

Role of Digital Libraries in Contemporary Times: Issues and Challenges

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Abstract

Digital libraries are relatively new concept in the educations sector, and are only two decades old concept. At the same time, digital libraries have been growing at a quick pace. Digital libraries are the systems providing user with articulate access to a very large & organized repository of knowledge and information. The existence of digital libraries have changed the domain of education sector, and enhanced the quality of education in particular. Keeping in view the importance of Digital Libraries, the main aim of the present paper is to highlight the role played by digital libraries in contemporary times. The paper will also endeavor the issues and challenges faced by educational institutes and students with reference to digital libraries. The research is qualitative in nature and the data will be collected through secondary source by using online resources like Ugc inflibnet, Ebsco host and Google Scholar etc.

Keywords : *Digital Library, Digital Resource, Digital resource management*

1. Introduction

It has been man's continual quest to be able to access all the records of human intellectual appeared anywhere, which might be of interest to him. Libraries are always being social institutions. They offer public access to information and knowledge representing diverse sources and viewpoints. But access to public knowledge, in traditional libraries, was limited to those who could travel to the physical site of that library or receive items through inter library loan. Access to library collection for remote users has long been a challenge for librarians. For centuries, they have managed warehouse of documents by acquiring, cataloguing and classifying books, journals and other materials and circulating them to their clientele. But computer and

communication technologies have improved the new breed of information professionals to select, organize, retrieve and transfer digital content effectively and efficiently to the users (Schement, 2002). Advancement in information and communication technologies (ICTs) has changed the concept of library as a physical artifact to digital library as a library without walls.

With the advancement of information and communication technology, the rate of information explosion increases exponentially. This has given the birth to concept of digitalization of libraries. Library digitization is nothing but the conversion of physical media of the library, i.e. books, periodical, articles, etc., into digital format (0 and 1 bit). Bits are the fundamental units of information in a computer system. The digital library contains digital representation of the object found in it. Digital library is popularly viewed as an electronic version of a library. To some extent, it simply means computerization of traditional libraries. **Larson defined**, the Digital Library as global virtual library - the libraries of thousands of “networked electronic libraries.” Networked electronic libraries describe the collection of various library resources to the network so that any user can access the resources anytime in anywhere. (Nazim, 2009)

A main benefit of digital library is to preserve rare and fragile objects by enhancing their access to multiple users simultaneously. There are several reasons for libraries to go for digitization, but the prime reason for the digitization is the need of the user for convenient access to high quality of information. Other important considerations for the digital library are quality preservation, multiple referencing, wide area usage, archival storage, and security measure.

Creating “effective” digital libraries pose serious challenges for existing and future technologies. The integration of digital media into traditional collections will not be straightforward, like previous new media (e.g., video audio tapes), because of the unique nature of digital information, which is less fixed, easily copied, and remotely accessible by multiple users simultaneously. Some specific challenges are resource discovery, digital collection development, digital library administration, copyright and licensing, etc., library of congress specified various challenges for building an effective digital library. Flexibility is one of the chief assets of digital information. As a result, libraries have been constantly facing the problems of space, escalation in the cost of books and journals, budget shrinkage, inability to provide multiple copies and most important is

retrieval efficiency of user being endangered for want of information. The main purpose of the present paper is to emphasize the role of digital libraries in contemporary times and also highlight the issues and challenges faced by education sector towards the digitalization of library.

2. Research objectives

- To study the existing literature pertaining to digital libraries in contemporary times.
- To study the role of Digital Libraries in imparting quality education.
- To explore the various issues and challenges faced by digital libraries in developing countries.

3. Review of Literature

3.1 Digital Library: Meaning and Nature

The terms, electronic library, digital library and virtual library have been used interchangeably and now widely accepted as a description of the use of digital technology by libraries to acquire, store, conserve and make available their content to remote users.

The term digital library was best defined by Christine Borgaman (1996) as “a set of electronic resources and associated technological capabilities for creating searching and using information”. They are an extension and enhancement of information storage and retrieval systems that manipulate data in any medium. The content of digital libraries includes data and metadata’.

In a broad sense, a digital library may be treated as an organized and managed collection of highly quality information content in a variety of media (text, still image, moving image, sound or combination thereof) , but all in digital forms, accessible over different electronic networks. Such a digital library includes a number of search or navigation aids that both operate within that particular library and allow access to other collection of information connected by networks worldwide.

The concept of digital library is rooted in the age-old dream of creating a virtual library. “The main component of a virtual library is a vast, ideally universal collection of information and instantaneous access to that information wherever it physically resides” (Donnell, 1994). But digital library is different from virtual library because of its physical identification in some aspects.

Beckman & Pearson (1993) differentiated digital library from virtual library as it can still maintain a physical presence, whereas virtual library, since it is perceived as transparent, will have transparent physical facilities and transparent librarians.

Digital libraries are the logical extension and augmentations of physical libraries in the electronic information society. Extensions amplify existing resources and services, and augmentations enable new kinds of human problem solving and expression. As such, digital libraries offer new levels of access to broader audiences of users and new opportunities for the library and information science (LIS) field to advance theory and practice.

3.2 Digital Library and Definitions

Digital libraries are systems providing user with coherent access to a very large, organized repository of information and knowledge. Digital library is a global virtual library. The library of thousands of networked electronic libraries from the dawn of civilization, the intellectual brains have poured their omniscience in different directions in shape of print and non-print form to enlighten mass to explore multifarious research and development. Several terms have been coined at different times to represent the concept of library without books. Libraries having information in computer readable format or having access to information in digital format have risen to an unexpected height and thereby the traditional libraries were conformed to problems to meet the instant growing demands of the user communities for their multidimensional approaches. Recent advances in the information world have transformed the role of library in disseminating information to user. Increase in the number of user and their different needs have made modern libraries to apply new communication technology. As a result of this there is a

worldwide need and trend to collect organize manage, protect and distribute information in digital form.

The terms, which have been in vogue at different times, include paperless library, virtual library, and electronic library online library, desktop library, and polyglot library, library without boundaries and more recently digital libraries (Mahapatra & Ramesh, 2004). The term Digital library in broad sense is a computerized system that allows users to obtain a coherent means of access to an organized electronically stored repository of information and data.

The digital library is making the library undergo a change in the paradigm of its role to create organize and distribution of information resources. A digital library is a distributed electronic collection that covers virtually all fields of human endeavor to serve the defined community.

Digital libraries are logical extension and augmentations of physical library. They extend and augment their physical counterparts by extending existing resources and services and enable development of new possibilities for information access and Retrieval in other worlds Electronic library based on digitalized data is text replacing the paper based records and that is why with the help of networking one can have access to resources round the clock. The advantage includes resources sharing, documents delivery services and data transmission in a minimal duration.

The collection of information image graphics etc. in a digital library without any geographical circumscribe are disseminated in all digitized form through internet which are accessed by the network services provider and millions of users connect their PC's through Digital collection services using local Area Network (LAN) Technology to get a transformed authentic, pin pointed information.

Clifford Lynch a well know expert on Internet and web technology, defined digital library as *“System providing a community of users with coherent access to a large organized repository of information and knowledge. The digital library is not just one entity, but multiple sources are seamlessly integrated.”*

According to R. Smith digital libraries are “ *Controlled collection of information bearing objects (IBOS) that are in digital form and that may be organized, accessed, evaluated and used by means of heterogeneous and extensible set of distributed services that are supported by digital technology.* ”

According to E.A. Fox. the digital library may defined as the “ *New way of carrying out the function of libraries encompassing new types of information resources, new approaches to acquisition, new methods of storage and preservations, new approaches to classification and cataloguing intensive use of electronic system and networks and dramatic shifts in intellectual organizational and electronic practices.* ”

According to computer professionals, a digital library may be simply a distributed text based information system a collection of distributed space, inters linked information or a networked multimedia information system.

According to researchers “ The digital Libraries is a support tool of learning in both formal an informal manners for high technology users of world wide web (www), the digital library provides the enhancement in performance organization usability and functionality”.

3.3 Characteristics of Digital Libraries

Digital libraries, like traditional ones, select, acquire, catalogue, make available, and preserve collections. A digital library contains digital representation of the objects found in it, and will be accessible via Internet, though not necessarily to everyone. But the idea of digitization is perhaps the only characteristic of a digital library on which there is universal agreement. The common characteristics in the various definitions of digital library, identified by Association of Research Libraries (Nazim, 2009).

- The digital library requires networking technology to connect many entities;
- The digital library is not a single entity;
- Universal access to digital content and information is a goal; and
- All linkages are transparent to end users;

- Digital library collections are not limited to documents surrogates, but can include digital artifacts not extents in traditional formats.

4. Discussion

4.1 Role OF Digital Libraries

Over the centuries, libraries have been the keepers and distributors of books, journals, maps and other materials that are used by students and researchers in the learning process. They have also been the legal deposit of part of the products of scholarly publications – theses & dissertations, articles, technical reports, etc. In general, students have been patrons of the libraries of their institutions. In order to make more contents available and thus benefit students and faculty, pools of institutions have engaged in commuting items and/or their copies. There is no reason for digital libraries not to have the same functions of traditional libraries, except that they can add functions and value due to their digital and networked nature. Digital Libraries play a significant role in imparting quality educations to students. There are numerous benefits of digital libraries some of them have been explained below:

1. Digital Libraries and Quality Education

Digital libraries are quickly becoming the norm at colleges and universities since they combine technology and information resources to **allow remote access to educational content**, breaking down the physical barriers. They have improved the quality of educations among the students. There are number of benefits of digital libraries in the present times, which have changed the ways of learning among students. Some of the significance of digital libraries are;

a. Implementation of I.T. environment

It is a important factor in the respect of library information technology, through the melding of computer technology with communications, digital imaging, and full-motion video and sound, can be a powerful ally to improving education and thus improving skill

for grain full employment. But in order to do this libraries and libraries will have to change. Changing the traditional to digital is improving the education and skill.

b. Speed

As we go from traditional to digitalization concept we feel that the speed becomes faster the speed factor may be realized in respect of working of office worker or students/ user working. By digitalization the user retrieves information faster.

c. Accessing Power

Digital Library provides accessing power to user. In digitalization environment the users access the latest information. User can interact with larger number of databases. The user also accesses the worldwide information through digital library.

d. Space power

The Digital Library increases the space power. It means that we are making portable system for materials. As the Technology increases the portability also increases as example like compact disk, DVD system minimize the larger data and store it larger. So there is no storage problem.

e. Online reference Books

Educational software enhances the knowledge experience if it is designed well and developed by expert group. The quality of digitized reference materials today is a huge leap. Forwarded From even the best learning programs available in 1990s it is due to the contribution of I.T. and the advances in computer hardware and software. Lighting fast microprocessors, large memory, super quick high-resolution video display cards, sophisticated soundboard. Which deliver digital audio and the storage medium the CD ROM which holds as much data as 450 high density diskettes materializes the provision of reference facility for thousand of multi volume encyclopedia and other materials?

2. Digital Libraries and References

Students and researchers go to libraries to look for materials that go beyond course contents. They seek additional books, journals, theses & dissertations, technical reports and other items that enhance the learning process. This is extremely important in the present contemporary times of research. Research is based on a lot of searching, retrieving and reading. So, libraries must carry and make available collections to fulfill this need. Some examples in the traditional world are the subscriptions of scientific journals and conference proceedings. Digital libraries, like their traditional counterparts, can hold reference materials. In addition they have all the advantages mentioned in the context of courseware. At the same time, the characteristics of being available all the time from anywhere and of cross-institutional cooperation are the strongest points. Digital libraries in their role of courseware and reference holders and distributors are of paramount importance in distance learning and training. A very special situation occurs in continued education when focusing on training professional staff who works in remote locations, as for example engineers in road and dam constructions, and offshore oil drilling. Current trends in continued education make digital libraries very useful, especially due to the possibility of customization of contents to meet individual needs (Roes, 2001).

3. Digital Libraries and Scholarly Publications

Universities have contributed to a class of publications referred to as “scholarly publications”. The availability of personal computers connected to the Internet has allowed researchers to report results through these systems in addition to the traditional printed journals. Sompel & Lagoze (2000 & 2001) mentioned that the fast pace of research results in the sciences has required alternative forms of publication to overcome the latency times of traditional peer-reviewed journals. At the same time, the rising costs of journal subscription have also yielded the need for alternative ways of publishing. According to the authors, these two factors and the availability of computers and networks paved the way for scholars to publish research results on the Internet. Many repositories have been created to communicate scholarly results in the form of E-Prints (pre-prints).

4. Digital Libraries and Open Access

All over the world, intellectual property rights (IPR) are protected by law. This is important because IPR are basic rights of democracy and stimulus for intellectual creation. At the same time, authors may want to share their works, especially in the academia.

Digital libraries are suitable to hold and distribute open access materials – they can manage contents, make metadata available for harvesting for union catalogs. They can multiply accesses because of interoperability and the existence of an active worldwide digital library community. It is important to assess the importance of Open Access to higher education. It can be viewed from two different points of view. Initially, the student or researcher looking for references must be considered – the more contents are made available the better. Knowing previous results avoids duplications and waste of time and funds. At the same time, the search must be efficient and this is accomplished with digital libraries that are compliant to standards and best practices. The second role is that of the author of the works – in the academia citations are a measure of quality of the works.

This second vision is directly related to the impact factor introduced by Garfield in 1964. A lot of discussions have been devoted to impact factors and how they can be biased, perfect, etc. An interesting item of this discussion was introduced by Garfield half a century ago, after his first work, where he states that review articles are more cited because they contain extensive bibliographies; this is a characteristic of ETDs and students always mention this is an important motivation to access them.

5. Remote login

Remote access refers to the ability to access a computer, such as a home computer or an university network computer, from a remote location. This allows Students or employees to work offsite, such as at home or in another location, while still having access to a distant computer or network, such as the university network. Digital libraries makes it possible to access the university database from remote locations. It enables students or researchers to access information from their home without any hindrance. This feature of digital Library has improved the quality learning in students.

5. Issues and Challenges of Digital Libraries:

Digital Libraries are the need of an hour, for the excellence institutions and libraries need to implement the concept of digital libraries in their setups. It is a great challenge for libraries and information resource centers to cop up with the transforming technology involved in digitalization of libraries. The following are some major challenges and issues faced by educational institute with reference to digital libraries.

1. Resource Building

In order to build a comprehensive resource, historical materials now in analog form (e.g., books, journals, laboratory records, sound recordings, manuscripts, photographs) must be converted. Today, the technology for digital conversion is, at best, emergent and often forces a library to choose between risking damage to precious originals or producing the highest quality reproductions. There are few established standards or best practices and a shortage of tools for the objective measurement of reproduction quality. There is a need for more automated support for capturing in explicit data structures the navigational and organizational clues implicit in printed works through page numbers, tables of contents, and indices. Also, Providing access to library collections is labor-intensive. In order to apply scarce resources to the digitization of significant quantities of content, it is often necessary to reduce the level of detail offered in accompanying catalogs or indexes.

2. Intellectual Property

A key element for digital libraries is appropriate recognition and protection of legal rights such as copyright, publicity, privacy, matters of obscenity, defamation intellectual property protection as well as less legalistic but serious concerns associated with the ethics of sharing or providing access to folk or ethnographic materials. The vision for digital libraries includes fluid, easy access to a wide variety of materials. This is often in conflict with the duties of libraries and archives entrusted with care and management of materials that may be subject to privacy rights or other needs for security.

3. Effective Access

A user looking for an item in a library catalog should be able to identify it without regard to whether it is available in its original physical form or as a digital or microfilm

reproduction. Intellectual descriptions of originals and reproductions should be presented in a fully integrated way. During the current experimental period, however, many digitization efforts are disconnected from traditional library services. Even when appropriate catalog records exist, digital content may fail to connect to potential users because individual items in digital collections cannot be retrieved directly or are not identified appropriately to support links from traditional catalogs or bibliographic indexes.

Today, each content item in most digital libraries is represented in multiple forms or versions. The multiple forms exist to serve varieties of users, function as archival masters, and reduce download time and transmission loads on networks. A content provider may produce large and small versions of images; compressed and uncompressed versions of images, texts, audio, and video; texts formatted for browser software and also formatted for preservation or publication; and materials both in proprietary formats and in public or "open" formats. This burden of plural production and maintenance results from the fact that today many digital objects are hard to transform on the fly. What technologies can be developed to make digital objects malleable, migrate-able, and transformable? Similar capabilities are also needed to ensure the preserving of digital content for posterity.

4. Sustaining the Resource

The creation and maintenance of digital libraries is very expensive. Costs are incurred for production, for ongoing provision of access, and for preservation of the digital information. The cost to develop and operate a distributed architecture for long-term archiving, migration, and backup of digital materials will be high. Since the resource is distributed among providers, the net cost tends to be disguised. Libraries would benefit from better estimates of costs and trends in cost for production and maintenance of a corpus of digital information.

5. Lack of awareness among students

It has been usually found in developing nations that students are unaware about the importance of digital libraries in educations. So it is the responsibility of libraries and educational institutes to make students aware about the benefits of the digital libraries & how to make the productive use of them. Even, Majority of the research libraries in India are unaware of the initiatives on the

transition of journals to open access. Open access is a cost effective way to disseminate and use information. It is an alternative to the traditional subscription-based publishing model where access to the journal is restricted to those who subscribe the journal (either directly or through their institution). In fact journals should not be expensive as writing, editing, reviewing and typesetting are done free of cost by researchers. Publishers are making profit by controlling access, archiving and marketing. Open access refers to works that are created with no expectation of direct monetary return and freely available online to all interested readers on the public Internet for purposes of education and research.

6. Conclusion

Recent trends in information and communication technology and the emerging potentials with which to build a global knowledge base offers exciting opportunities for libraries and Information resource centers. By using information technology libraries have played their role in imparting quality educations to students. With the development of digital libraries, the rate of information explosion increases exponentially. Libraries have been the companions of higher education for many centuries. They have preserved and has given access to all sorts of materials books, manuscripts, rare documents, journals, maps, etc. There is no doubt that the utility of digital libraries as they facilitate live and interactive access to wide variety of contents online. However, the problems of managing digital library content and its development are manifold. Libraries around the globe have been working on the daunting set of challenges and issues for several years now. It is not an easy task to Integrate access to both digital & physical materials, address legal concerns which are associated with access, copying, and dissemination of physical and digital materials and provide more efficient and more flexible tools for transforming digital content to suit the needs of end-users. In developing countries, there has been the main issues and challenge of lack of technical knowhow in students, also awareness among the students and researcher towards digital libraries.

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