


Library and Information Services

Location	Learning Outcome	Knowledge Evaluation	Performance Evaluation	Teaching and Training Method
Unit-1: Library and Information Services: An Overview				
Classroom or Library	Understanding Library and Information Services, their types, characteristics and features.	Meaning, Types of Library Information Services, their characteristics and features.	Chart out: Different types of Library and Information Services, their, types, characteristics and features.	Interactive Lectures: Understanding Library and Information Services, their types, characteristics and features. Activities: Visit a library and ask students to collect information on different types of Library and Information Services provided by the library.
	Understanding Reference Services, their types, characteristics and features.	Meaning, Types of Reference Services, their characteristics and features.	Chart out: Different types of Reference Services, their characteristics and features.	Interactive Lectures: Understanding Reference Services, their types, characteristics and features. Activities: Visit a library and ask students to collect information on different types of Reference Services provided by the library.



Unit-2: Library & Information Services: ICT Applications				
Location	Learning Outcome	Knowledge Evaluation	Performance Evaluation	Teaching and Training Method
Classroom, Library / Computer Laboratory	Understanding ICT Enabled Library and Information Services, their features and characteristics.	Meaning, Characteristics and Features of ICT Enabled Library and Information Services.	Chart out: Meaning, Characteristics and Features of ICT Enabled Library and Information Services.	Interactive Lectures: Understanding Meaning, Characteristics and Features of ICT Enabled Library and Information Services.
	Understanding Characteristics, features and mechanism of Web Based Reference and Information Services, WEB-OPAC, Access to Digital Contents, Library portal, Subject Gateway, Different databases, etc.	Characteristics, features and mechanism of Web Based Reference and Information Services, WEB-OPAC, Access to Digital Contents, Library portal, Subject Gateway, Different databases, etc.	Chart out: Characteristics, features and mechanism of Web Based Reference and Information Services, WEB-OPAC, Access to Digital Contents, Library portal, Subject Gateway, Different databases, etc.	Activities: Visit a library and ask students to collect information on different types of ICT Enabled Library and Information Services, like-Web Based Reference and Information Services, WEB-OPAC, Access to Digital Contents, Library portal, Subject Gateway, Different databases, etc.

Library and Information Services : An Overview

3.1.0 Introduction

To meet informational needs of the users, libraries provide a range of services referred to as Reference and Information Services. Reference service are concerned with direct personal assistance to the users seeking information. They cover services such as assistance to the users in the use of the library and its tools, assistance in searching and locating documents, ready reference, and long-range reference service, literature search and compilation of bibliography.

On the other hand, information services are provided in anticipation of various needs of the users of libraries. The current awareness services, indexing, and abstracting service are included in this category. These services are provided to users when they ask for it. The factors which affect the nature of services depend on the information-seeking behaviour, the information needs, and the service expectations of the targeted community. There are a number of ways by which a library can provide information services including direct personal assistance or reference service and referral services where the user is directed to the source, reader's advisory services, document delivery services and many other services designed in anticipation of user needs such as current awareness services, Selective Dissemination of Information (SDI), etc. There is value added information services like information repackaging (particularly in the field of business and science), subject analysis and information analysis, citation analysis, abstracting, translation, etc.

Types of Information Services

The variety and number of information services and products provided by modern libraries and information centers are quite large in the present era of information and knowledge explosion. The surge in knowledge creation and consumption happens in basic and interdisciplinary fields of technology, development, industry, marketing, trade and research and calls for an increase in personalized services.



Reference and Information Services may be categorized as:

- (i) Responsive services or services on demand, and
- (ii) Anticipatory services

Responsive information services, also known as **passive information services**, are provided in response to the requests from the library users. **Anticipatory information services**, also known as **active information services**, are provided in anticipation of the needs of the library users.

The following features and some of the important information services provided by libraries under these categories are discussed in the following sections

Responsive Information services

An information service provided in response to an expressed demand by the user is called a responsive or on demand information service. Here, the user requests an information professional to search and find out the specific information that he/she needs. A brief description of important responsive information services provided by a library is given below.

3.1.1 Reference Services

The concept of reference service was formulated in 1876 by Samuel Swett Green, librarian of Worcester Free Public Library in Massachusetts. In an article published in Library Journal, he advocated personal assistance and service by librarians to library readers. The purpose of reference service is to facilitate access to information. This is a highly personalized service, where the librarian interacts with the users in a one-to-one manner and provides access to the information. According to Dr. S. R. Ranganathan, "reference service is the establishing of contact between reader and book by personal service". The concept will get clearer when we understand the role of the library professional or the reference librarian, who delivers the reference service. Green's original paper suggested a reference librarian as the one who teaches people how to use the library resources, answers reader's questions, aids the reader in the selection of good books and promotes the library within the community.

Joan M. Reitz, in her "Dictionary of Library and Information Science" defined reference service as, "including but not limited to answering substantive questions, instructing users in the selection of appropriate tools and techniques for finding information, conducting searches on behalf of the patron, directing users to the location of library resources, assisting in the evaluation of information, referring patrons to resources outside the library when appropriate, keeping reference statistics, and participating in the development of the reference collection."

3.1.1.1 Reference services on Demand

Reference services delivered by a library depend on the local situation, traditions, kind of users, size, resources, and the organizational and administrative philosophy followed by the library. The nature of service also varies from one type to another type of library. The reference services may be divided into following three categories:

- (a) Basic services
- (b) Services performed on regular basis
- (c) Services performed sometimes

A. Basic services:

There are several essential and minimum reference services that a library should perform. These include:

- (a) Provision of general information (e.g., queries like “where is periodical section?”)
- (b) Provision of specific information (consulting the documents)
- (c) Assistance in the location and searching of documents (locating on the shelf and if not available, then searching in other places)
- (d) Assistance in the use of library catalogue
- (e) Assistance in the consultation of reference books, etc.

B. Services performed on regular basis:

The reference services usually performed in a library are:

(a) Readers’ advisory service:

This is the process of recommending sources to library users based on their needs/queries. The reference librarian chooses a source which may be a book, journal, database, or website based on his/her skills, expertise and the nature of user’s query.

(b) Inter-library loan and document delivery:

Inter-library loan is the process of sharing materials between libraries. The libraries under a consortium or a mutual agreement may loan a physical item in original or a partial copy of it and deliver the same to the requesting library for a specific period based on certain established codes and copyright guidelines.

(c) **Reservation of documents:**

This service allows a user to reserve an item of the library that has been loaned out to another user. When the item is returned, the user who reserved the same is informed and allowed to borrow it.

(d) **User Education (instruction):**

User education deals with educating the user about the use of library facilities and services. In other words, this is a methodical approach to teach the users as to how to use the library effectively. There may be user education programmes on the general use of library and the use of library tools like catalogue, bibliographies, reference books, etc. Library orientation, which is given in the beginning (initiation of a freshman), is also a part of user education. But user education is treated as a continuous service.

(e) **Compilation of Bibliographies:**

This service may be on demand or in anticipation. This service will significantly help students and researchers.

(f) **Bibliographic verification and citations:**

This is the process of reading, identifying, and interpreting citations to information sources, including books, manuscripts, journals, theses, web pages, or any other form of publication. During this process of verification, the reference librarian frequently finds other reference sources that cite the same publication, correct errors, and determines where to find the preferred information.

(g) **Indexing and abstracting services:**

This service is mostly performed by special libraries. The abstracts and indexes of acquired publications may be prepared locally at the library. The intended users can refer to these services to find the required information.

(h) **Subject specialists:**

Subject specialist reference librarians are now common in large and special libraries. They are specialists in specific subject fields or disciplines who select material for the collection as well as assist users with specialized research requirements. These service providers work closely with researchers and handle very complex questions.

(i) **Ready reference:**

This service is particularly important for public libraries, where factual answers to highly specific queries are provided. (e.g., "What is the population of New Delhi?").

(j) **Library Tour:**

This is a reference service given to a library visitor or a new member to understand the resources and services. The member is taken around the library under the guidance of a professional/instructor.

(k) **Holding of library exhibitions:**

Exhibitions and displays are important services to attract users' attention towards new additions or previously unknown resources.

(l) **Issue of permits for library use:**

This involves issuing of permits to nonmembers of the library to use the library for a certain period.

(m) **Maintenance of clippings and vertical files:**

Clippings prepared from newspapers, magazines and pamphlets and vertical files containing pamphlets, prospectuses, reports, press clippings, etc., are sources of information having special importance.

(n) **Preparation of library publications:**

Bringing out publications like handbooks, user guides/manuals, newsletters, bibliographies, indexing and abstracting documents, etc., and assisting other departments in their publishing activities, is an important reference service.

C. Services performed sometimes

These are information services not always provided by the library but only when the users demand. They are:

(a) Display/list of current periodicals


(b) Maintenance of special files

(c) Reproduction of documents (Photocopying, CD/DVD writing, microfilming, etc.)

(d) Translation service: Translation is a process of precisely transforming the information contents of the text from one language into another language.

Referral Service

Referral service is referred to a prospective user of information source. The Concise Dictionary of Library and Information Science defines referral service as a "service which, if unable to provide the information required, refers the enquirer to another potential source or service". The distinction between a reference service and a referral service is that, in the former, the



user is provided with the required document or information but in the latter (referral) the user is directed (referred to) the sources such as secondary publications, professional organizations, information units, research organizations or individual specialists. A referral service guides a user where to search for a resource which is presently not available in the library.

Literature Search Services

Literature search service is an extension of reference service. The process of literature search starts with the library professional first understanding the nature, scope, depth, and exact area of enquiry of the user by a user interview. Assessment of these indicators decides whether the search is for specific information, or for a few select references or for a comprehensive bibliographic information (mainly for research). This is followed by the formulation of a search strategy for searching different information sources. Knowledge of the subject area of search is beneficial for the librarian here. Traditionally, books, journals, theses, etc. and in modern parlance online databases, CD-ROM databases and web sites are considered as the most important sources for literature search service.


3.1.1.2 Reference services in anticipation

An information service provided for anticipating a user's needs is called an anticipatory information service. The important services under this category are given below:

i. Current Awareness Services (CAS)

The meaning of the term "current awareness" is the knowledge regarding recent developments in a subject area of special interest to an individual. The process of current awareness function includes the reviewing of newly available resources relevant to the user community or pertinent to the programme of the organization and the selection and organization of individual items which must be brought to the attention of the user. The means for delivering this service varies depending upon the type of library. This service is concerned with the dissemination of latest information to a specialist to keep him/her up to date and well informed.

Finding relevant information has become more and more difficult for a professional, particularly in the field of science and technology. The exponential growth of scientific and technical information makes it impossible for the users to examine the information comprehensively. The need and relevance of CAS comes into effect at this point. The CAS enables the researchers to keep them up-to date and well informed. The information products delivered periodically by the libraries under CAS keep the researchers abreast of the recent developments in their field of study or work and save their valuable time. This is



a perfect example of an anticipatory information service which draws a user's attention to latest trends/developments in a specific area of interest.

Current Awareness Services have two categories:

(a) CAS directed towards individuals or group of users:

This type of CAS includes communication of information to individuals or groups through informal conversation or by telephone or mobile phone; through electronic messages (SMS), messages sent on notification form, selective dissemination of information (SDI), selective dissemination of documents, routing of documents (periodicals), etc.

(b) CAS directed towards all users of the services:

This includes accession lists (new arrivals), bibliographies, indexing and abstracting services, literature surveys, bibliographic surveys, table of contents of periodicals, etc. The end products are current awareness bulletins which may include all the above elements.


The systematic ways to deliver a CAS are:

- (i) Reviewing or scanning of documents regularly and focusing on a desired subject.
- (ii) Selecting information and recording individual documents, and
- (iii) Sending notification to the users about items of information of their interest.

The selected information is recorded and delivered by suitable means, such as (i) telephone calls or personal visit by the library professional; (ii) written messages sent on notification forms or post to call at the reference desk; (iii) routing of periodicals, selective dissemination of documents and users; (iv) preparation and publishing of library bulletins; (v) display, and (vi) view data.

ii. Selective Dissemination of Information (SDI)

The concept of Selective Dissemination of Information was originally given by Hans Peter Luhn in 1958. Selective Dissemination of Information (SDI) is a highly personalized service. It is a method of supplying each user or a group of users with references of documents or abstracts relating to their pre-defined areas of interest selected from documents published recently/received during the period in question. This service saves the user the effort and time of having to scan through several publications, and to choose the documents of interest to him. The basic concept behind SDI is the matching of information/documents with the profile of each user or group of users with same interest. A user profile and document profile are two important components of the SDI service. Then the matching items are brought to the attention of the user. The same activity can be performed effectively with the help of a



computer. Commercial mechanized SDI services are available in highly information rich fields like science and technology.

During the process of SDI, the 'user profile' which comprises of a set of 'key words' organized as meticulously as the 'system' permits, describe the subject of interest, in accordance with the keywords that appear on the documents. A document is selected when two key words coincide. In an automated environment, once a search profile of the user is created and saved, relevant information is sent to the researcher automatically (and the selected databases/catalogues are updated). The effectiveness of an SDI service depends on the completeness or comprehensiveness of the user profiles and the relevance of the information, which are to be matched with each other. The SDI is considered as one of the best current awareness services available at present.

3.1.2 Ready Reference Services

This is another important category given to the practicing librarians leading towards the development of reference services and process. Here again Ranganathan worked in detail about the 'What', 'Why' and 'How' of Ready Reference Services, what is also called as short-Range Reference Services in view of the time involved. Ready Reference Services requires a good knowledge of reference sources. He has established how the preparation and assimilation help the reference librarian in effectively providing this service to the generalist users in minimum time.

3.1.3 Long Range Reference Services

The fourth category of reference service (including its process) is the Long-Range Reference Services, and Ranganathan has mentioned about its 'What', 'Why' and 'How' to provide this service to the specialist users, particularly in research and special libraries. Reference service for serious studies will require a good bibliographical mastery and familiarity with the developments in the universe of subjects.

Thus, he has developed the concept of reference service in detail and elaborated various methods of giving the service in the form of 'What', 'Why' and 'How'. He also described the "idiosyncrasies of readers" as well as those of books, and these types have already been recognised by the reference librarians the world over. These have also necessitated, indeed, the rendering of reference service itself.

Ranganathan's concept of Long-Range Reference Services has been his unique contribution in the development of reference service, as it is the result of the implication of the fifth Law of Library Science. When one studies reference service of this kind in relation to the Fifth Law, it comes to the mind that Ranganathan had perceived about the rate of information explosion, which many scholars, including De Solla Price, studied much later.

Difference between Ready Reference and Long-Range Reference Services

Ranganathan's basic contribution, however, lies in drawing a line of demarcation between the Ready Reference Services and the Long-Range Reference Services which otherwise seems quite indefinite and elusive. He has recognised their distinguishing features, and the basic difference between the two lies in respect of the following points:

- (a) The time involved
- (b) The material used and
- (c) The nature of information sought

It is the general practice to classify queries into quick or ready reference and long-range reference queries. A quick reference query is one, the answer to which can be found readily in a directory, yearbook, or other reference material. A long-range reference query is one, the answer to which can be found only by consulting several reference works or source and which therefore takes a longer time to answer. A long-range reference query becomes a ready reference one when it is repeated a second time, since the answer is now readily available.

Reference service: value to the user

In such a classification we are using as the yard - stick of measurement, the length of time taken to provide the answer and the range of reference material in which the information was sought. But we do not have any means of judging the value to the enquirer of the answer provided. Merely because an answer takes longer or is more difficult to find, it cannot be assumed that its importance is greater. A small piece of information out of a reference book provided when it is most needed may prove of vital importance to the inquirer.

3.1.4. Summary

Reference service is the personal assistance provided to library users seeking information. In this service, library staff works as mediator between the user and the information. The service may be provided on demand or in anticipation. Various categories of reference service are being provided under both the cases. SDI is a highly personalised reference service. On the basis of time involved to deliver the information, the reference service may be categorised into ready reference service and long-range reference service.



3.1.5 Exercise

1. Define Reference Service? List the services performed on regular services?
2. Differentiate between Responsive service and anticipatory services?
3. What is Referral Services?
4. Differentiate between Ready Reference Services and Long-range Reference Services?
5. Explain the different categories of Current Awareness Service (CAS)?

Library and Information Services: ICT Applications

3.2.0 Introduction

Today is the information age and lot of information is emerging in all fields throughout the world. Therefore, it becomes very difficult to manage it manually due to the exponential growth of literature. Providing timely information is not due to lack of information, but the way in which it is handled to enable the user to fulfill his/her needs. The traditional way of information handling methods has become almost ineffective in providing the specific information of an individual's interest. To overcome this problem, libraries and learning resource centers need to change their attitude towards information handling. ICT-based information handling is a viable solution in this direction.

3.2.1 Modern Library and Information Service

Modern library and information services have been profoundly affected by the emergence of a large number of information and communication technologies and tools. Exponential growth of digital/electronic information spearheaded creation of new information products which in turn demanded new user services. The rise of Internet as a gigantic store house of information has set challenges as well as opportunities before the libraries and information centers. Web based information services take prominence as the quantity of global population which has access to Internet increases day by day. The changing preferences of today's users from print to digital/online and real-time information tend the libraries and information centers to redesign their traditional services by incorporating web-based tools or developing innovative services based on these technologies.

Modern trends in library and information services can be listed under three categories:

- I. Web-based library and information services
- II. Services to electronic/digital/web resources, and
- III. Services to local/internal digital resources

The features of the various fast developing library services will be discussed in the following sections.

3.2.1.1 Web-based/Electronic Library and Information Services

'Web' is a synonymous and popular term of World Wide Web (WWW) or Internet. The traditional method of offering library and information services has changed greatly in recent years because of the development and applications of new technology, especially the Internet and Web Technologies. The demands and expectations of users have also changed considerably. In the changed scenario, the academic libraries in India are offering new web-based library services to satisfy the users. For this unit, "Web-based library services mean library services provided using Internet as medium and library website as a gateway with the help of integrated library management systems (Madhusudhan, Nagabhushanam 2012)". In simple words, web-based library services that are modified versions of existing services and technology-driven library services (Arora, 2001). The history of web-based library and information services began in 1960s by the introduction of computers in libraries for information processing, which resulted in the creation of bibliographic databases like MEDLARS in 1963, BLAISE (British Library Automated Information Service), and the formation of online library networks, like OCLC.

In the following sections, some of the major web-based library and information services will be discussed.

i. Library Web Portals

A library web portal is a website that offers access to a broad range of information resources and services, such as online catalogues, e-journals, databases, information on new additions, programmes, etc. It acts as a gateway to the library's web/online resources and services. Web portals have replaced the earlier static library websites, which had limited features, and now have become more interactive and user-friendly.

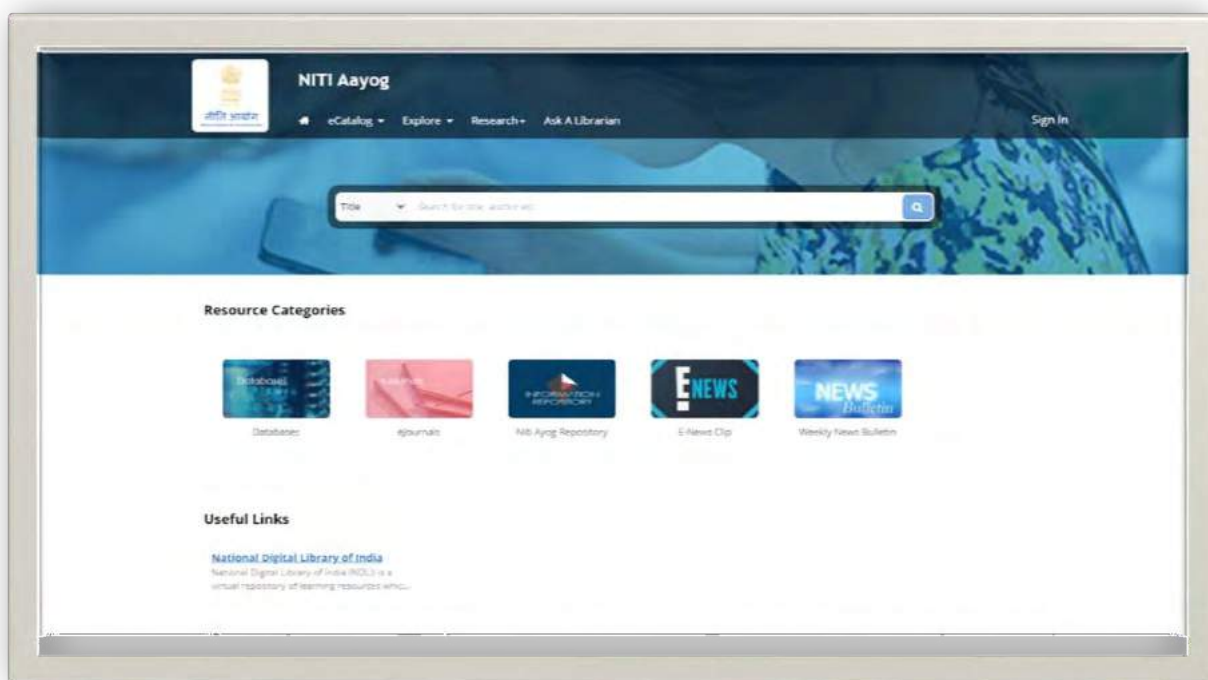



Figure. 3.2.1: NITI Aayog Web portal Source: <https://nitiaayoglibrary.in/user#/home>
Accessed 11.8.2021 13:20 Hrs IST

ii. Web OPAC and Next Generation Catalogues

Web OPAC is an Online Public Access Catalogue made available on the web. It offers the user with a 24x7 access to the library catalogue. The user can search the library catalogue and find the availability of library holdings. Simple and advanced search options are available and many of the webOPACs offer online renewal and reservation facilities to the members. A Next Generation Catalogue, also termed as Catalogue 2.0, is a single point of entry for all the library information. Here, 'information' refers to all library resources, including all bibliographic information on printed books, journals, multimedia documents but also links to full text electronic databases, digital archives, and any other library resources. These new generation catalogues use federated search engines for this one-stop searching. The users are directed to electronic and printed resources which are linked together on a single interface. Other features of the next generation catalogues are, state of the art web-interface, which is intuitive and visually appealing, enriched content (images of book covers, CD cases, book summaries, tables of contents, reviews, etc.), faceted navigation (which allow users to narrow down the search by facets, like, authors, dates, types of material, subjects, location, etc.), simple keyword search box (like popular search engines, e.g., Google) instead of controlled vocabulary, and options for advanced search, relevancy



(ranking of resources using many criteria like circulation statistics, comments received, etc.), “Did you mean...?” (Spell checking of search entries and recommending other search queries), recommendations and related materials (suggestions to related materials), user contributions (ratings, reviews, comments and tagging by the users) and RSS Feeds (which give updates about new acquisitions and search updates).

Examples for Next Generation OPACs: Voyager ILS by Ex Libris, EBSCO Discovery Service (proprietary), Evergreen, Invenio, KOHA (open source).

iii. Bulletin Board Services and Listserves

A ‘bulletin board’ is a public discussion area where users can post messages without sending them to anyone’s personal e-mail address, which can be viewed by anyone who enters the area. The entry to the area may be restricted by invitation or be kept open. Bulletin boards are also known as forums or newsgroups. Announcements regarding library resources and activities, information on special collections, etc. can be displayed over here. These electronic bulletin boards are linked to library websites for general users and special groups.

Listserve are topic or subject oriented online forums, where messages are communicated through e-mail. These are basically discussion forums which deal with topics on academic or professional interests. One who subscribes to the Listserve can send and receive emails, the process that is controlled by a programme, hosted by the parent organization/authorized individual, for example, Become a Reading Butterfly!


iv. Subject Gateways

A gateway is defined as a facility that allows easier access to network-based resources in each subject area. Subject Gateways provide high quality evaluated web resources. These act like clearing houses to quality information selected by subject experts. Basic objective of any subject gateway is to help users to locate high quality information resources available on the Internet. These are user searchable metadata databases with hyperlinks to specific information. Search may be with keywords or subject headings.

Examples: INFOPORT (INFLIBNET Subject Gateway for Indian Electronic-Resources), ipl2: Internet Public Library (IPL) and the Librarians’ Internet Index (LII) (<http://www.ipl.org/>), INTUTE (Social Science Information Gateway), covering social science resources and OMNI (Organizing Medical Networked Information) covering medical resources.

v. Web based Current Awareness Service

Libraries offer web-based CAS primarily through e-mails. Individual and customized email alerts are provided to the users on their area of special interest about new acquisitions of



documents, table of contents of journals or new web resources available on the Internet. Many publishers also provide journal alerting service.

Example: Journal Alerting Service by Oxford University Press, Journal Table of Contents Service (tic TOCs) by JISC, National Archives, UK.

vi. Online Question and Answer Service

Web-based question and answer service is an asynchronous system that uses a web form to receive requests (questions) and responses (answers) which are sent via email to the enquirer. 'Ask a Librarian' service provided by libraries is an example for a Question and Answering Service. This is also considered as a part of the digital reference service. Example: Ask ERIC (U.S.).

vii. Webcasting

Webcasting is the method of broadcasting live audio and video in real-time, to audiences all over the world via the Internet. It is 'broadcasting' over Internet. Streaming media technology is used here to distribute a single content simultaneously to multiple viewers/listeners. There is no need to download the content before viewing. A webcast may either be distributed live or on demand. In the area of LIS, Library of Congress (LoC) offers webcasts of audio and video resources like talks on history, performing arts, culture, science and technology, through its web page for webcasts.

viii. Web based Reference Services

Providing web-based reference services to users, who are sitting anywhere in the world in a 24x7 mode is now popular in many libraries. Access to in-house electronic reference sources and external digital resources like database and online reference websites, provided in a mediated way is the base of such services. Web based reference services include:

- (a) Reference websites: These are websites that exclusively provide reference information like Britannica online (<http://www.britannica.com>), Encyclopedia.com (<http://www.encyclopedia.com/>), Infoplease (<http://www.infoplease.com>), Oxford English Dictionary (<http://www.oed.com/>).
- (b) Online Reader's Advisory Service: The recommendations and review of the book titles and other resources by experts are posted on the library website. A search features allow the visitors to search for reviews of specific titles/resources and an online form permits the readers to submit their own review for publication on the site. Additional information on local book talks and book club is also provided with links to web sites of interest to readers.

- (c) Online Instruction Service: Bibliographic instruction to new members is provided in an online way using web-based tools and technologies. Instructional videos on the use of OPAC, resources, etc. are made available online which can be viewed/ listened by the users.

3.2.1.2 Services to access web resources

Modern libraries largely depend on web resources (also termed as electronic/digital resources) to provide up-to-date information. Almost all digital information resources are now available on a networked (internal or internet) environment. Providing access to these resources in the library or remotely on a network is one of the main services of a library. Web resources have many advantages over traditional print resources. Some are:

- (a) Web resources can be interlinked and hence users get comprehensive information (e.g., journal articles can be hyperlinked with their own reference sources, external indexing/abstracting databases and other web resources).
- (b) Anytime anywhere access: Digital/web resources can be accessed 24x7 and from anywhere, may be on an internal network or on internet using a remote login facility.
- (c) Web/digital resources save the time of the user, physical space in a library and are easy to maintain. Main library and information services which are intended to provide access to various web based information resources will be discussed in this section.

i. E-Books and other Downloadable Media

Merriam Webster's Dictionary defines an E-book as "a book that is read on a computer or other electronic devices. It is a book composed in or converted to digital format for display on a computer screen or a handheld device

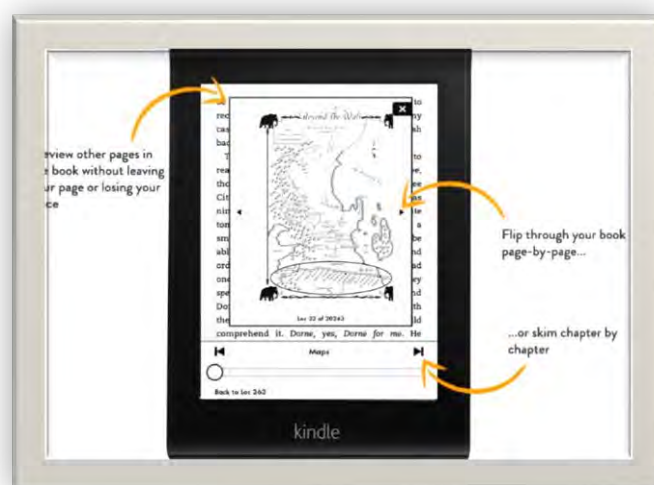


Figure 3.2.2 An e reader

Source: <https://dearauthor.com/features/industry-news/wednesday-news-new-kindle-paperwhite-amazon-bundles-print-and-digital-fore-edge-painting/>

Accessed on 11.8. 2021 at 12:50 Hrs. IST

Encyclopaedia Britannica categorizes the method of distribution of e-books on the Internet as: (i) downloadable files that can be read offline, (ii) as live web pages that must be read online, or (iii) as web pages that are cached by a web browser for reading offline. e-books may be downloaded or accessed in a closed (proprietary) system, where the buyer or the library has to purchase the e-book from the publisher/distributor under the Digital Rights Management (DRM) Policy. Example: Amazon Kindle, Apple iBooks, etc. In an open system, e-book files may exist in only one place, but anyone can access and download the files (whether for purchase or free download), because their metadata are freely available and can be freely shared. Examples: Catalogues created in the Open Publication Distribution System (OPDS, part of the Internet Archive's Book Server Project) and the Project Gutenberg. E-books can be read on any electronic device with a software to display their given file format. Most common e-book file formats include EPUB, (an open standard for e-books created by the International Digital Publishing Forum (IDPF)), e-Reader (Palm Digital Media), iBook (Apple), AZW (Amazon), LIT (Microsoft), PDF (Portable Document Format by Adobe), ODF (Open Document Format), MOBI (Mobi Pocket), etc. e-book reading devices include dedicated e-Readers, personal computers, mobile (smart) phones, hand held devices like tablet computers, and consoles attached to televisions or other screens.

The other downloadable media to which modern libraries provide access to users are:

- (a) **Audio Books:** access to downloadable audio books (e.g. Audible.com, Amazon Prime)
- (b) **Music:** access to downloadable music (e.g. Freegalmusic, Napster, Spotify, Shazam)
- (c) **Digital Magazines (digital newsstand):** access to magazines in their digital form (e.g. Zinio, GTxcel)
- (d) **Movies:** streaming movie service to access, films, documentaries and other video contents (e.g. Indieflix, Netflix, HuluPlus, YouTube)
- (e) **News:** access to newspaper databases (eg: Worldcrunch)
- (f) **Learning Resources:** e-versions of test preparatory materials, guides, handouts, etc. (e.g. Thomson Gale)

ii. Online Database

A database (e-database) is an organized collection of information, of a particular subject or multi-disciplinary subject areas; that can be searched and retrieved electronically with

the help of searchable elements or fields. A single database may refer to a specific type or a variety of sources, including periodical articles, books, government documents, industry reports, conference proceedings, newspaper items, films, video recordings etc. A database may be dedicated to a single subject or cover several subjects. The contents may be updated in a daily/weekly/monthly manner. Libraries, based on their user needs, subscribe to these database through information retrieval service providers or database vendors/publishers. As the contents of library database are sourced from experts and professionals on the field, they are more reliable than the information that is available on some websites. Primarily, database can be: (i) Full-text database (compilations of documents or other information in the form of database in which the complete text of each referenced document like journal articles, conference proceedings, etc. is available for online viewing, printing, or downloading), e.g. Academic Search Premier, JSTOR, Science Direct, and (ii) Bibliographic databases (databases of bibliographic records or citation information), e. g., LISTA, MEDLINE. Database have three categories based on the scope of the subject area they cover. They are:

- (a) **General interest (multi-disciplinary) database:** consist of information from several subject areas and disciplines. E.g., JSTOR, Academic Search Complete, Project MUSE.

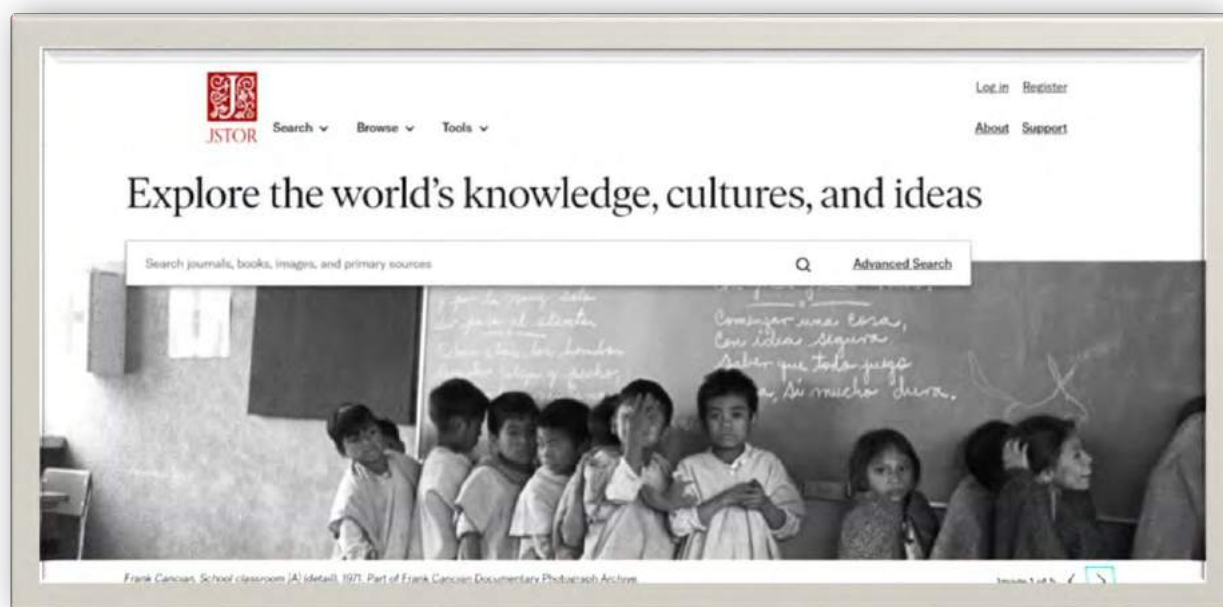


Figure: 3.2.3 Web page of JSTOR database Source: <https://www.jstor.org/>
accessed 11.8.2021 13.10 Hrs IST

- (b) **Discipline-specific databases:** consist of materials from related subject areas. E.g., SocINDEX (sociology research database), SPORT Discuss (sport medicine and related fields)

- (a) **Subject-specific databases:** provide in-depth information on a specific subject. E.g., Ethnic News Watch (ethnic, minority, and native press content), PsycINFO (behavioral science and mental health).

Libraries provide in-house and remote access to subscribed databases to their members. To reduce the huge subscription cost, libraries form consortia share the resources among them. INDEST (Indian Digital Library of Engineering, Science and Technology), and INFLIBNET are two examples for such library e-journal consortia. Another method to provide access to e-journals is through Aggregator services, which offer searchable databases of contents of e-journals from several publishers, and links to journal site for full text. E.g., Emerald, J-Gate.

iii. Other web-based resources

Other important web-based resources to which libraries provide access are:

- (a) **Electronic Theses and Dissertations (ETDs)** Many Universities and research organizations in India and abroad are now digitizing their thesis and dissertations and make them available on internet for public access. One global initiative is Networked Digital Library of Theses and Dissertations (NDLTD). Indian Digital repositories of Theses and Dissertations include that of Indian Institute of Science, Bangalore, India and 'Sodhganga' at INFLIBNET Centre.
- (b) **Open Educational Resources and other Course Materials** According to UNESCO, Open Educational Resources (OERs) are any type of educational material that are in the public domain or introduced with an open license. The nature of these open materials means that anyone can legally and freely copy, use, adapt and re-share them. OERs range from textbooks to curricula, syllabi, lecture notes, assignments, tests, projects, audio, video and animation. Examples of this include MIT Open Courseware Project, World Bank Open Knowledge Repository, Open Yale Courses and NROER (National Repository or Open Educational Resources) by NCERT. Other digital learning repositories which provide teaching and learning resources on the web include ERIC (Education Resources Information Center, USA), NDLR (National Digital Learning Resources, Ireland).

3.2.1.3 Services to access local/internal digital resources

Many libraries are developing their digital collection of documents like institutional repositories and archives of historically important documents and are making them available on intranet and on the Internet. The main digital services are:

i. Institutional Repositories

An institutional repository (IR) is an electronic archive of the scientific and scholarly output

of an institution, particularly an institution, which has been stored in a searchable digital format and which can be retrieved for later use. The contents deposited in IRs include: (i) Electronic Theses and Dissertations; (ii) Conference papers and Proceedings; (iii) Preprints and post prints of journal articles; (iv) Books and Research Datasets; (v) Working papers and Reports; (vi) Teaching and Learning objects; and (vii) multimedia collections. DSpace and E- Prints are the most common software used for developing IRs. IRs make the institutional outputs open to the world. Open Access IRs around the world can be accessed at the Directory of (Academic) Open Access Repositories (Open DOAR) and Registry of Open Access Repositories (ROAR) websites. Indian examples include Dyuti (Cochin University of Science and Technology), Open Access Repository of Indian Institute of Science Research Publications (ePrints@IISC), etc.

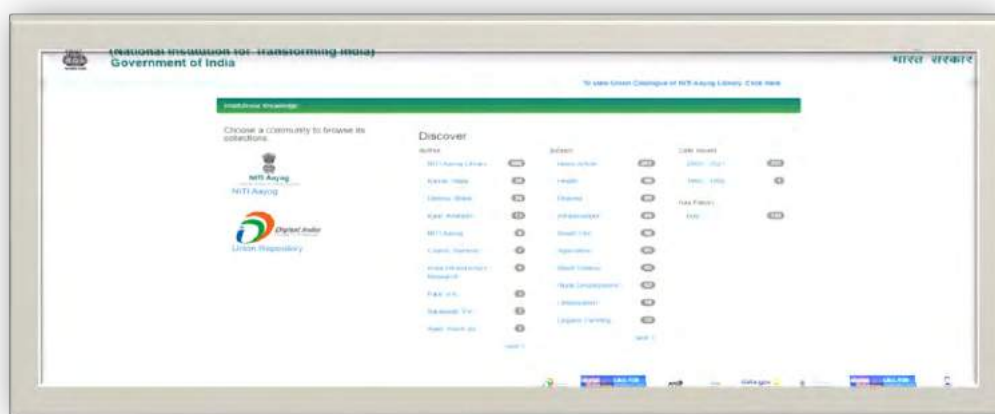


Figure 3.2.4: Institutional Repository of NITI Aayog
Accessed 9.7.2021 at 16:19:15Hrs IST

ii. Online Exhibitions

An online exhibition or virtual exhibition or online gallery is a web-based service provided by libraries, museums, and archives where an exhibition of digital artefacts (photographs, paintings, documents, etc. normally owned by the institution) is conducted online. It may be viewed or visited by anyone irrespective of time and physical location. Advantages of an online exhibition over the physical one includes a wider reach to the audience, saves production costs, solves conservation/ preservation problems, creates a durable online record and provides anytime-anywhere access.

Examples: American Treasures of the Library of Congress, Latin American Business History by Harvard Library, Online Gallery of British Library, Columbia University Library Online Exhibitions.

iii. Web Archiving Service

Jinfang Niu (2012) describes web archiving as 'the process of gathering up data that has been recorded on the World Wide Web, storing it, ensuring the data is preserved in an archive, and making the collected data available for future research. Like the management of many other kinds of information resources, the workflow of web archiving includes appraisal and selection, acquisition, organization and storage, description and access.' Web archiving services are getting prominence, as on many occasions, the web has become the sole medium for communication, sharing and collaboration between organizations and individuals and the information published on a website may be the only place where it is available. Websites are now important records for organizations and individuals that are to be preserved for reference and posterity. The dynamic nature of the websites also warrants their preservation. Web archivists use automated tools (or web crawler software) to collect or harvest websites. Web crawlers go across the web and into the websites to copy and save the needed information. These archived websites are organized and made available to the users for online access. Many of the national libraries are now archiving the culturally important and country specific web contents. Proprietary web archiving software services are being utilized by companies to archive their own web content for business, heritage, regulatory, or legal purposes. The largest non-profit web archiving service available is the Internet Archive (<https://archive.org/>).

Examples for Library web archives:

- ◆ Legal Deposit UK Web Archive: Developed by the British Library with millions of websites obtained through an annual archiving of the entire UK domain. This was enabled by the non-print legal deposit regulations introduced by the U K Government in 2013. This archive is only accessed internally through computers on premises controlled by the library.
- ◆ The UK Open Web Archive: This is a smaller collection of selected websites archived by the British Library. Selected websites will continue to be added to this open access collection, again with the permission of website owners. It is available online.
- ◆ The Australian Government Web Archive (AGWA): A web archiving initiative of the National Library of Australia (formerly known as PANDORA).
- ◆ The Library of Congress Web Archives (LCWA): The early development project for LoCWeb archives was called MINERVA.

3.2.2 Emerging Trends in Library and Information Services

As discussed above, new concepts are emerging in the field of library and information science. Let us understand some important emerging trends in the area of library and information services.

i. Mobile Applications for Libraries

There is an exponential growth in the number of users, particularly in developing countries, who access internet on their mobile devices, especially on smart phones. As in the case of e-commerce and entertainment industries, modern libraries are also using mobile technologies to reach out to these customers who are on the move. For that, mobile/cellular phone-based applications and services are designed and incorporated by libraries. Mobile services are “typically (and often implicitly) understood as services that make use of mobile devices and/or mobile networks”. Mobile based library services include:

- (a) Mobile interface to library website: Mobile optimized library website homepages
- (b) Mobile interface to library catalogue
- (c) Mobile reference service: Access to mobile interfaces of important reference sources like Encyclopaedia Britannica
- (d) Downloadable e-books and audio books on mobile

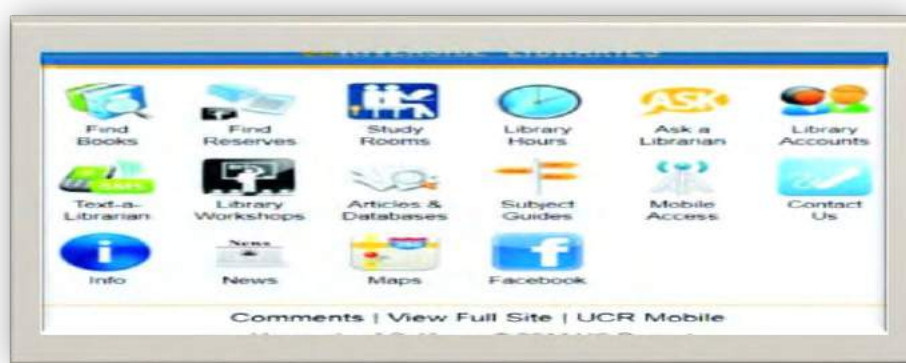
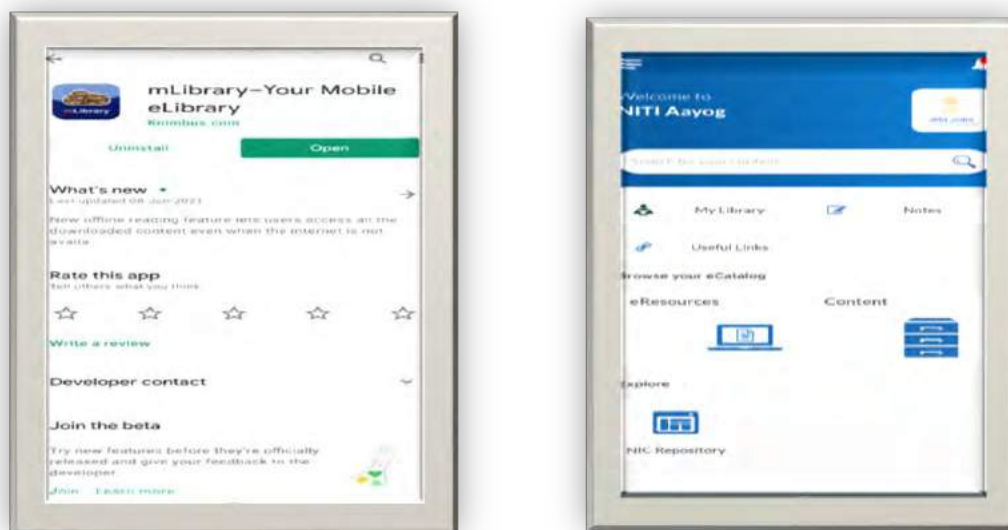


Figure 3.2.5: Mobile website homepage of Riverside Libraries, University of California

- (e) Mobile interfaces to e-journal and other databases

- (f) SMS notification services: Circulation (reminder, renewal, reservation), Current awareness, SDI, Content alerts, catalogue enquiries, SMS reference services, etc. Some libraries also developed Mobile Apps which help the users to access library services. These apps need to be downloaded and installed in the user's mobile/handheld device. E.g., mLibrary app of NITI Aayog Library,



A

B

Figure 3.2.6 Mobile e library

ii. Application of Cloud Computing in Libraries

Merriam-Webster's Dictionary defines cloud computing as "the practice of storing regularly used computer data on multiple servers that can be accessed through the Internet". There are three service models of cloud computing services: (i) Infrastructure as a Service (IaaS), (ii) Platform as a Service (PaaS), and (iii) Software as a Service (SaaS). Types of cloud deployment models include: (i) Private Cloud (ii) Community Cloud (iii) Public Cloud, and (iv) Hybrid Cloud.

Cloud computing technologies are used in libraries to:

- (a) develop cloud based digital libraries/repositories (e.g. DURACLOUD)
- (b) share searchable library data
- (c) host websites
- (d) search scholarly content (e.g., Knimbus Knowledge Cloud)
- (e) store files (e.g., Dropbox, Google Doc, SkyDrive)
- (f) build networks with other libraries and people

- (g) support library automation through cloud-based acquisition, cataloguing and processing services and hosting the entire data on the cloud which will cut down the costs for hardware and maintenance. (e.g., ExLibris, OSS Labs)

National Informatics Centre, GOI, is providing Cloud computing services to the Libraries of Government of India.



Figure 3.2.7 e - Granthalaya

Source: <https://eg4.nic.in/demo/> Accessed on 11.08.2021 at 13:45 Hrs IST

3.2.3 Summary

The requirement of the user in digital format, compelled the library to redesign their traditional reference services into web-based reference services. The digital collection is increasing more day by day than print collection. The properties of digital resources to anytime anywhere access has increased the digital footfall of the user. The emerging tool and technologies have also made it easy to provide the information quickly.

3.2.4 Exercise

1. What is a library web portal?
2. Explain Bulletin Board Services?
3. Discuss web-based reference services?
4. What is an e-book and how it is different from print book?
5. Name the services provided in the cloud computing?