Chapter 3

Paradigm Shift in Library and Information Science

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3.0 Development of Library and Information Services

Libraries have been in existence ever since the first spoken word was recorded. They have a long association with the human culture. Libraries and librarians transmit culture to future generations through their services. The following section gives a brief and precise historical account of library and information services.

3.0.1 The Ancient Period

In earliest times there was no distinction between a record room/archive and a library. From the account available, it is evident that no specific services were provided to the users in the ancient period. Though it is also evident that the users of these libraries were very few, only those who were learned or attached to monasteries and temples which acted as the centres of learning in the ancient world. The access to information contained in these manuscripts which existed in the form of palm leaves, birch bark and clay tablets was highly limited to the nobility. Information access to common man was a far fetched dream. Hence, no specific services can be said to have existed during this period. However, due to travelers who visited countries on the pretext of religion and learning, there has been enormous exchange of information from one place to another. It seems as if it marks the beginning of library and information services in the form of traveler's accounts and their consultation thereof. But it also connotes that no separate personnel were appointed for the purpose. The libraries were under the
possession of monasteries, cathedrals and temples. There were also private collectors of these records who belonged to the noble and rich classes.

3.0.2 The Medieval Period

The medieval period and Renaissance period witnessed founding of universities in several countries. Books were found to be essential for the development of spiritual life. As a result many university and public libraries were established. Invention of printing press by Gutenberg in 1440 AD brought about a revolution in the world of books and libraries. Introduction of printing press in India in 1556 triggered the establishment of several libraries both academic as well as public at different places in India by the Mughal and Maratha kings. As for the library services are concerned it was during the reign of Akbar that reforms into the management, classification and storage of books were brought about. A separate department for systematizing its management was also created. The Hindu centres of learning at Benaras, Mithila, Nadia, Nalanda, Taxila, Vikramshila etc. played important roles in the library development of medieval India in terms of organization and management of libraries in medieval India, as separate library personnel were appointed for the purpose and they enjoyed important status through their positions. As per the historical account of libraries in India connoting to medieval period there were head librarians who were called as ‘Nizam’ and the assistant librarians as ‘Muhatin’ or ‘Darogha’. Other types of staff included scribes, book illustrators, calligraphers, copyists, translators, book binders, and gilders. It is also said

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that during the Mughal period, books were classified broadly by subjects. The fixed location system for classification was used by Jain Jnana Bhandars. Cataloguing was practised.

The above account shows that the services like technical services (classification, cataloguing, bookbinding, and maintenance etc.), copying service, and translation service etc. existed during the medieval period. However, the copying and translation services were manual.

3.0.3 Period of Incunabula (Early Printed Books)

The invention of printing press made the production of books much cheaper and easier. Books became more available, and the literacy rate rose because the usefulness of the knowledge of reading and writing grew rapidly and so also the collections of books. Eighteenth century was a time of new ideas concerning all aspects of life, including scholarship and education. The early nineteenth century became the time of attempts to bring these ideas to life. The modern university library used to have two functions: (i) it was supposed to serve faculty and students by providing texts and space to work comfortably with those texts, and (ii) it guided faculty and students in their research and study. It did so through the selection of texts to be included in the library’s collection.

3.0.4 The Transition Period

The Transition Period can be roughly discussed in two sub-periods viz., Pre Information Technology Era and Post Information Technology Era.
a. Pre Information Technology Era

The librarian in a modern university was expected to be a highly qualified, competent, well-read person, who was able to make a judgment about what books would be most useful, most inspiring, most valuable for faculty and students. In the words of F.W. Lancaster (1999), the librarians were once considered as “people capable of separating the wheat from chaff”.

But unfortunately, the difficulties of library management grew in the later part of 19th century. Libraries had increased in size, but their growth had been haphazard; administration became weak; standards of service almost nonexistent; funds for acquisition tended to be inadequate; the post of librarian was often looked down upon as a part-time position; and cataloguing was frequently in arrears, also lacked proper method.

A leading figure in the transformation of library service was Sir Antonio Panizzi, a political refugee from Italy who became the principal librarian of the British Museum from 1856-1866. He revolutionized library administration and management demonstrating that the collection in libraries should match its declared objectives. He perceived the importance of a good catalogue and elaborated a complete code of rules for catalogues. He had been instrumental in bringing the libraries and access to information close to the poor and underprivileged. Thus the common man also derived benefit from libraries. This phase was followed by Melvil Dewey's enormous contribution to the field of library science through his Dewey
Decimal System of Classification of documents for arrangement in library. Other vital library services viz., bibliography, book lending, etc. are dependent upon this system. Even today this is the most prevalent and convenient system of classification in libraries world over. (Encyclopaedia Britannica, 2007).

While scenario in India also kept pace with the international developments, improvements were made in Indian academic libraries after consultation with library experts from the U.K. and the U.S. and also as a result of trained librarians who were sent for training outside in the field of librarianship. Also during this period the library science education and library related literature in the form of various publications viz., The Indian Library Journal, Library Miscellany, The Modern Librarian etc. grew. Dr. S.R. Ranganathan, Father of Library Science in India, published his Five Laws of Library Science in 1931 which form the bedrock of the profession. The laws – 1. Books are for use; 2. Every reader-his book; 3. Every book-its reader; 4. Save the time of reader; and 5. Library is a growing organism; are universally applicable across the time and space even today and also in the projected future.

In the post independence period, constitution of UGC and Education committees for the development of university libraries led to several developments in academic library services.
b. Post Information Technology Era (Modern Era)

The paradigm for library services shifted radically in the 20\textsuperscript{th} century with the advent of new information technologies. By the end of the century computer-based systems had given individuals access to an enormous network of information. Especially in the world’s major urban centres, the library’s traditional means of sharing access to information, such as the owning and lending of books and other materials or the sharing of these resources with sister libraries, were increasingly supplanted by the use of electronic databases that contained everything from library catalogues and subject area indexes and abstracts to journal articles and entire book-length texts. As individuals using home computers became familiar with a worldwide electronic network, the library as a storehouse site was challenged by the so called virtual library, accessible by computer from any place. The role of the professional librarian also evolved as many were called upon to be familiar with and to train others to use a variety of electronic databases.

The changes in the library and information services and products became clearly visible in this period with the gigantic growth of information coupled with the impounding impact and speed of information and communication technologies.
3.1 Concept of Library and Information Services & Products

The service offerings of library and information centres can be broadly categorized into three types. They are:

3.1.1 Technical Services viz. Acquisition of documents, Processing, Classification and Cataloguing of documents, Preservation and Maintenance, Indexing and Abstracting etc.

3.1.2 User services viz. Circulation Service, Document Supply Service, Inter Library Loan Service, Reference and Retrieval Service, Translation Service, Bibliographical Service, Newspaper Clipping Service, Reprographic Service, Bibliographic Instruction, Current Awareness Service (CAS) and Selective Dissemination of Information (SDI), CD-ROM and Online Database Searching Service, Internet and E-Journals Service, Library Extension Services, Off-campus Services, Services for the disabled etc. Of these the last four services are new developments mostly, after the advent of computer technologies.

3.1.3 Administrative services viz., looking after the routine work of library, library administration and management, staff issues, performance etc.

Of the above, user services and technical services to certain extent can be considered as information services. Information services can be described
as “a combination of information, technology, and people... a set of activities that provide individuals with relatively easy access to data or information” (Woodsworth, A. and Williams, J.F., 1993). Library services are among traditional information services.

3.1.4 Nature of Library and Information Services & Products

Library and information services & products play a vital role in the present day society. Though the terms ‘information services’ and ‘information products’ are used synonymously, they are distinguished by their nature. A service can be tangible or intangible one, but a product is usually a tangible one. The information services are categorized into three types – factual information / data service, bibliographic information service and document supply services. Depending upon the nature of information need, the library and information centres provide services to the users. Information products are provided in the form of Alerting services, Indexing and Abstracting services, Translation services, Database services etc. The document back-up and document delivery services are rendered by library and information centres to provide access to information to the seekers of information.

The acute problem of increasing amount of literature was first felt by scientists and technologists, who used scientific and technical libraries. In order to solve the problems created by the growth of literature, information service was started in scientific and technical libraries. The intention was that information service should be provided by one who was a member of
the research team. He was expected to keep in touch with research going on in the laboratory. His primary function was to organize literature and he was expected to know all the possible sources of information, which might be found useful by the group of persons being served by him. And this practice was followed by other types of libraries like academic and public libraries also.

Information service is one which involves provision of a required piece of information orally or otherwise to a user or an inquirer. Here Selective Dissemination of Information (SDI) and Current Awareness Service (CAS) are information services. They are services, because, by and large they are intangible. Therefore, service is intangible one and can be either pull type or push type services. A user approaches the library in need of information and he is provided with the information. This is provision of information on demand or responsive documentation service or pull service. He pulls required information. The second aspect aims at keeping the users well informed and up-to-date in their field of specialization and also in the related subjects of interest. This is anticipatory documentation service or push service, where related information is pushed to the user in anticipation of his need.

Product being a tangible outcome of a service, it ought to be tangible. For instance, Current Contents of Institute for Scientific Information, Thomson Publishing, Biological Abstracts, Chemical Abstracts, Psychological Abstracts, Index Medicus, Prowess etc. are all products. However, these can
also be called services but they are products as far their publishers and aggregators are concerned. Even when a library buys or subscribes to them, they can be viewed as products. But when the library gives access to its users and supplies information using these products, especially by compiling information for specific queries it becomes service.

Different types of Information Products are Information Newsletters, House Bulletins, Trade and product bulletins, State-of-the-art reports, Trend reports, Technical Digests, Indexing and Abstracting Products, etc. However, there is very fine line of distinction between information services and products.

3.2 Paradigm Shift in Library and Information Services Scenario

The concept of "paradigm shift" was defined and popularized by Thomas Kuhn (1962) in his seminal work *The Structure of Scientific Revolutions*. He argues that scientific advancement is not revolutionary, but rather a "series of peaceful interludes punctuated by intellectually violent revolutions", and in those revolutions "one conceptual world view is replaced by another". It is a change from one way of thinking to another; a transformation instigated by "agents of change" (catalysts) whose ultimate effect is a metamorphosis embodying both the previous knowledge and the new discoveries that challenge and overthrow it.

Paradigm shift is not limited to hard sciences but as evident academic and research institutions have been moving away from their traditional roles as
"knowledge producers". They have had to face a more complex, multifaceted world whose demands have increasingly changed the processes and scope of their activities. Rapid development in information and communication technologies like personal computing and networking tools and techniques have all opened up tremendous possibilities for information acquisition, management, and accessibility. This, in turn, produced new needs and new types of users – those less likely to sit for hours poring over manuscripts and more inclined to stop in, check email, do online project collaboration, access an article off an electronic database etc. Moreover, universities and research institutions have been experiencing decrease in funds and a pressing need for revenue generation. This had had an influence on everything from library collections to library services.

During the 1990s a new era of library began that introduced information and learning commons. It followed and promoted a new conception of what libraries were and what purposes they needed to serve. In breaking away from the old model, architects and library planners developed a new paradigm of libraries as enhanced interactive and research environments. "This paradigm shift" implied a different kind of user than the traditional academic researcher. He would partake of unique services sometimes connected, sometimes not, with the conventional services offered by the library. The emerging library is no longer viewed simply as a monastery of books and journals for scholars but a marketplace competing for clients by offering different array of services. If any one statement could summarize
this shift it would be: new facilities meeting new needs of new users; encapsulated in one word – “cybrary”. Belying this formulation are multitudes of perceptions and perspectives about what should be integrated into the cybrary, how it has changed notion of library services, and what its effect has been on both accommodating and developing new kinds of users for its facilities.

The benefits of information services lie in that they can help users to get right information, at right time and thereby enhance their academic understanding and user efficiency. As a matter of fact, there exists a virtually unlimited potential market to explore for information services. This market involves availability, reliability, serviceability, response and users’ satisfaction of information services. However, the current situation in information services is unsatisfactory. It does not fully fit the requirements of present day society. One of the future development strategies of information services in libraries is to leverage levels of information services. In other words, it means transforming information services into knowledge services in order to provide better support for the society. As it is due to impeccable proliferation of Information and Communication Technologies (ICTs), there has been a considerable shift in the paradigm of library and information services. While many of the existing library and information services have been transformed or altered i.e., in the way they are delivered or the tools used for the service etc., some new services have been added too that are relevant in the present conditions.
Libraries cannot be service departments with high technological needs if they are not technologically up-to-date and accessible themselves. Consequently, a metamorphosed balance is embedded in modern library design – injecting contemporary market demands with the classic identity as a repository of knowledge and a cornerstone of the institution’s intellectual endeavours. In any metamorphosis, there are “facilitators” essential to change the process. For academic and research libraries the wide range of digital information sources and technologies act as facilitators towards balancing between monastic and marketplace roles of the contemporary library, says Boone (2003). He opines that the “cybraries” must embody both the monastic perspective as a facility to store and access materials, and still manage to build services and features to make it competitive in the technology-driven marketplace. The paradigm shift emerges from the physical transformation of the facility from research/repository to a flexible, multi-purpose enhanced interactive and research environment.

3.3 Changes in Library and Information Services

Changes in some of the important library and information services, specifically in technical and user services during transition period can be traced as follows:

3.3.1 Technical Services

a. Acquisitions: The acquisitions process used to take as long as three to eight months period prior to the development of Internet based
catalogues and book supply. Libraries used to collect book recommendations from their users and patrons, place orders to their regular suppliers who in turn would arrange to procure them from various local and foreign sources. The entire process would consume good amount of time until the reader actually could get the document.

The development of electronic means of document delivery has improved this process. With online catalogues and lot of information about the publication itself as provided by online vendors viz. Amazon.com, Barnes & Noble, Crossword etc. and also publishers own sites and trade, the acquisition process can be said to have become open and transparent with the removal of middlemen. Libraries can now purchase with their corporate accounts with these publishers via e-commerce applications. Though the traditional sources of supply, publishing and book selling trades still exist to a considerable extent in libraries, but they also have had an impact of online and electronic book publishing and trading. The traditional methods are likely to continue for some more time along with the modern methods. The modern method has also made acquisition of e-books and e-documents easy, as their importance in library grew rapidly.

b. **Classification**: Classification of documents in a library aims at arranging them in a sequence that will make sense and be helpful to
the user. Almost all the libraries worldwide arrange documents subject wise. The documents are classified with the help of a classification schedule. This is an important tool of libraries. The schedules are usually updated periodically depending upon the rise and merger of new subjects and disciplines etc. Libraries have to purchase these schedules as and when they are in need of the updated subject headings. They are expensive also.

Now the classification schedules are also available online and more current information is available on Internet. A library worker can consult the Library of Congress or Online Computer Library Centre (OCLC) or British Library Online Public Access Catalogue for classification data on Internet. This not provides him with standard and accurate data but also saves him of duplicate efforts.

c. **Cataloguing:** However careful and scholarly the methods used in building a collection, without expert guidance to its access and use, the collection remains difficult to approach. These techniques have been in use as long as libraries have existed, and their value in the information age has been enhances by the use of computers. Catalogues exist in a variety of forms like classified catalogue that is subject based and dictionary catalogues that are alphabetical and of varying physical appearance. Earliest catalogues were on birch, bark, palm leaves or any other material that the reading material existed on. Catalogues also used to be in book form with handwritten entries.
and spaces for new additions. They were called as sheaf catalogues. The card catalogues became very popular as the catalogue cards were filed in cabinets alphabetically or on class basis they offered the opportunity to have a complete up-to-date file.

The advent of the computerized catalogue, however, offered a more practicable approach because the storage capacity and operating speed of even small machines overcame the main drawbacks of card services like multi user access and non mutilability, delays in production due to manual typing of a number of cards per title (sometimes they would be upto 20 cards per title) and the labour of card filing etc. The data once entered into computer enables the user to multi query on author, subject, keywords etc. The Online Public Access Catalogue (OPAC) in many libraries has been expanded to include information about journal articles and sometimes about the community served by the library.

Further developments in this system has made it possible to integrate other library records with the OPAC, so that patrons can reserve materials that are still on order and can determine if items in the library collection are already on loan from their respective departmental desktops through WebOPAC. Whereas in case of card catalogue the user had to come all the way to the library for these tasks.
As discussed in case of classification, some Integrated Library Management Software (ILMS) also allow connecting to remote servers of other library OPACs like Library of Congress or OCLC to download their cataloguing data. Thus lot of time and effort can be saved besides getting standardized data.

The job of cataloguer once highly dedicated to the task of describing library materials for the production of a catalogue is now focused on producing an information retrieval tool that will be of general use to the library patrons. Cataloguing records as traditionally produced by libraries are rather generic in that sense, that they make relatively few assumptions concerning the potential users of these records. The future context of usage (integration in an OPAC or placing of printed cards in a sequentially organized catalogue) until now had very little impact on the actual way such information was created in the cataloguing process and did not influence the semantics (as formalized in cataloguing rules such as AACR2) to a very high degree. Whereas, metadata creation and meta-tagging which can be considered as high level or advanced cataloguing of electronic and digital documents takes care of semantics that the location information is held within the record in such a way to allow direct document delivery from appropriate application software, in other words the record may well contain detailed access information and the network address(es). (Gradmann, S. 1998)
d. **Preservation:** One model of library service is that collections are used so extensively that the materials disintegrate from heavy use. Earlier there were no methods for longer preservation of library materials except discouraging their frequent use. But this would mean a negative aspect to library services.

Now, most libraries try to strike a balance between maximizing current use and preserving materials for future use. As a response to various problems of preservation, libraries have developed several preservation strategies like reformatting – preservation by making photographs, mimeograph, scanning etc. to create digital images on magnetic or optical disc. The drawback of this process, of course, is the frequent obsolescence of technology. The other less popular methods are de-acidification, and future conscious manufacturing.

e. **Indexing and Abstracting Service:** The indexing and abstracting services in libraries began with the introduction of Engineering Index in the library of American Institute of Civil Engineers in 1892, an eight-year cumulation of the "Index Notes" was compiled into "Descriptive Index to Current Engineering Literature" which took shape into "Engineering Information Village" later on.

In the past decade the increased costs of traditional print-on-paper secondary services have resulted in a decline in subscriptions for many titles. Concomitantly, the cost effectiveness and efficiency of
computer processing has led to a proliferation of online databases. Secondary services in online form have not only increased access points to the primary literature, but have also had the effect of making information more accessible regardless of geographic location. However, as the databases and the search engines became more sophisticated, librarians found themselves intervening more, not less, in the instruction and use of this and other electronic information tools. In addition to the traditional indexing and abstracting, links to world-wide-web sites, access to technical experts, and document delivery services make present indexing and abstracting services very comprehensive information resources. The future lies in an integration of primary and secondary services. Dual-mode secondary publications will gradually give rise to new secondary services in machine-readable form only. As the primary literature follows suit, secondary services will be involved in building "filters" and search aids to guide the user from the initial databases of primary text to databases of abstracts derived from primary text, and finally to more specialized, subject-profile-oriented databases of abstracts.

Patron service today involves the use of a broad spectrum of complex information tools, coupled with the librarian's understanding of the literature, the research process and specific patron needs. Librarians are
already assuming new roles in helping patrons effectively utilize the many possibilities of this service.

3.3.2 User Services

a. Circulation, Document Supply and Inter Library Loan: Many of the libraries in antiquity were accessible to the literate public only and more so for reference only. Due to this the libraries did not become popular until late 18th century. The rapid development of public libraries in the 19th century led to the extension of the practice and to the introduction of various systems for the recording of loans. All the early systems depended on the use of borrower cards and the specified system for the purpose was called as charging and discharging of documents.

With the advent of computerized operations the circulation work became even more easier through a single all-purpose identity card that would be recognized by barcode or Radio Frequency Identification (RFID) technology which led to self service checkouts in libraries. Also that a user can now reserve his document over the library’s Web Online Public Access Catalogue (Web OPAC) over Internet from anywhere, anytime. The document supply service which used to be in the form of supplying photocopied documents to the customers either physically or via traditional postal mail system is now being offered through fax, email and Internet, file transfer protocol etc. Increased awareness and participation in consortial
resource sharing activities have facilitated the institutions to share their resources over Internet along with their traditional material. The popularization of e-books, e-journals and digitization of documents have also facilitated inter library loan services between institutions.

b. Reference and Retrieval: In reference service, librarians have traditionally given personal help to readers in making use of collections to satisfy their information needs. The publication of printed catalogues and bibliographies, the accessibility of online catalogues and multimedia databases, and the organizing of interlibrary cooperation have widened the range of resources available to the individual reader. As a result, librarians increasingly are called upon to help users determine the most efficient tool to use in their research. The two types of reference services are 1. retrospective searching, which is responsive documentation service and 2. current awareness service (CAS) and selective dissemination of information (SDI), which are anticipatory documentation service.

Modern day developments in these concepts in the electronic environment are computer programs that scan electronic databases, computer bulletin boards, electronic mail messages, and similar networked information resources and select items that meet a user's query or his profile. Such programs return near accurate results and also enable individual users to keep abreast of large amount of information available through computer networks without having to
sift through much material that may be little interest or relevance to them. These are called as pull and push services. The reference queries are now increasingly answered over email, instant messaging and mobile phones via short message service, whereas these queries were once answered through postal mail, personal interview sessions etc. Not only has the medium of service delivery changed but also tools used for reference service have also changed. The biggest change in reference service during the 1990s is the widespread use of the Internet and electronic databases. Reference librarians have been involved with developing web pages since the mid 1990s to manage and improve access to electronic databases, full text journal articles, and online catalogues. The referral service has also now taken the digital form as the reference librarians refer virtual digital resources to their users by providing them links of virtual libraries and online documents.

c. Translation service: Libraries used to empanel translators of various languages depending upon their need. Libraries of some scientific institutions either used to have a panel of foreign language translators on their roll or outsource this job of translating the technical documents like scientific papers and patents to the foreign language translators on their panel. This service is one of the expensive services of libraries.
Developments in the field of natural language processing tools and techniques have led to increased use of human assisted machine translation that replaced the manual translation services.

d. **Bibliographical Service:** Bibliographic service used to be one of the important services in libraries. The task of compiling bibliography on a particular subject or topic used to be a tedious job of sifting through various documents in the library manually with the help of a card catalogue for the relevant ones.

The development of online public access catalogue (OPAC) has facilitated the library and information professionals to provide bibliographic service within a short span of time. The advent of Web OPAC and semantic web technologies have now empowered the user to compile bibliographies on his own on a variety of topics within very less time.

e. **Newspaper Clipping Service:** Libraries also used to take up this service for their users on specific topics regularly. For this purpose the library had to subscribe to a wide range of newspapers in print and maintain them.

Now as the newspapers have also established their web presence and more so by providing the latest news, users have started preferring e-newspapers. Librarians, now, with the help of various tools like Google Notes etc. maintain newspaper clipping service on their
library web pages and daily posts through bulletin boards and email
digests etc.

f. Reprographic service: Libraries have always provided their users
with reprographic service. There seems to be an ever increasing
demand to this service. The reprographic machinery has also
improved with time to accommodate network printing and Internet
printing in a single machine. Earlier libraries had to employ a
separate staff for this purpose.

Now with the advent of technologically sophisticated reprographic
machines the users operate the machine themselves with the help of
debt cards provided for this purpose. The machine can be used either
for photocopying library material or file printing or Internet printing
via computer network. The card used to operate the machine would
then calculate the usage and service charge automatically to be
debited from the user’s account. The user has been empowered to
use the service on his own.

g. Bibliographic Instruction: Bibliographic Instruction can be
explained as instructional programs (either manual or computer
aided) designed to teach library users how to locate the information
they need quickly and effectively. BI usually covers the library's
system of organizing materials, the structure of the literature of the
field, research methodologies appropriate to the discipline, and
specific resources and finding tools (catalogues, indexing and abstracting services, bibliographic databases, etc.). In academic libraries, bibliographic instruction is usually course-related or course-integrated.

Information Literacy is the skill in finding the information one needs, including an understanding of how libraries are organized, familiarity with the resources they provide (including information formats and automated search tools), and knowledge of commonly used research techniques. The concept also includes the skills required to critically evaluate information content, and an understanding of the technological infrastructure on which information transmission is based, including its social, political, and cultural context and impact. Teaching or instructing to incorporate these skills in users is called as Information Literacy Instruction.

In the past, most library users required only a minimum of help in searching and finding information. With more and more information available in electronic format, librarians have become in greater demand during the past decade because their technical expertise is being requested by library users for search strategies, as well as for computer hardware and software inquiries. Many electronic resources require sophisticated searches due to the idiosyncrasies of each electronic resource. To expedite people's ability to find information, librarians currently are in demand for instructing
informally, as well as with formal information instruction sessions. This is particularly true in educational settings, where assignments revolve around finding information. Thus, partnerships between teachers and librarians have evolved. Table 3.1 clearly explains the distinction between traditional bibliographic instruction and information literacy of modern age.

Table 3.1 Comparative account of Bibliographic Instruction (BI) vs. Information Literacy (IL) [Compiled from various sources on BI and IL]

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<td>Collaborative responsibility</td>
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<td>Control</td>
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<td>Pervasive throughout the curriculum,</td>
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<td>linked credit courses, competency</td>
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<td>Content focus</td>
<td>Tools, search interfaces</td>
<td>Overarching concepts, critical</td>
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<td>thinking processes, thinking standards</td>
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<td>Teaching methods</td>
<td>Librarian control / didactic approaches</td>
<td>Construction of learning environments;</td>
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<td>librarian and faculty act as guides,</td>
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<td>facilitators</td>
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<td>Learning transfer</td>
<td>Limited (except skills)</td>
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<td>opportunities, internal motivation,</td>
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<td>deeper grasp of concepts</td>
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<td>Assessment</td>
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<td>Focus on competencies, standards as</td>
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<td>based measurements</td>
<td>yardstick for outcomes based approaches</td>
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<td>Focus on unbounded universe of</td>
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<tr>
<td>place</td>
<td></td>
<td>information</td>
</tr>
<tr>
<td>Role of</td>
<td>Limited, used in relatively inflexible</td>
<td>Expanded role, variety of technologies</td>
</tr>
<tr>
<td>technology</td>
<td>ways</td>
<td>selected to match instructional situations</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(&quot;technology as a lever&quot;)</td>
</tr>
</tbody>
</table>

h. Current Awareness Service (CAS) and Selective Dissemination of Information (SDI): Knowledge navigation means the guidance of users at any level of experience in a world of rapidly growing possibilities for heterogeneous online information services. Library automation in the past twenty years concentrated on the use of
computers in traditional library services. First of all administrative processes were automated, next the card catalogue was transformed into an Online Public Access Catalogue (OPAC). These traditional processes were very much book oriented, while in the same period the importance of journals in the scientific process has grown dramatically. To cope with the growing demand for disclosure of articles, mainly outside the library world so called abstracting and indexing services (AIS) emerged. Some characteristics of AISs however make them less well used by library users as the OPAC. This was one of the reasons why current awareness service (CAS and selective dissemination of information (SDI) services came into being. Aim of this service was to realize, from the user's point of view, a disclosure of the journals collection in terms of articles similar to that of books. A service comparable to ISI's well known Current Contents, but mapped to the journals collection of a particular academic or research library.

In the past a current awareness service was described as "A system, and often a publication, for notifying current documents to users of libraries and information services, e.g. selective dissemination of information, bulletin, indexing service, and current literature". It has also been defined as "... a service which provides the recipient with information on the latest developments within the subject areas in
which he or she has a specific interest or need to know". (Hamilton, 1995).

Selective dissemination of information (SDI) is defined as "a service provided by a library or other information agency whereby its users are periodically notified of new publications, report literature, or other sources of information in subjects in which they have specified an interest". SDI services offer an important option to users for keeping current with research.

In the Internet era there is a need to reconsider the definition of CAS as "A selection of one or more systems that provide notification of the existence of new entities added to the system's database or of which the system took note (e.g. documents, Web sites, events such as conferences, discussion groups, editions of newsletters)". CAS automatically notifies users or allows users to check periodically for updates. The entities can be specified according to users' subject interests or according to the type of entity (e.g. books or newsletters).

At first CAS were based on manual methods such as accession lists and indexing or abstracting bulletins. Over the last decade a number of electronic CAS have been introduced, and more recently a number of very useful services have become available through the World Wide Web (WWW). Also over the last few years many new terms have been coined for current awareness services, such as "alerting
services” or “alerts”, to describe the former selective dissemination of information (SDI) services, CAS-IAS (current alerting service – individual alerting service) and current alerting service – individual article supply. The latter stress the importance of linking CAS to document supply services, which has added a new dimension to the provision of such services. The new terms do not, however, really indicate a significant change in the purpose of CAS. The only difference is that they are all electronically based. Since SDI services that have been used for many years are also electronically based, retaining the term “current awareness services” (CAS) for the purpose is justified.

CAS available via the WWW are viz., table of contents services, book alerting services via email from publishers and suppliers, alerting services through aggregators, e-newsletters and e-zines, news filtering services and newspapers, monitoring through intelligent agents, web pages, weblogs, RSS feeds from various blogs, discussion groups and email listservs, etc. (Fig. 3.1).
They offer a number of advantages over their traditional printed counterparts as they are speedy and appear very frequently (some even appear on an hourly basis), they are very convenient to use from the desktop, and as the WWW is available 24 hours a day, these services are also highly available (Nesbeitt, S.L. and Gordon, R.S., 2002).

3.4 Emergence of New Service Paradigms

The pace of technology innovation in libraries has steadily accelerated over the past decade. Initially technology tools were being applied to the same fundamental library service paradigms to make the work more efficient, but now library work itself is beginning to change, with technological innovation leading to design of new services for users. The modern electronic / digital library has much more to offer in terms of service
modalities and options for users. The new service paradigms will include
the following (Steele, C. 1998):

i) Capacity to influence both the form and makeup of information
consumed;

ii) Personalization of information / communication services;

iii) Location should not be a distinctive barrier to access;

iv) Transparent access is expected to a range of information resources;

v) Ability to access a number of information sources at the same time;

vi) Ability to mix different media in real time;

vii) Provision of a choice in suppliers; and

viii) Ability to interact with other colleagues in a collaborative networked
environment.

3.4.1 Characteristics of the electronic / digital library environment

The new information environment is characterized by electronic
communication, both synchronous and asynchronous, web-based
information sources, multimedia information, and is uncontrolled largely as
a result of the Internet facilitating information creation, distribution and
access. Accordingly, typical user expectations of the present day include –
everything in full text and downloadable or printable; faster service; 24/7
service availability; easy access; virtual reference service librarian available
online 24/7; easy-to-use web resources permitting self-service; a librarian
who knows all subjects and all databases; everything should be in electronic
or digital format; several options / alternatives to choose from; a library web
site that is capable to conduct all library transactions online viz., library registration, document delivery request, loans and renewals, etc.; and a web search engine to find required information. The following describes not only the reshaping of traditional service paradigms but the creation of entirely new service paradigms in the networked information environment:

3.4.2 Emerging Service Paradigms

a) Access and delivery paradigms: Library collections are transitioning from being predominantly made up of printed books, to incorporate electronic hypermedia. This has great implications on how user services are planned. Electronic resources offer an unprecedented means of reaching dispersed library users. In an academic setting, the category of “remote users” does not only incorporate geographically distant students taking distance education courses from another state, or even country, it also incorporates students who are using library resources from their dorm rooms or class rooms on campus, or outside the campus, at home.

The fact that access to library electronic / digital resources is unbounded by space or time is a major boon to distance education programmes in many higher education institutions. Also it is advantageous for those users who cannot otherwise come to the library due to their physical disability etc. Another advantage of electronic access is that it permits multi-user access. Also, full text access is another highly sought after feature of many electronic / digital
resources that has been cited in many research findings as a top preference for users. Students can also access electronic course reserves incorporating various formats such as images, audio, video, and often integrated with other resources through course management systems. This is another major breakthrough in collections access for academic libraries. The future role of library and information professionals in supporting course work lies in partnering with other stakeholders.

It is also true that many a times librarians find themselves grappling with new issues inherent in the emerging scholarly communication culture, such as licensing, authentication, archiving of back issues given the changing pace of technology media on which information is stored, user instruction with electronic environments, library technology facilities required as part of the service infrastructure, changing skill and competency requirements of library and information professionals and staff etc. Nevertheless, the advantages of electronic access far outweigh that have to be overcome to achieve this access.

b) **Emerging Reference Paradigms:** Reference services are also undergoing transformation at an unprecedented pace. They are being transformed in response to the changing technology and information environment. With this changing information environment patrons continue to need help on what and how to search among the numerous
resources available to them because electronic / digital resources have generated even greater reference and instruction need. Internet connectivity and electronic communication forms the foundation for the new reference environment. The key success factors in e-reference are availability of the service to the user at the point of need, and a minimal turnaround time for patrons to get the information they need. The new reference environment addresses these factors. Furthermore, the need to empower patrons to become effective independent searchers within the online environment has led to the continuous incorporation of a strong instructional component within the electronic reference setting. A number of responses to the new reference environment to ensure that patrons have adequate support are:

- digital reference services (chat, e-mail, web-forms etc.);
- searchable ‘frequently asked questions’ (FAQ) databases;
- online tutorials;
- instructional blogging through weblogs;
- web portals or gateways;
- research advisory sessions (appointment based);
- peer mentors reference exchange programmes; and
- ongoing staff training and development.

The growth of virtual reference services (VRS) is a result of the need to cater to the needs of the emerging virtual communities of library users. Virtual reference services offer the following advantages:
• service is easily accessible wherever there is Internet access;
• capability to reach both remote and local library users; distributed service;
• increases accessibility of librarians to library users;
• provides point-of-need assistance to users;
• convenient for physically invalid or disabled users, who cannot come to the library physically;
• expands the scope of library services while extending hours of service (24/7);
• provides an additional communication option for the library users;
• provides an opportunity to market the library services to virtual communities; and
• meets users' expectations.

Overall, virtual library services allow libraries to remain relevant competent in a changing information environment in which reference is still a key component of supporting library research.

c) New approaches to library instruction and user education: Every new database or resource added to the library collection generates an instruction need. Providing instruction to on-campus students is still primarily done through group-based course related sessions within the library. Providing instruction to patrons at a distance can be challenging. Libraries have started use a variety of means to provide
library instruction to their patrons like web tutorials, instructional blogging, library portals with library channels and course management software with links to research guides and instructional content as a means of distributing library instructional materials, research mentoring etc. Another way of providing library instruction to students in an academic environment is through course management systems (CMS). The core features of courseware and the benefits it offers are – resource sharing tools, communication tools, and assessment tools. If library resources were integrated into CMS, the library would have access to all the tools within the CMS. Furthermore, students are more likely to perceive the library and the resources as an integral part of the entire course and learning process. Specific resources that could be integrated are: virtual reference desk services, OPAC and database links, global pathfinders, help sheets, and document delivery services. The resources would be of value to both local and remote users, therefore, catering to growing body of distance learners.

Such information literacy or library instruction services should be driven by objectives viz., demystifying the technology-driven research process by humanizing it, and helping users get comfortable with conducting research in a networked electronic environment; inculcating information literacy skills and competencies in the students; enriching academic experience by making them aware of enormous resources available to them; offering instruction / assistance
in accessing and navigating the myriad electronic / digital resources available to them; and identifying any common problems being faced by students within the context of information literacy and addressing them through appropriate programming.

3.5 Challenges in the new service environment

3.5.1 Nature of change in information services

![Diagram of Nature of change in information services]

According to Lyndon Pugh (2007) the nature of change in information services characterized by the factors like diversity and unpredictability of the services and staffing of libraries, which are cross-border specialized, the structural change in library and information services, the amount of complexity driven by mixed economy, personalization of library and information services, competition and / or collaboration with network giants
like Google etc.; all these constantly demand new skills and competencies over the traditional ones. (Pugh, L. 2007).

Along with a wide range of facilities offered by the electronic / digital resources and services there are some impounding implications and challenges too underlying them for libraries and library and information professionals too. Some of the few are as follows:

Huge financial implications associated with the emerging technology-based services in electronic libraries. Costs range from infrastructure costs, hardware and software, (including lifecycle replacements and upgrades), technology support, staff training for the use of technology, all in addition to subscription costs for the electronic resources, such as digitized images, web page authoring, development of tutorials, etc.

Electronic / digital libraries are challenged to develop strategic plans for harnessing technology to offer viable services in a cost-effective manner within the dynamic technology environment.

As more and more electronic / digital resources are being created for the virtual electronic library, it has become pertinent for the users as well as library and information professionals to upgrade their information literacy as well as technology skills and competencies in order to fully exploit the range of information resources and services available to them in electronic environment.
The new environment has also created a need for new tools to be developed not only to manage processes but also to capture statistical data. In the traditional library all kinds of statistical data are recorded and are used for planning purposes. In the new electronic environment, libraries still need to keep track of these transactions. Special software products capture data on web page traffic, other products are built into the databases and other electronic resources sold by vendors and they track resource usage. The product vendors can share this usage data with librarians as part of licensing terms of the product.

Another uncertainty being grappled with regarding electronic collections is archiving of back issues of resources subscribed to, since electronic journals are not actually purchased as print journal runs are, but rather, subscriptions are paid to gain access to the resources. Some vendors offer to provide those runs on CD-ROM or other media to the libraries. Considering that technology changes rapidly, if electronic resources subscribed to during a particular period are archived on CD-ROM, the medium would be rendered obsolete when the technology changes, leaving less desirable alternatives like migrating data to new media whenever this happens, continuously diminishing the value of the resource.

Nevertheless, the prospects and advantages of the electronic environment far outweigh the challenges encountered.
The shift from traditional libraries to electronic / digital is not merely a technological evolution, but requires a change in the paradigm by which people access and interact with information.

The following table illustrates major differences between a traditional library and an electronic / digital library and also trend shifts from modern to post modern era.

Table 3.2 Traditional Library vs. Modern Electronic / Digital Library

<table>
<thead>
<tr>
<th>Traditional Library</th>
<th>Modern Electronic / Digital Library</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emphasis on storage and preservation of physical items, particularly books and</td>
<td>Emphasis on access to digitized materials wherever that may be located, with digitization eliminating</td>
</tr>
<tr>
<td>periodicals</td>
<td>the need to own or store a physical item</td>
</tr>
<tr>
<td>Cataloguing at a high level rather than one of detail, e.g., author and subject</td>
<td>Cataloguing down to individual words or glyphs</td>
</tr>
<tr>
<td>indexes as opposed to full text</td>
<td>Broadcast technology; users need not visit the library physically; it can be accessed from anywhere,</td>
</tr>
<tr>
<td>Browsing based on physical proximity of related materials, e.g., books on</td>
<td>Browsing based on hyperlinks, keyword, or any defined measure of relatedness; materials on the same</td>
</tr>
<tr>
<td>psychology are near one another on the shelves</td>
<td>subject do not need to be near one another in physical sense</td>
</tr>
<tr>
<td>Passivity; information is physically assembled in one place; users must travel</td>
<td>Broadcast technology; users need not visit the library physically; it can be accessed from anywhere,</td>
</tr>
<tr>
<td>to the library to learn what is there and make use of it</td>
<td>anytime.</td>
</tr>
<tr>
<td>Fixed, permanent, formatted text collections</td>
<td>Fluid and transient multimedia resources</td>
</tr>
<tr>
<td>Static library facilities with fixed stacks</td>
<td>Free, flexible, and virtual information spaces</td>
</tr>
<tr>
<td>Uniform sources, citations, references</td>
<td>Customized annotations / transient works</td>
</tr>
<tr>
<td>Services provided to individual readers</td>
<td>Tailored services to collaborative teams</td>
</tr>
<tr>
<td>Standard reference services</td>
<td>Personalized consulting and analysis</td>
</tr>
<tr>
<td>Professionally provided services</td>
<td>Integrated service provision</td>
</tr>
<tr>
<td>Locally owned permanent collections</td>
<td>Holistic, integrated networked systems</td>
</tr>
<tr>
<td>Centralized collections and services</td>
<td>Distributed, decentralized global access</td>
</tr>
<tr>
<td>Hierarchical organizational structures</td>
<td>Participative and collegial relationships</td>
</tr>
<tr>
<td>Discipline specialization</td>
<td>Inter-, multi-, cross-disciplinary studies</td>
</tr>
<tr>
<td>Generic user service offerings</td>
<td>User-/use-specific relevant services</td>
</tr>
<tr>
<td>Formal publication acquisition</td>
<td>Integration of informal with informal</td>
</tr>
</tbody>
</table>
3.5.2 Measuring the impact of altered / new library services

As expenses and workload for altered or new services are rising, libraries need to justify the investment to change and prove the efficiency and positive impact of the altered or new services. This need is enforced by the fact that the development and introduction of new services can in many cases call for special or additional funding that demands evidence and justification. Another reason is to gain a basis for resource allocation. If the services are widely accepted and yield positive results, the library will have to shift more staff and financial resources into that sector and may plan to add other services of similar kind. If there is no apparent positive outcome, services could be cut down again and resources set free for other activities. On the other side, there might also be negative effects or consequences like information overflow, problems in suing new services, or a high involvement of workload and / or costs for the library. Positive impact of new library services could be shown by:

- Time saved in information search and delivery
- Enlargement of the scope of resources used
- Better knowledge of information seeking ways
- Lower costs for the delivery of services

The impact of new services can be measured by methods like statistics of use; qualitative measures through exit surveys, questionnaires, structured interviews etc. Possible outcomes can be evaluated as to the criteria of users viz., changes in skills and competencies; changes in attitudes and
behaviour; changes in the structure of the library’s clientele; better social
inclusion; higher success in research, study, or job. The results would not
only be helpful for reporting to funding agencies, but also for management
and further planning and organization of new services based networked
information resources, for development of information policy and
nonetheless, planning for marketing of specific or in general all library and
information services, strategic and operational planning of library and
information services as a whole. (Poll, R. 2005.)

3.5.3 Need for marketing of library and information services

The range of information products and services potentially available from
networked libraries differ significantly, both qualitatively and
quantitatively, from that offered in the past traditional setting.
Technological developments have given library managers a wider set of
options from which they can select the best combination to meet the needs
of the library users who are their customers. Traditionally libraries tend to
be judged by their facilities and their collections. The emphasis has shifted
from collection to service to the delivery of information services and
products to the customer irrespective of their origin. The real challenge lies
not in managing the collection, staff and technology but to turn these
resources into services. Even the notion of service has changed, from basic
to value added, from staff-assisted to self-service, from in-house to out-
reach, from free to paid, from reactive to pro-active, and from mass-
customization to individualized service. This has caused a paradigm shift in
library and information services management. It means that there is always a need to equip the library staff with such measures that would develop more responsible attitude towards the customers and ensure credibility and an attitude to face new challenges and opportunities. Marketing provides the library and information professionals an opportunity to see as to how they can offer effective and efficient services to their customers. Thus, marketing can help the libraries to shift from old to a new paradigm in which libraries operate. The library and information professional's view about marketing of library and information services is characterized by four aspects of marketing as – a set of techniques, as a philosophy, as an approach, and that which is customer driven. Marketing will help library and information professionals in managing their libraries better, instill commitment to customer satisfaction, help to understand their customers better, in making their customers visit them repeatedly, for the prosperity of libraries, and last but not the least, for improving the image of libraries.

Though there are many myths that surround the concept of marketing of library and information services interest in marketing has tremendously increased over the past few years in libraries like other service sectors. The reasons for reluctance that persists may be due to the reasons like attitude of library staff, limited conceptual clarity and appreciation, non-availability of simple unique best way to market, and controversies over the product / service concept. Services are those separately identifiable, essentially intangible activities that provide want-satisfaction, and that are not
necessarily tied to the sale of a product or another service. Though in the broadest sense, product marketing and service marketing are the same, in actual practice significant differences do exist between them. The distinguishing characteristics of services in general are – intangibility, heterogeneity, inseparability (cannot be separated from other sellers), perishability, production and consumption, variability and their fluctuating channels of marketing. (Stanton, W.J. and Futrell, C. 1987) These distinguishing characteristics pose to be challenges in the way of marketing library and information services.

Library is a service profession. “Our services are the products we sell” (Kalan, A. 2002). Service is among the core values of librarianship and provision of excellent customer service is the underlying value of the marketing of library and information services through appropriate and usefully organized resources; equitable service policies; equitable access; and accurate, unbiased, and courteous responses to all requests. This can be brought into practice by implementing principles of Total Quality Management (TQM) in library and information services. Libraries have to keep in view the value of customer service and excellence while devising marketing plans. While developing a marketing mix for services, several aspects like service offerings, service quality etc., deserve special attention. In addition, understanding customers’ requirements and expectations, creating customer vision and service policies, staff training etc. factors, if taken care will help. A strategic focus on customer service along with the
right marketing mix and a well-devised marketing plan can act as an effective tool in helping libraries accomplish the mission of serving users or customers in an better manner.

3.6 Leveraging Levels of Information Services to Develop Knowledge Management and Knowledge Services

Another dimension for librarians to pursue in shaping their role and services for the future is knowledge management. Knowledge management environment embraces the entire information-transfer cycle, from the creation, structuring, and representation of information to its dissemination and use. (Lucier, R. 1993). This moves librarians beyond their traditional role of storage, bibliographic organization, and retrieval into the world of information transfer and creation. At the same time, information technologies are now developing into knowledge technologies. These new emergent technologies make it feasible to provide knowledge services in libraries.

The concept of knowledge management embraces the need to organize large data files, and integrate different but related files and databases to one another so that users can move between and among related resources efficiently. Knowledge services refers to a variety of factors, architecture, standards, technologies and models that make knowledge services possible. Knowledge services can be described as a means of exploiting and processing considerable masses of information resources, making them into
useful knowledge that shows both the content and structure of that knowledge. Users can navigate and unravel them, which requires a good map across multiple performance levels. Knowledge is embodies in repositories and the human brain.

Library services are developing from manual endeavours to automatic operations. Reliance on computer connections between information can be shown. It has been highlighted that massive knowledge is tacit in the brain. Data, information, and knowledge have been seen as a hierarchical structure (Fig. 3.2). Data are codified and communicable symbolic representation of entities, properties and their states. Data can turn into information if they are put into a context and given meaning, by linking and being organized with other data. Information establishes a relation between things and agents. It becomes knowledge when it is analyzed, linked together to other information, and compared to what is already known.

![Diagram of Data, Information, and Knowledge](image)

*Fig. 3.3 Relationship between Data, Information, and Knowledge (Adopted from Ju, Y. 2006)*
Knowledge can be divided into functional and non-functional, and also explicit and tacit. Explicit knowledge is one which is recorded or articulated. Tacit knowledge is that which is unarticulated, experiential and that which resides within the people. It is acquired as a result of their learning and experience. The effect of functional knowledge is visible whereas the effect of non-functional knowledge is invisible. The main purpose of knowledge services is to open out non-functional knowledge by revealing relation, map and solid structure. Non-functional knowledge only can bring on innovation, whereas functional knowledge does not. The recombination of knowledge is also innovation. Specialist librarians can integrate knowledge and data in their disciplines by using technological tools in conjunction with their subject expertise to create authoritative information repositories. Knowledge technology like knowledge discovery and data mining can be made use of to discover the tacit knowledge used for such purposes. Strong analysis and derivative capability are the main characteristics of knowledge services that make them different from the information services.

3.7 Library 2.0

There has been a gradual trend shift in libraries from the modern to post modern era which directs towards the growth of new versions of library and information services. The trend shifts noticed in the Table 3.2 illustrated in Section 3.6 have affected the growth of knowledge and information networks, and the approaches to access them. The emergence of Library 2.0
paradigm has proved this trend shift true. Library 2.0 is a concept where users are not only information consumers but also content creators. It is a library without any boundaries and with the fullest participation of users as architects.

To make the term Library 2.0 understandable to a broad audience and directly applicable to how new services are developed, it is important to uncover the defining attributes of the term. In so doing, the differences between Library 2.0 and other new services can be clarified. This clarification will lay a solid foundation for developing Library 2.0 services.

Considering some of the popular definitions of Library 2.0:

i) Library 2.0 is the application of interactive, collaborative, and multi-media web-based technologies to web-based library services and collections. (Maness, J.M. 2006)

ii) The heart of Library 2.0 is user-centered change. It is a model for library service that encourages constant and purposeful change, inviting user participation in the creation of both the physical and the virtual services they want, supported by consistently evaluating services...

...What makes a service Library 2.0? Any service, physical or virtual, that successfully reaches users, is evaluated frequently, and makes use of customer input is a Library 2.0 service. Even older, traditional services can be Library 2.0 if criteria are met. Similarly, being new is
not enough to make a service Library 2.0. (Casey, M. and Savastinuk, L. 2006)

iii) Library 2.0 is a concept of a very different library service that operates according to the expectations of today’s library users. In this vision, the library makes information available wherever and whenever the user requires it. (Chad, K. and Miller, P. 2005).

The term has evoked considerable controversy and confrontation in the library and web world. To uncover the defining attributes of the term, it is helpful to start from the beginning and analyze the origins of the term. Library 2.0 can be broken down into two parts, “Library” and “2.0”. Seeing as the 2.0 comes directly from the term Web2.0, it is clear that the term roughly describes the relationship between Web 2.0 and libraries.

To have added value, Library 2.0 must have meaning above and beyond either of its parts. In other words, Library 2.0 cannot be defined solely by characteristics that are also characteristics of either Libraries or Web 2.0 if the combination of the characteristics does not create a unique concept. Consequently, Library 2.0 must describe a unique service model that occurs when libraries take Web 2.0 services into account. To determine this added value, the following definition based on the above argument is proposed.

Library 2.0 describes a subset of library services designed to meet user needs caused by the direct and peripheral effects of Web 2.0 services leveraging concepts of the Read/Write Web, the Web as Platform, The
Long Tail, harnessing collective intelligence, network effects, core datasets from user contributions, and lightweight programming models. (Habib, M. 2006).

This definition explains that Web 2.0 precipitates changing user needs and that Library 2.0 services meet these needs. This definition includes all implementations of Web 2.0 methodologies and technologies by libraries. However, this concept is not about replacing the traditional technology adopted by libraries already in use but rather about adding additional functionality. Figure no. 3.4 illustrates the key principles governing the Library 2.0. (Biancu, B. 2006).

The concept of Web 2.0 originated as a list of characteristics of successful web properties viz., the read/write web, the web as platform, the long tail (describes how the web makes it possible to provide services to small niche groups), harnessing collective intelligence, network effects, core datasets from user contributions, and lightweight programming models.

Due to the widespread use of Web 2.0 services, there are cultural changes affecting library users’ information seeking behaviors, communication styles, and expectations. The term Library 2.0 has been introduced into the professional language of librarianship as a way to discuss these changes. What Library 2.0 is and what it means are still under constant discussion in the biblioblogosphere (world of librarian blogging). The term Library 2.0 was introduced by Michael Casey in September 2005. Additionally, the
British ILS vendor Talis took an early interest in promoting the term (Miller, 2005; Chad & Miller, 2005; Miller, 2006). The term was exposed to a wider audience when Michael Stephens discussed Library 2.0 on the ALA’s Techsource Blog. Principles of Web 2.0 and its technology offers libraries many opportunities to serve their patrons better and to reach out beyond the walls and websites of the institution to reach potential beneficiaries where they happen to be, and in association with the task that they happen to be undertaking. The level of integration and interoperability of Web 2.0 and Library 2.0 that is designed into the interface through the library portal or intranet is the worth appreciating. If we consider the existing service model of libraries as Library 1.0 and the new emergent service model of library as Library 2.0, then the following comparative chart elucidate the differences between the services of Library 1.0 (existing model) and Library 2.0 (new model). (Soundararajan, E. and Somasekharan, M., 2006)

<table>
<thead>
<tr>
<th></th>
<th>Library 1.0</th>
<th>Library 2.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Closed stacks</td>
<td>Open stacks</td>
<td></td>
</tr>
<tr>
<td>Collection development</td>
<td>Library suggestion box</td>
<td></td>
</tr>
<tr>
<td>Personalized ILS (ILS)</td>
<td>User tagging</td>
<td></td>
</tr>
<tr>
<td>Walk-in-services</td>
<td>Globally available services</td>
<td></td>
</tr>
<tr>
<td>‘Read-only’ catalogue</td>
<td>Amazon-style read/write/integrate comments</td>
<td></td>
</tr>
<tr>
<td>Print news letters mailed out / email communications</td>
<td>Team-built blog</td>
<td></td>
</tr>
<tr>
<td>Easy = dumb users</td>
<td>Easy = smart systems</td>
<td></td>
</tr>
<tr>
<td>Limited service options</td>
<td>Broad range of options</td>
<td></td>
</tr>
<tr>
<td>Information as commodity</td>
<td>Information as conversation</td>
<td></td>
</tr>
<tr>
<td>Monolithic applications</td>
<td>Flexible, adaptive modules</td>
<td></td>
</tr>
<tr>
<td>Focus on bringing the users in</td>
<td>Focus on finding the user</td>
<td></td>
</tr>
<tr>
<td>ILS is core operation</td>
<td>User services are core</td>
<td></td>
</tr>
</tbody>
</table>
Library 2.0 is a service model. The heart of Library 2.0 is user-centred change. It is a model for library service that encourages constant and purposeful change, inviting user participation in the creation of both the physical and virtual services. It also attempts to reach new users and better serve current ones through improved customer-driven offerings. Each component by itself is a step towards better serving our users; however, it is though the combined implementation of all of these that Library 2.0 can be reached. The information environment within which the libraries find themselves is changing, probably faster than ever before. These changes offer great opportunities for progressive libraries to reach out far beyond the boundaries of their buildings and websites, and to engage with an increasingly literate body of information consumers. The library domain has repeatedly evolved to embrace new technologies and to adapt in line with changing expectations, and it will doubtless continue to do so. However, it is our view that the current challenges are more subtle, more significant, and thus more disruptive than in the past.

Amazon, Google, eBay, Skype, Twitter, and other new information revolution tools do not threaten the progressive library. Rather, they create whole new opportunities for us to engage with an empowered and skilled set of audiences.

Similarly, the techniques and technologies that have enabled these new organizations are also suitable for deployment within our libraries, to
enhance the ways in which we make our own data work for ourselves and our visitors.

Sites as diverse as Amazon, Flickr, MySpace, Facebook, and Wikipedia which are termed as Web 2.0 tools and resources or semantic web resources, all depend on high levels of user participation to expand the value of product. Blogs and wikis are other ways to engage customers and push fresh content to users.

Library 2.0 has much to offer to the distance learners. Most of its features appear to be intended to cater to the needs of distance users. Though these can successfully be used by regular users too. At its most basic level, the Library 2.0 model gives library users a participatory role in the services libraries offer and the way they are used. Customers, should they desire, will be able to tailor library services to best meet their own needs. This can be done electronically, such as through the personalization of library web pages. (Prakash, K. and Swarup, K.S. 2007.) The Library 2.0 model seeks to harness our customer’s knowledge to supplement and improve library services. User comments, tags, and ratings feed user created content back into these web sites. Ultimately, this creates a more informative product for subsequent users. The openness of Library 2.0 extends to the software and hardware that libraries use, including Integrated Library Software (ILS). Modifiable automation systems and catalogues such as Aleph, Evergreen, Koha, VUFind etc. are preferable to proprietary and closed systems.
3.8 Summary

This chapter discussed the emerging library scenario by tracing the historical development of library and information services thru the new and emergent services in the wake of digitization. A detailed account of different types of library and information services was given. Paradigm shift from traditional services model to new service model have been discussed with special reference to Library 2.0 which operates on Web 2.0 platform. These developments have posed several challenges before the library and information professional who not only has to deliver services based on the profound values and ethos of the profession but also has to keep pace with the ever growing new demands from his users and advent of continuously changing technologies. The following chapter deals with the emerging roles and responsibilities of the library and information professionals (LIPs) in wake of the changes discussed in this chapter. Various challenges faced by the LIPs in the changing environment will also be discussed in detail through primary data analysis.
The library is a framework for integrating change into all levels of library operations

1. User-centricity
2. Technology-savvy environment
3. Reaching of the patrons long tail
4. Content for more than one device
5. Component-based software, not monolithic ILS
6. Constant change
7. Use of Web 2.0 apps and services
8. Open standards

The library has no barriers

The library is human

Patron 2.0 = from content consumer to content creator

The physical library
Loud spaces for collaboration & conversation
Mobile devices for users

Social computing apps to meet users' need when, where and how they need it

Integration with (e)learning environment

Library that fits
that suggests
that learns
that gathers
that combines
that organizes

The library invites participation

OPAC
- Federated search
- RSS for cataloging records & search results
- Records tagging
- User reviews

Fig. 3.4 Meme Map Library 2.0 (Adopted from Biancu, B. 2006)
References


2. American Library Association Manual (nd), Section 54-16.


34. Soundararajan, E. and Oth. 2007. Library 2.0: Myth or Reality? Proc. of Recent Advances in Information science & Technology (READIT) by Madras Library Association (Kalpakkam Chapter), 12-13 July, Kalpakkam, India.

