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## Role of Digital Libraries in E-Learning

Prachi Singh

### Abstract

*Today the concept of e-learning or online learning is getting emphasis in many organizations like academic, research, corporate or government. But method of implementation of e-learning is still a question. Many organizations have developed separate IT based systems for e-learning which are independent and costly as well. While others have preferred to develop e-learning modules integrated to their other IT technology based systems like KM System (Knowledge Management), Content Management System (CMS), or digital library. Digital Library provides a very well framed and compatible base for e-learning module. This article deals with various aspects of e-learning, strategies for e-learning implementation, role of digital libraries in developing e-learning, and few cases where digital libraries are successfully used in e-learning.*

**Keywords:** Digital Library, E-learning

### 0. Introduction

Let's consider the term *library* the way Dr. S. R. Ranganathan defined & called it a "growing organism". In past decade we have observed a dynamic change in anatomy and physiology of library. What was considered to be a storehouse for books some few years back has now become an information provider and valuable capital of an organization.

As the type of format of information changed from written to e-format, libraries assumed the role of digital libraries. The concept of digital libraries was a major success as it came out of closed walls of library and reached users in their home, workplace and even while traveling, with the help of laptops. This approach reduced major barriers in the path of information dissemination like distance and time.

Today library is a hybrid of print and digital resources. Many developed and automated libraries who have large amount of digital content are now trying to provide e-learning through their digital libraries' web interface, thereby developing a fully dependable knowledge system. In this article we will look upon various aspects of e-learning, how digital libraries can contribute to e-learning, and practical examples of some universities and institutes which are in the process of developing e-learning mechanism through their digital libraries.

### 1. E-Learning

As the world is contracting and time is reducing, human aspire for more information in less time. Internet has come as boon at such a time. As far as teaching and learning is concerned, educators and students, both find it difficult to take out time from their busy schedules to meet and spend time at a place like classroom. Here Internet brings in picture "Online Learning" or "E-learning". Online education is becoming increasingly common in schools, colleges, and the training realm.

Online education in particularly best mode for distance education, i.e. settings in which learners and teachers are located in different places and all or most interaction takes place via the network. In E-learning learners are responsible for their own education & study strategies to accomplish their academic goals.

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## 1.1 Brief History of E-Learning

Use of technology in learning, in true sense, started around the beginning of this century with the invention of films and motion pictures. During World War II world witnessed real use of technology in learning when U.S. Army used training films to educate their army-men and to maintain consistency in U.S. based training. Since then large scale developments have taken place at different fronts like academic, government, and corporate. In the sixties, early “teaching machines” and “programmed texts” paved the way for embryonic computer-based training. Instructional films became more creative and educational film business catered to both public and private sectors [1].

Next era of e-learning started when television was invented. But television did not become everyone’s teacher due to the lack of interactivity with learner. The necessity of interactivity renewed efforts in the area of computer-based training (CBT). In the seventies and eighties a tremendous efforts were put in this field.

The real revolution in the field of e-learning started with the coming up of Internet. As quoted by Nobel laureate Gary S. Becker in 1992- “The Internet has begun to radically change the teaching of adults in the U.S. who want to improve their skills or further their general education.”

Today’s Internet (Web) is like a universal library which is anyway easy to manage, update with worldwide accessibility. Actually Internet is the perfect E-learning tool available to all and sundry.

## 1.2 Few Definitions of E-Learning from different sources

- ✍ Online Education or E-Learning refers to any form of learning/teaching that takes place via a computer network. Network can be of any form, viz. LAN, WAN, MAN or WWW. Various computer functions that are most commonly used for e-learning are: Electronic mail (e-mail), e-conferencing, groupware programs which include electronic whiteboard (shared writing space) kind of technologies.
- ✍ E-Learning refers to the use of Internet technologies to deliver a broad array of solutions that enhance knowledge and performance [1].

## 2. Digital Libraries in E-Learning

According to Gary Marchionini (1995) [2], libraries serve three roles in the learning process-

1. Sharing valuable resources- Digital library plays vital role here by allowing several information seekers to access materials simultaneously regardless of their physical location.
2. Preserving and organizing artifacts and ideas- million books project is a live example of a digital library serving for preserving old artifacts of intellectual importance by archiving their soft copies. The material is digitized with the help of scanning devices.
3. Bringing people and ideas together- Digital libraries offer diverse information resources shared by groups of learners irrespective of physical space and time. Digital libraries bring people together with different learning missions.

Various aspects that make e-learning through digital libraries an advantage are:

- ✍ Full text digital resources contained in a digital library database can be directly linked to its e-learning module.

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- ✍ Efficient Digital Library software provides ability to identify, access, evaluate, organize and communicate information and knowledge. This happens because most of the Digital Library softwares use maximum librarian's tools including metadata for effective retrieval, standards like Z39.50 for effective information interchange between two different libraries, etc.
  - ✍ Digital Library of an organization or institute is Intranet based, thus providing a readymade framework for e-learning.
  - ✍ Digital Library provides a platform for all information and knowledge communication, user to user interaction, and provides facility for dual role of user as both teacher and learner.

### 3. Creating E-Learning Strategy

Implementation of E-Learning in an organization needs a well framed strategy. Normally we can consider that if an organization has a digital library with even most primary modules, it can provide a good foundation for developing e-learning system. But to develop an e-learning module we need to plan on various levels like technology level, policy level and organizational level. Marc J. Rosenberg, in his book "e-Learning: Strategies for Delivering Knowledge in the Digital Age" [1], describes in detail the various viewpoints required while planning e-learning for an organization. Following are few of the necessary steps for developing a E-learning strategy:

#### 3.1 Who will be participants?

First and foremost we should identify who all should participate in strategy development. People who should be involved at initial level should include training managers, developers, instructors and administrators. In second stage all prospective clients should be involved like students, organizations (if the project is big one), sponsors and other stakeholders like senior managers. On the basis of the compiled result of these two discussed stages, IT department should be included to discuss technical aspects. Once whole strategy is clear a small task force should be used further

#### 3.2 Analyzing Current Situation

The first step after identifying all participants is to fully analyze the current situation as it pertains to the ability to launch and sustain e-learning. It includes identifying main objectives of your organization, current state of your overall learning and development efforts, and analyzing how much support you will get from the administration. You also need to analyze needs of the clients, the current state of the technology infrastructure in your organization and current level of funding for e-learning.

#### 3.3 Describing The Desired Situation

Once we know everything about our organization's needs and current situation, we need to design the future picture of e-learning in our organization as desired by us. So we create a detailed description of where you want your learning and development efforts (including e-learning) to be. For this identifying following points can be helpful-

- ✍ Identify what are the best practices in learning and development, and e-learning.
- ✍ What should be your e-learning value proposition?
- ✍ Building a vision and mission for learning and development.
- ✍ What principles are most important to you in guiding how you will implement your mission and realize your vision?

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- ✍ How learning and e-learning are defined by you and your organization?
  - ✍ The support you receive from top management

### 3.4 State your vision and mission

A vision statement describes a future state as if it were the present. It's more about how you will be recognized and valued internally and through the eyes of your users. Once you agreed-upon vision, develop a mission statement, i.e., what will you do to achieve your vision.

### 3.5 Gap Analysis

Create detailed specifications of the key disparities between the current and desired situation, along with associated descriptions of root causes.

### 3.6 Conduct a SWOT analysis

A SWOT analysis looks at the entire organization to determine its strengths, weaknesses, opportunities, and threats, either at the moment or at some future point in time.

### 3.7 Strategy Recommendation

Based on the work done till now make specific strategic recommendations to close the gaps, implement the mission, and achieve the vision.

### 3.8 Build an Action Plan

Prepare an action plan to implement e-learning on the basis of the findings of the till now done research and studies. This is where the specific tactics are described in enough detail so everyone knows what needs to be done. In this stage,

- ✍ Identify critical success factors.
- ✍ Set and stick to timeliness and milestones.
- ✍ Provide adequate funding for implementation.
- ✍ Define and implement a change management plan.
- ✍ Define and implement a communications plan

## 4. Practical Examples of Digital Libraries in E-Learning

### 4.1 University of Strathclyde Library Services

University of Strathclyde Library Services [7] has been providing information resources for the teaching and learning of the University since many years. Its role in supporting virtual learning is no different. The Library continues to provide assistance to teaching staff engaged in e-learning. They concentrate on making the learning environment Information-rich.

It provides advantage over traditional learning in following senses:

- ✍ Rather than pointing to digital information resources such as e-books and e-journals, you may wish to import the full text of an e-resource in its entirety into your VLE space or class web pages.

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- ✍ The Library can offer advice on the legal sourcing/acquisition of files and digital information resources on digital rights clearance.
  - ✍ If, for example, some user want to mount a specific subject list of e-journals subscribed to at Strathclyde within his/her learning environment (not as external Library page), Library can create a stable, static url that user can place as an anchor in the code of one of his/her pages.

#### 4.2 Cognitive Arts and Columbia University

Cognitive Arts and Columbia University [3] have come together to build high quality e-learning courses as a way of offering the educational advantages of Columbia to a wider audience. Columbia Continuing Education Online is a very good example of Columbia's initiations in the field of online education. The relationship of Columbia University with Cognitive Arts allows Columbia to examine and deploy new media as tools to enhance their educational resources and to expand content delivery opportunities, in keeping with the overall mission of the University [4].

#### 4.3 RGUHS E-Learning Program

RGUHS (Rajiv Gandhi University of Health Sciences) situated in Bangalore, India, has developed an e-learning module called MedInfo (made from Medical Informatics) which provides information relevant to medical sciences. This E-Learning platform [5] is developed with the support and guidance of Health InterNetwork(HIN-India Project) and the World Health Organization. MedInfo aims to provide for both self education and trainer assisted education, in accessing and searching Biomedical literature on the web including:

- ✍ international and national sites in the public domain available in a variety of content categories spread throughout the world.
- ✍ using the National Health Information Collaboration

#### 4.4 Needs Digital Library

NEEDS (National Engineering Education Delivery System) is a digital library for Engineering education. NEEDS [6] provides web-based access to a database of learning resources where the user (whether they be learners or instructors) can search for, locate, download, and comment on resources to aid their learning or teaching process over the world wide web. In addition, NEEDS supports a multi-tier courseware evaluation system including a national award competition, the Premier Award for Excellence in Engineering Education Courseware.

NEEDS' vision of what a digital library for undergraduate engineering education should be is more than just a traditional academic library in digital form. The digital library of the future will be a community of learners — encompassing faculty, students, and life-long learners.

#### 4.5 iLumina Digital Library

iLumina is a Digital Library [8] of sharable undergraduate teaching materials for chemistry, biology, physics, mathematics, and computer science. iLumina was funded by a DLI-Phase 2 grant from the National Science Foundation. It was developed by the University of North Carolina at Wilmington, Collegis, Inc., Virginia Tech, Georgia State University, Grand Valley State University and The College of New Jersey. It is designed to quickly and accurately connect users with the educational resources they need.

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## 5. Conclusion

Digital Libraries have proved themselves not only as effective repositories of knowledge and information, but also as effective communication medium between peers and for scholarly discourse. Jumping a step ahead, now Digital libraries are capable enough to provide an information rich platform to both instructors and students to teach, learn and share knowledge. Thus in future we will witness major role of Digital Libraries in online learning or as we call it "e-learning".

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## About Author



**Ms. Prachi Singh** presently working in Indian School of Business as consultant of Learning Resource Centre. She did her ADIS (Associateship in Documentation and Information Science) course from DRTC, ISI, Bangalore (Documentation Research and Training Centre) in 2004.