough to integrate it with a personal information space, like an individual’s digital dairy.
The future of online information would be dominated by small collections maintained and indexed by small groups. Digital libraries will store community knowledge, and the great mass of objects on the net will be stored in these repositories. New indexing techniques and federation across collections along with semantic interoperability would be a must. Besides these, as the quantum of information increases in the cyberspace, tools that ensure that boundaries between private and public information remain intact might be needed. Digital Library Technologies (DLTs) focusing on authentication systems that not only measure the quality of information being discerned, but also measure the depth of its permeability from private to public domain and vice-a-versa, are therefore needed. Besides quality the two most critical integrity issues with web-based information are: provenance – where does an object come from and how has it changed (tampered with) over time, and persistence – how long will an object last and how to make it last longer.

The Indian library scene is characterized by over 260 university libraries, 8000 college libraries, 54,000 public libraries and 9000 other institutional libraries spread across the vast geographical area. In addition there are several personal libraries with rare collections. Naturally, they are at different levels of development as far as digital status is concerned.

One of the most notable presence of organizations assisting in the transformation of academic libraries in India, and of the way they are involved in the research and development of the country has been that of the, Information and Library Network (INFLIBNET) centre, an autonomous Inter-University Centre set up by the University Grants Commission (UGC), the highest University body of India. Its various programs like, the formation of e-Journal consortia, retro-conversion, web-site hosting, and creation of network resource centers in different universities and research institutions across India provide an opportunity for these
organizations to come together to consolidate resources and to co-operate and collaborate for different services and systems.

Likewise, INDEST, the Indian National Digital Library in Engineering Sciences consortium set up by the Ministry of Human Resource Development, has obtained nationwide prices for a number of electronic resources for its member libraries, which is helping the researchers.

Networking of research libraries with similar end objectives and associated collections is a popular approach, one that is also strongly encouraged by UNESCO. In India, there are already a few regional networks of libraries, like,

- Developing Library Network (DELNET) http://delnet.nic.in/
- Ahmedabad Library Network (ADINET) http://www.alibnet.org/
- Madras Library Network (MALIBNET) http://www.angelfire.com/in/malibnet/

4.13 DELNET

Developing Library Network (DELNET) is a major Indian effort on a national scale with over 950 libraries as its members, including both institutional and associate-institutional members. DELNET was established with the prime objective of promoting resource sharing among the libraries through the development of a network of libraries. It aims to collect, store, and disseminate information besides offering computerized services to users, to coordinate efforts for suitable collection development and also to reduce unnecessary duplication to the possible extent.\(^{12}\)

DELNET has been actively engaged with the compilation of various Union Catalogues of the resources available in member-libraries. It has already created the Union Catalogue of Books, Union List of Current Periodicals, Union Catalogue of Periodicals, CD-ROM Database, Database of Indian Specialists,
Database of Periodical Articles, Union List of Video Recordings, Urdu Manuscripts’ DEVINSA Database, sample databases of language publications using GIST technology and several other databases.

A newcomer in the arena of global information exchange, India’s exposure to the Internet, electronic-mail and messaging, and other such “information/data exchange? Means has been relatively recent. The surge in interest in the networking arena within India is therefore spectacular. For example, the number of operators in India offering some form of connectivity has at least doubled during the last two years. Following are a list of prominent net-based services that are currently active:

- ERNET (Educational and Research Network)
- GPSS-GEMS (Gateway Packet Switching System)
- UUNET (UUNET Technologies India Pvt. Ltd.)
- BI Infotech (Business India)
- ICNET
- I-Net

ERNET is a government run network. It is a joint effort for the National Center for Software Technology, Mumbai, Department of Electronics, and the educational institutions (basically a couple of the Indian Institute of Technologies or the IITs). The GPSS-is under VSNL (Videsh Sanchar Nigam Limited), which is a Government of India organization (different from ERNET). I-NET is under the MTNL (Mahanagar Telephone Nigam Limited), providing leased lines webbed across India.

On the dimension of promoting research and scholarship using digital technologies, efforts by university and research libraries at creating institutional repositories that open the gates of knowledge for academics, researches and students are being explored. Advocates and enthusiasts of the initiative have been
stressing the need for mandating Open Archiving and Institutional Repository (IR) initiatives in universities and national research institutes. Eprints@iisc, the electronic print archive of the Indian Institute of Science, Bangalore is probably the first OA-IR in India. With the number of IRs rising in the country, the need to create a consortium of research and scientific institutions for sharing information by establishing institutional open access archives has been stressed time and again.

There is a significant potential for open access publishing in India, considering the large number of publicly funded universities, institutions of higher learning and research laboratories. It is noteworthy that OpenMED, an internet archive for the medical and allied sciences, developed by the National Informatics Center, India has recently been nominated for the Stockholm Challenge Award 2006. Not only would open access increase the visibility of scientists from the South, but it would also enable them to access relevant information at affordable price.

4.14 Software Issues

Greenstone is a digital library software used for building and distributing digital library collections, organizing information and publishing it on the Internet or on CD-ROM. Produced by the New Zealand Digital Library Project, it integrates functions such as metadata, full text search and retrieval, multilingual support, support for multiple document formats and administration. Greenstone is open-source software, issued under the terms of the GNU General Public License. The aim of the software is to empower users, particularly in universities, libraries, and other public service institutions, to build their own digital libraries. The Indian Labour Archives was one of the first Indian digital library initiatives to use Greenstone.

In India, at present, Information Library Network (INFLIBNET), a consortium incubated under the rubric of UGC, is actively involved in Library
Automation, Database Creation, Software Development, Human Resources Development, Information Services and Networking. They have developed a software SOUL based on relational database management language, which is used for cataloguing, archiving as well as enabling online public access of resources.

Interactive educational, informational, and even leisure contents are not readily available in many India’s regional languages. Even if developmental funds are specially directed towards the creation of such content in the initial stage of this digital library project, these are likely to be consumed quickly, and there will be a drop off in the interest and value of the library, unless user groups continue to encounter novel content on each visit. This has been the experience of the Azim Premji Foundation’s CLCs, for instance, where students soon mastered specially commissioned educational games in the local language, and began to prefer pirate-copies of violent and ribald computer games.

Special programming and training efforts can be directed towards enabling segments of the local community to create their own digital media. The JIVA foundation in Faridabad, for instance, ran a highly successful project, which taught local teenagers how to make their own digital-movies, from storyboarding and scripting to direction and post-production editing. The example of the Hole-in-the-Wall project reveals the extent to which unsupervised interaction among students around an interactive medium can induce learning, dialogue, and even basic computer literacy.

### 4.15 Multiple Access Possibilities

One of the greatest challenges in the establishment of a digital library network in a country like India is Internet connectivity. The lack of networked infrastructure and inappropriate pricing patterns can also prove significant hurdles for a fledgling ICT initiative. Several connectivity options now exist and it is
helpful to understand their relative costs and benefits. Dial Up access, using regular telephone lines emerges as an immediate connectivity solution as existing network infrastructure can be tapped. Due to limited bandwidth and slower speeds, Dial Up is suitable only for basic emailing and browsing. Moreover, it ends up being exorbitantly expensive for longer durations of use.

The Indira Gandhi National Center of Arts digital library for example, primarily supports a variety of multimedia formats including audio and video files of archaeological or cultural significance. Interactivity to a very limited degree is also embedded. However, even for such minimal activity broadband connection is preferable. Broadband connectivity, including ISDN (integrated services digital network), an order technology, and DSL (Digital Subscriber Line), offers high speeds with high costs, but may not be available in most rural areas. While this low maintenance technology is appropriate for bandwidth hungry applications like multimedia, bulk data transfers or teleconferencing, it is usually only accessible to those living near the telephone company central offices. It often proves too expensive unless cable infrastructure already exists in the area of deployment.

Wireless-in-Local-Loop (WLL) systems afford subscribers wireless access through a base-station, which is then connected to a broadband backbone. The n-Logue customized version of this configuration called ‘correct’ WLL system provides both voice and data transmissions simultaneously. WiFi or 802.11 networks allow high speed wireless data or voice transfer within extremely local areas, usually under 300 meters. It is ideal for networking multiple classrooms as their locations do not change over time. VSATs (Very Small Aperture Terminals) connect up to diverse kinds of satellites using the C and Ku bands. Even though VSAT costs have reduced considerably over the last several years. Operating costs are still higher for than that of other means of connectivity. VSATs are suitable for usage patterns characterized by bursts of traffic or applications. It is ideal for
downloading media files, applications and freeware that children can find use for in their curriculum.

Initiatives such as the Center for Education and Documentation (CED) that maintain historical manuscripts and archives of media combine digital and offline modes of content delivery. CED provides access to a searchable database of catalogues and indexes. Users can register themselves as members for a subsidize fee and request selected material to be sent to them via post or email depending on what format the resources are available. Recently, CED has also started making its resources available in digital formats that can be emailed to users as this would aid in cutting cost for the users as well as increase geographic reach. Therefore, a digital library initiative in a country like India has the flexibility of making use of a combination of existing networks of communications and distribution including print, CD-ROM, postal, email, and online.

Mixed Media approaches to connectivity may employ radio and data-transfer using mobile phone networks in combination with some form of Internet access. Data transmission over cellular networks is a possibility for one-way broadcast and streaming of appropriate media content that can be relayed on a closed group network. They may be used for peer-to-peer communication to exchange information on a mesh network. Combining mobile phones with GPS technology and audio/camera functionalities may find a lot of use for interactive and project-based learning programmes.

Table-44: On-line Full – Text Journals

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<thead>
<tr>
<th>Sr.No.</th>
<th>CABI Primary e-journals</th>
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<tbody>
<tr>
<td>1.</td>
<td>American Journal of Alternative Agriculture</td>
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<td>2.</td>
<td>Animal Health Research Reviews</td>
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<td>3.</td>
<td>Aquatic Resources, Culture &amp; Development</td>
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<td>4.</td>
<td>Bulletin of Entomological Research</td>
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<td>5.</td>
<td>Chinese Journal of Agricultural Biotechnology</td>
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<td>6.</td>
<td>Equire &amp; Comparative Exercise Physiology</td>
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<td>7.</td>
<td>Journal of Helminthology</td>
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<td>8.</td>
<td>Plant Genetic Resources: Characterization &amp; Utilization</td>
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<td>9.</td>
<td>Seed Science Research</td>
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<td>10.</td>
<td>Soil use and management</td>
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<td>11.</td>
<td>British Journal of Nutrition</td>
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<td>12.</td>
<td>Nutrition Research Reviews</td>
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<td>13.</td>
<td>Proceedings of the Nutrition Society</td>
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<td>14.</td>
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<td>15.</td>
<td>In Vitro Cellular &amp; Development Biology-Plant</td>
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<td><strong>Journals @ DVD</strong></td>
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<td>16.</td>
<td>Nature</td>
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<td>17.</td>
<td>Journal of Applied Microbiology</td>
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<td>Animal Genetics</td>
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<td>Nucleic Acids Research</td>
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<td>21.</td>
<td>Protein Engineering</td>
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<td>Conservation Biology</td>
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<td>Journal of Bioenergetics and Biomembranes</td>
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<td>Plant Pathology</td>
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<td>Ovid Technology Fee</td>
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<td>27.</td>
<td>Agroforestry System</td>
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<td>28.</td>
<td>Antonie Van Leeuwenhoek</td>
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<td>29.</td>
<td>Apoptosis</td>
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<td>Applied Biochemistry and Microbiology</td>
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<td>31.</td>
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<td>32.</td>
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<td>36.</td>
<td>Biodiversity and Conservation</td>
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<td>Biogerontology</td>
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<td>Biologia Plantarum</td>
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<td>Biology Bulletin</td>
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<td>Bioscience Reports</td>
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<td>42.</td>
<td>Cell Biology and Toxicology</td>
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<td>43.</td>
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<td>Euphytica</td>
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<td>53.</td>
<td>European Journal of Plant Pathology</td>
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<td>54.</td>
<td>Evolutionary Ecology</td>
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<td>Experimental &amp; Applied Acarology</td>
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<td>56.</td>
<td>Fish Physiology and Biochemistry</td>
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<td>57.</td>
<td>Genetic Resources and Crop Evolution</td>
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<td>58.</td>
<td>Genetic</td>
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<td>59.</td>
<td>Glycoconjugate – Journal</td>
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<td>Hydrobiologia</td>
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<td>Integrated Pest Management Reviews</td>
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<td>63.</td>
<td>International Journal of Primatology</td>
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<td>64.</td>
<td>Irrigation and Drainage Systems</td>
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<td>65.</td>
<td>Journal of Applied Phycology</td>
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<td>66.</td>
<td>Journal of Bioenergetics and Biomembranes</td>
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<td>67.</td>
<td>Journal of Chemical Ecology</td>
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<td>68.</td>
<td>Journal of Evolutionary Biochemistry and Physiology</td>
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<td>69.</td>
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<td>Journal of Insect Conservation</td>
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<td>71.</td>
<td>Journal of Mammalian Evolution</td>
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<td>72.</td>
<td>Journal of Muscle Research &amp; Cell Motility</td>
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<td>73.</td>
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<td>Journal of Pharmacokinetics and Pharmacodynamics</td>
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<td>Journal of Structural and Functional</td>
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<td>76.</td>
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<td>84.</td>
<td>Origins of Life and Evolution of the Biosphere</td>
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<td>Plant Cell, Tissue and Organ Culture</td>
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<td>Transgenic Research</td>
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<td>105.</td>
<td>Wetlands Ecology and Management</td>
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</table>

The following databases are available in the library for use of their users:

- Agricola
- Agris
- Cab Abstracts
- Fsta
- Medline
- Indian Science Abstracts
- J-Gate (On-line Access plus CD-ROM)
• Nucssi
• Forestry Database in CD-ROM (FRI, Dehradun)

Besides the above many university libraries have also prepared its own databases for:

• Theses Holdings (Theses)
• Back volumes of the journals in the library (journals)
• Book available in the library (books)
• FAO publications (Books).

On-Line Journals / Portals

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<td>1.</td>
<td>CABI Primary e-journals</td>
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<td>2.</td>
<td>Journals @ OVID</td>
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<td>3.</td>
<td>j-Gate Custom Content</td>
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<tr>
<td>4.</td>
<td>j-Gate online Journal Portal</td>
</tr>
<tr>
<td>5.</td>
<td>Kluwer e-journals</td>
</tr>
</tbody>
</table>

However, the present study uses a survey method for research, including observation, interviews, etc. followed by analysis method through questionnaires, uses included, levels of conclusions and findings. In bibliography, all the publications, report on study is listed separately.

4.16 U.P. State University Libraries

Libraries are the repositories of knowledge and form an integral part of education. Libraries have a long history, starting with the chained and closed-access libraries of earlier times to the present-day hybrid, digital, and virtual libraries that use the latest technology for provision of information through various services. Accordingly, librarians have also changed from storekeepers who were concerned with protection of books against theft, mutilation, and pilferage, to that
of information officers, navigators, and cybrarians who find themselves in the vast ocean of reading material and are busy in satisfying their clients who want anytime and anywhere information.

With the advent of computers, the nature of libraries has changed dramatically. Computers are being used in libraries to process, store, retrieve and disseminate information. As a result, the traditional concept of library is being redefined from a place to access books to one which houses the most advanced media including CD-ROM, Internet, and remote access to a wide range of resources. University libraries have now metamorphosed into digital institutions. Gone are the days when a library was judged by its quantitative resources.

Today, university libraries are surrounded by networked data that is connected to a vast ocean of Internet-based services. Moreover, electronic resources relevant to the professions are developing at an unprecedented pace. University libraries are considered to be the nerve centres of academic institutions, and must support teaching, research, and other academic programmes. The situation in university libraries of India is the same as that of academic libraries the world over; however, Indian libraries must provide maximum information with limited resources.

e-Resources play a vital and viable role to cater to the needs of research scholars in the process of a advancement of society in todays environment. The main function of any library is to provide efficient and effective services to its users. The study is an analytical study of electronic resources and services provided to users with special reference to research scholars of U.P. State university libraries.

How people use electronic resources or their preferences for print and electronic library services have been the focus of dozens of individual research
studies in the last few years. The objective of research of research was to study the different factors such as information sources, adequate collection, various channels of information and the constraints facing by the research scholars in using and searching information through electronic sources. Therefore a survey method, a most popular among the users was adopted. A questionnaire was designed which includes all the factors needed to make an evaluative study. This is all because of the growth in electronic library system has forced a review of library services and system. In a burgeoning electronic environment, the challenge is to identify the needs of users and to ensure the services are fully supporting of these. Although users include from different disciplines. However, this is not as simple as it was first appeared.

Table-45: U.P. State University Libraries: Details of e-Resources

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>University</th>
<th>CD-ROM Title</th>
<th>e-Journals</th>
<th>e-Books</th>
<th>e-Data Base</th>
<th>e-Reports</th>
<th>e-Content Pages</th>
<th>e-Clipping</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>BU</td>
<td>400</td>
<td>4000</td>
<td>485</td>
<td>500</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td>CCSU</td>
<td>0</td>
<td>4000</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>3</td>
<td>CSJMU</td>
<td>1200</td>
<td>3800</td>
<td>2000</td>
<td>800</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>4</td>
<td>DBRAU</td>
<td>600</td>
<td>4000</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>5</td>
<td>DDUGU</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>6</td>
<td>DEI</td>
<td>460</td>
<td>4000</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>7</td>
<td>LU</td>
<td>800</td>
<td>4000</td>
<td>0</td>
<td>350</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>8</td>
<td>MGKV</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>9</td>
<td>MJPRU</td>
<td>0</td>
<td>4000</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>10</td>
<td>RMLAU</td>
<td>600</td>
<td>4600</td>
<td>1000</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>11</td>
<td>SSV</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>12</td>
<td>VBSPU</td>
<td>676</td>
<td>4000</td>
<td>1000</td>
<td>480</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
Details of e-Resources

CD-ROM Title
- Under Process: 17%
- Yes: 58%
- No: 25%

e-Journals
- Under Process: 17%
- Yes: 75%
- No: 8%
The above diagrams shown that 58% university libraries accessing CD-ROM title while maximum 75% university libraries are accessing e-Journals, 35% university libraries are accessing e-Books and 33% university libraries are accessing e-Database.

**Criteria for selecting of e-Resources**

1. **BU** : NIL
2. **CCSU** : Users need/cost effectiveness/sub relevance/ease of accessibility/Added value
3. **CSJMU** : NIL
4. **DBRAU** : NIL
5. **DDUGU** : Users need/cost effectiveness/period of access
   Sub. Relevance/Added value/case of accessibility
6. **DEI** : Users need/cost effectiveness/period of access
   Sub. Relevance/Added value/case of accessibility
7. **LU** : Users need/cost effectiveness/period of access
   Sub. Relevance/Added value/case of accessibility
8. **MGKV** : NIL
9. **MJPRU** : NIL
10. RMLAU  Users need/Subject relevance
11. SSU  NIL
12. VBSPU  Users need/cost effectiveness / subject relevance

Some university libraries are following some criteria to select the e-resources most of the library are not following any criteria to select the e-resources.

Table-46: Weeding Policy of e-Resources

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>University</th>
<th>Following Licensing Agreement</th>
<th>Weeding policy of e-Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>BU</td>
<td>NIL</td>
<td>NIL</td>
</tr>
<tr>
<td>3</td>
<td>CCSU</td>
<td>Under UGC-Infonet consortia</td>
<td>According to the consortia</td>
</tr>
<tr>
<td>2</td>
<td>CSJMU</td>
<td>NIL</td>
<td>NIL</td>
</tr>
<tr>
<td>4</td>
<td>DBRAU</td>
<td>NIL</td>
<td>NIL</td>
</tr>
<tr>
<td>5</td>
<td>DDUGU</td>
<td>NIL</td>
<td>NIL</td>
</tr>
<tr>
<td>6</td>
<td>DEI</td>
<td>Yes. Based on Access, Fair Use, Electronic links e-multiple formats</td>
<td>Yes. Longer availability of e-Resources</td>
</tr>
<tr>
<td>7</td>
<td>LU</td>
<td>NIL</td>
<td>Yes. Longer availability of e-Resources but difficult to maintain</td>
</tr>
<tr>
<td>8</td>
<td>MGKV</td>
<td>Under process</td>
<td>NIL</td>
</tr>
<tr>
<td>9</td>
<td>MJPRU</td>
<td>NIL</td>
<td>NIL</td>
</tr>
<tr>
<td>10</td>
<td>RMLAU</td>
<td>YES</td>
<td>NIL</td>
</tr>
<tr>
<td>11</td>
<td>SSV</td>
<td>Under process</td>
<td>NIL</td>
</tr>
<tr>
<td>12</td>
<td>VBSPU</td>
<td>YES</td>
<td>NIL</td>
</tr>
</tbody>
</table>
References


  
  DESIDOC Bulletin of Information Technology, 16 (2), 23-28