
TOWARDS E-INFORMATION LITERACY : QUEST FOR INTEROPERABLE WEB BASED INFORMATION SYSTEM

Gayatri Mahapatra

Abstract

The paper introduces e-information literacy as the accepted phenomena, which helps in delivery of information, training or education programs via electronic media. It includes wide range of electronic communications like, Internet, intranet, satellite broadcast, digital television, CD-ROM, DVD, audio and video tapes, etc. Discusses the impact of e-learning on distance education and emphasizes on a paradigm shift that has facilitated the transfer of focus from the teacher to learner, and the institution of instruction to the study –room/ workplace of the learners. Also emphasizes on nature of libraries and the professional activities of the librarians are fast changing because of introduction of web technology in to the publication and communication of information, influencing the strategic direction of the development of libraries in the society. Due to interoperable opportunity, the new technology allows information to be easily personalized and customized. Librarians and LIS faculties can contribute to foster the skills through the strategic use of e-information learning tools and devices for better outcomes. Elaborates in detail about the status of e-education programmes along with course content and techniques to be used for e-education implementation in India. The LIS professionals and the web-technologists along with the planners have to play the key role for proper implementation of this e-information literacy programme that can reach to every sectors of our society.

Keywords : E-information literacy, E-learning, Information literacy, Digital learning, User Education.

1. Introduction

The advances in computer science and ICT have brought tremendous opportunity for electronic learning (e-learning). Electronic learning is an accepted knowledge delivery system in the countries like, USA, Germany, Japan, Korea, etc. But the concept of e-learning in India is at threshold. Information literacy is an essential component of the educational system to prepare citizens to live and work in an information rich society. Information literacy is the ability to obtain, assimilate and apply the right knowledge for living and working. In India 'Right to Information Act 2005' has come into force and now enacted recently for better e-governance. The increasing importance of e-governance is widely known, which is an IT driven methodology of political and public administration that improves efficiency, brings transparency and ultimately proves economy in a nation. The in-place e-information literacy brings people and administration together and closer for maximizing efficiency and thus making the government accountable, responsive and alert. To upgrade the quality of education, several agencies like UGC, IGNOU, GYANDARSHAN etc. have started promoting e-information literacy as tele-education program through INSAT and EDUSAT.

The electronic information or e-information products are revolutionizing the publishing industry through rapid proliferation of electronic reading materials in the market place. The growing popularity of the web, public acceptance of new and easy-to-use technology of e-information is paving the way for its dominance.

Authors, editors, publishers, librarians and most importantly readers—all are witnessing a change from paper to electronic media for storage, dissemination and handling of information.

E-information literacy involves the use of computer or electronic devices in some ways or other to provide training, educating or learning of methods and materials. CD-ROM and DVD can be used to provide learning methods with the interoperable advantages of web-based system. Alvin Toffler [1] once quoted that “the illiterate of the 21st century will not be those who cannot read and write, but those who cannot learn, unlearn, and relearn”. Thus e-information literacy is the delivery of information, training or education programs via electronic media that includes wide range of electronic communications like, Internet, Intranet, satellite broadcast, interactive television, CD-ROM, DVD, audio and video tapes, etc.

2. Need of E-Information Literacy

E-Information literacy has become the essential component for LIS profession. Because in this era of world Wide Web (WWW) library users have to use the latest information sources and apply techniques of information retrieval having the skills of inherent interoperability. The e-information literacy has thus influenced the professional habitat of the entire LIS profession. The main reasons of e-information literacy for the present society may be stated as follows.

1. Rapid increase in quantity and variety of formats of recorded information.
2. Hybrid scenario of information and communication technology
3. Pressing demands for faster delivery of information
4. Libraries expansion beyond walls.
5. Diffusion and dispersal of information.
6. Interdisciplinary growth of literature.
7. Emergence of data mining and absolute web based system.
8. Increased fragility and vulnerability of information.

Out of these, e-publishing has achieved significant momentum on the web that represents general web publishing and e-educational platform to scholarly information with increased interoperability. It is now accepted fact that e-publishing has got significant advantages over print version i.e (i) faster access and distribution of information resources and delivery, (ii) interactive possibilities of e-publications that enhance collaboration between individuals and disciplines, (iii) offers greater scope for adoption of different publications models, access and easier searching. The multimedia capabilities also embedded as supportive base for e-publishing which provides most exciting possibility for e-information resources. The e-publishing has, therefore brought the necessity of e-learning.

3. The Interoperability of E-Learning through Web

As mentioned earlier the term e-learning is most frequently used to refer to computer based training which incorporates technologies that support interactivity beyond what would be provided by a single computer. Therefore, e-learning is an approach to facilitate and enhance learning through the use of devices based on both computer and communication technology. Such devices can include personal computers, CD-ROMs, Digital television, and mobile phones, etc. Communications technology enables the use of the Internet, email, discussion forums, and collaborative soft wares, etc. E-learning may also be used to support distance learning through the use of WANs (Wide Area Networks), and may also be

considered to be a form of flexible learning where just-in-time learning is possible. Courses can be tailored to specific needs and asynchronous learning is possible. Where learning occurs exclusively via online, is called online education.

The e-learning application, therefore, begins to look very much like a blogging tool. It represents one node in a web of content, connected to other nodes and content creation services used by other students. It becomes, not an institutional or corporate application, but a personal learning center, where content is reused and remixed according to the student's own needs and interests. It becomes, indeed, not a single application, but a collection of interoperating applications—an environment rather than a system.

The model of e-learning as being a type of content is produced by publishers, organized and structured into courses, and consumed by students and learners. Web Based Instruction (WBI) in e-literacy programme is recognized as a three stage process in practice[2]. The first stage is visualized as source level server side processing, the second as transmission of the WBI-deliverables and the third as user level client side processing. Most important component of WBI would depend upon the development of the high quality deliverables. Any WBI needs to satisfy the pedagogic-instructional and content related needs, technological hardware and software needs and economic-socio-psychological and physical needs.

At present e-portals of various organizations come across as gateway for the websites that aggregates information from variety of sources, providing access to information network and set of services through the web. This approach to learning means that learning content is created and distributed in a very different manner. Rather than being composed, organized and packaged, e-information learning content is actuated a blogging pattern. There is also an increasing recognition that learning is becoming a creative activity and that the appropriate venue is a platform rather than an application.

E- information learning may be categorized into four areas:

1. Knowledge database : key word searching
2. On-line support : discussion forums, chat room, e-bulletin board, emails, instant messaging.
3. Asynchronous training: CD-ROM based learning, Network based learning, intranet based training, access to instructors through on-line bulletin board, on-line discussion forums and email. In this mode both learner and the tutor get time to think over their respective responses.
4. Synchronous training: In this type of training there is use of voice and vision where both learners and the teacher s need to respond then and there. A real-time training therefore communicates directly with instructor, Internet websites, audio-video conferencing, Internet telephony, live broadcast to class room learners.

Rob Darrow[3] visualizes this perspectives as" web literacy" a subset of information literacy, requiring the ability to access, search, utilize, communicate and create information on the world wide web. Nevile, L et al [4] describe the need for an information model and specifications that support a new strategy for delivering accessible computer based resources to learners based on their specific needs and preferences in the circumstances in which they are operating. The strategy would augment the universal accessibility of resources model to enable system to focus on individual learners and their particular accessibility, needs and preferences. They propose a set of specifications known as 'AccessForAll'.

4. The Distance/ Virtual Learning

ICT has brought massive changes in distance mode of education. As this trend progresses, we find ourselves in a world characterized by the phrase “ubiquitous computing.” “Where virtual reality puts people inside a computer-generated world, ubiquitous computing forces the computer to live out here in the world with people”. It is seen that beyond all imagination, a paradigm shift has facilitated the transfer of focus from the teacher to learner, and the institution of instruction to the study –room/workplace of the learner. In 1990s ICT has provided a lot of tools such as computers, CD-ROMs, E-mail, Internet, etc. The use of such sophisticated technologies has now enabled the practitioners of flexible learning to stimulate a virtual learning classroom. The virtual classrooms and the virtual universities seem to be the viable realities of the future. The telecommunications media viz., computer, Internet, etc have significantly modified the concept of open/distance university system. The use of ICT has changed the face of distance education from that of face-to- face education(F2F) to an independent mode of delivery of quality education. In distance education use of ICT has reduced the barrier between distance and F2F education, and lead to a kind of convergence unthinkable in both the systems[5].

ICT has helped to introduce many virtual universities in the world, which are operated through Internet and other telecommunication technologies. This has helped to replace or compensate both the campus –based as well as home –based learning environments. These universities use multimedia and other communications and information technologies including www, through its virtual university-learning environment for providing different kind of information including library services.

5. Interoperability and LIS

Today the nature of libraries and the professional activities of the librarians are fastly changing because of introduction of web technology into the publication and communication of information. Further, it will continue to exert a major influence on the strategic direction of the development of libraries in the society. Due to interoperable opportunity, the new technology allows information to be easily personalized and customized, while objectively accessing and learning. Librarians and LIS faculties can contribute to foster the skills through the strategic use of e-information learning tools and devices for better outcomes.

The advent of Internet and multimedia system in the LIS activities has made it imperative that the library professionals should be familiar with the upcoming version of electronic information sources and devices. This will help them to capture any information from any where in the world at the single click as per the information needs of the users. LIS professionals have to be well equipped with the knowledge of e-resources and e-information handling skills to understand the offerings of virtual library environment. The skills of interoperability of web-based system are very much desirable to educate the information-illiterate users for OPAC and CD-ROM offline access and browsing. Librarians need to educate and re-educate themselves to acquire new skills and competencies from time to time for their readiness to a new role. They need to cultivate the concept of life-long learning of e-information skills to percolate the knowledge handling and organizing by the specialist and general users [6].

6.The Trends

The horizon has been expanding on the information literacy with the emergence of electronic gadgets. Therefore, different kinds of literacy activities are obviously evolving—audio-video literacy, computer or digital literacy, information literacy, etc. Traditional theories of distance learning, of (for example) transactional distance, as described by Moore[7] have been adapted for the online world. Content is organized according to this traditional model and delivered either completely online or in conjunction with more traditional seminars, to comforts of students, led by an instructor, following a specified curriculum to be completed at a predetermined pace.

The nature of the Internet has begun to change. These changes are sweeping across entire industries as a whole and are not unique to education; indeed, in many ways education has lagged behind some of these trends and is just beginning to feel their awareness.

One trend that has captured the attention of numerous experts is the changing nature of Internet users themselves. Sometimes called “digital natives” and sometimes called “n-gen,” these new users approach work, learning and playing in new ways[8]. They absorb information quickly, in images and video as well as text, from multiple sources simultaneously. The users prefer random “on-demand” access to media, expect to be in constant communication with their friends (who may be next door or around the world), and they are as likely to create their own media [9].

The manner in which the information searching skills of new generation of users is changing, is a matter of emerging concern. for the library profession.

In learning, these trends are manifested in what is sometimes called “learner-centered” or “student-centered” design. It is now placing the control of learning itself into the hands of the learners. “The changing demographics of the student population and the more consumer/client-centered culture in today’s society have provided a climate where the use of student-centered learning is thriving”. Learning is characterized not only by greater autonomy for the learner, but also a greater emphasis on active learning, with creation, communication and participation playing key roles, and on changing roles for the teacher. In this context it is stated that chaos is a new reality for knowledge workers [10]. In which learners attempt to foster understanding by meaning-making tasks. The learner’s challenge is to recognize the patterns, which appear to be hidden. Meaning-making and forming connections between specialized communities are important activities. Readers of Douglas Rushkoff’s *Cyberia* recognizes a similar theme as knowledge-working is no longer thought of as the gathering and accumulation of facts[11]. The breaking down of barriers has led to many of the movements and issues that are visualized on today’s Internet. Sharing content is not considered unethical; indeed, the hoarding of content is viewed as antisocial.

7. The Technology

The dominant learning technology adopted today is a type of system that organizes and delivers online courses as the learning management system (LMS). This piece of software has become almost ubiquitous in the learning environment; companies such as WebCT, Blackboard, and Desire2Learn have installed products at thousands of universities and colleges and are used by tens of thousands of instructors and students. The learning management system takes learning content and organizes it in a standard way.

7.1 The Web 2.0 : With the emergence of the Web 2.0, it is not only a technological revolution, but it is a social revolution. It’s about enabling and encouraging participation through open applications and services. For last one decade, the web has been considered to be a medium, in which information was transmitted and consumed, a platform in which content was created, shared, remixed, and passed along. As a part of e- information literacy people were doing with the Web was not merely reading books, listening to the radio or watching TV, but having a conversation, with a vocabulary consisting not just of words but of images, video, multimedia and whatever they could get their hands on. Web 2.0, a vision of the Web in which information is broken up into “micro content” units that can be distributed over dozens of domains. The Web of documents has morphed into a Web of data. The e-learners are no longer just looking to the same old sources for information. Now they are looking to a new set of tools to aggregate and remix micro content in new and useful ways[12].

7.2 E-Learning 2.0 : In the world of e-learning, the closest thing to a social network is a community of practice, articulated and promoted by people. According to Wenger, a community of practice is characterized by “a shared domain of interest” where “members interact and learn together” and “develop a shared domain of resources”[13].

8. The Global Scenario

E-information literacy has become a global phenomenon. Efforts are being made world wide to make people e-information literate and make them gain skills to their preparedness for lifelong learning and effectively utilize the super flow of digital information.

Some good examples of countries in which governmental policies reflect the importance of ensuring an information literate society are Singapore and Australia. Their project stressed the importance of e-learning methodology and technology for the improvement of quality of education with special emphasis on the complete e-learning strategy. Besides these the University Computer Centre – SRCE, at the University in Zagreb also has introduced the work on the new project for quality improvement by E-Learning Technology. The project aims to improve the quality of university education through application of e-learning methodology and technology; to prepare and adopt the legal and technological framework and standards for application of e-learning methods in Croatian Universities, through transfer and adaptation of knowledge and experience of the European universities. As a part of European community, important cooperative initiatives to digital illiteracy are being accomplished to the underprivileged society. Standards for e-information literacy have also been developed in USA to help librarians and educators to educate citizens for future work in the information society.

9. Indian Scenario

In India the e-information literacy began since 1980s but it is yet to be available for rural areas in all parts of the country. However, this e-information literacy provided by the government organizations with its farsighted objectives can reach to the learners through various available schemes and infrastructures. Some of these programmes are:

1. Project CLASS : In 1984, Government of India started a project called CLASS (Computer literacy and studies on schools). Under this project, the computer literacy has become compulsory for Class XI and XII. In the 7th Plan 2598 schools and in the 8th five year plan 2371 schools started computer literacy. It was a step ahead towards e-information literacy in Indian environment[14].
2. Educational technology scheme : Under this scheme, audio software (cassettes) and videocassettes were provided to the schools for training the students. As a result of this, AIR and Doordarshan started broadcasting educational programs in various states. At present most of the schools in India started computer subject as compulsory in their course and developed their schools infrastructures with TV, audio-cassettes, video cassettes, CD-ROM, etc.
3. Internet subscribers in India : India stands as the second largest work force in IT industry after USA. In India more than 380 university and 920 colleges are providing computer education. In India out of the total Internet subscribers, 60 percent subscribes Internet for their personal use at homes [15]. E-educational organizations in India are attempting to provide e-literacy development and training solutions to create channels of instructions and learning programs. Some of the useful websites/URLs are :

1. www.gurkulonline.com.in/mission.asp. This provides dedicated on-line education to the remotest corners of the world through net.
2. www.mircobitassociates.com/new/elearning.htm. Microbit associate are offering e-learning solutions for the requirements of corporate training in to e-learning environment.
3. www.indiainfo.com/news/.asp?dat=9895 Satyam education services with collaboration of USA are trying to provide e-learning in pharmaceutical and biotechnology field..
4. EDUSAT: Educational Satellite (EDUSAT) was launched in 2004. EDUSAT enables information to be broadcast in local languages and devoted to long distance learning across the country. These programs can be viewed on TV sets through a low cost receiver. A number of technical colleges, universities and other colleges are connected to this service.
5. GYANDARSHAN: Prasar Bharati and IGNOU jointly launched GYANDARSHAN in 2000. It is an exclusive educational TV channel working jointly with SIET, DST, NCST,etc. which transmits educational programs round the clock.
6. ERNET: Educational research Network (ERNET) founded by UNDP which is an autonomous scientific society of Ministry of Information Technology, Government of India. It is serving the academic and research community for the last 15 years.
7. UGC Education Program: UGC Higher Education Project with collaboration of INSAT started countrywide classrooms to upgrade and enrich quality of education towards e-learning. The inter university CEC(Consortium for Education Communication) along with various mass communication research centers were set by UGC.
8. IGNOU Doordarsan Telecast: IGNOU started telecasting education programs since 1991 for distance learners.
9. INFLIBNET : After successfully networking over a 100 universities in the country, INFLIBNET is targeting colleges. DTH (direct to Home) telecast and electronic journals have provided a new depth to distance learning and promise to integrate the disparate areas of our vast country into a seamlessly merged community of learners.
10. Public Information Kiosks (PIK): It provides information on finger touch of the users. In common public, the kiosks at railway stations, airports, tourists' information centres and reputed institutions are getting popularity for familiarization and learning. It helps the users in deciding their further course of action and rescheduling their program without wasting energy and time. On the other hand PIK navigates the information literacy culture to support interoperable system at their own. These kiosks are expected to increase at more places in future, when e-governance would be the way of governmental routines implementing the right to information act in Indian scenario.
11. Talking Kiosks: This is meant for the villages where the villagers do not read or write and are still illiterate. IIT Chennai developed such a device, perhaps first in the country to provide continuous speech output from in interactive user interface. Another group at IMB's India Research laboratory in New Delhi has built speech recognition system that listens to sentences in Hindi and Indian English and translates it into text. Lucknow based company Prologix has developed a software called 'vaachak' that enables text to be read out in Indian languages. In Uttaranchal, there are 3000 Hindi speech enabled 'kisan soochana kendras are being installed under the state government project[16].

The e-governance has taken up the shape through the country by making use of ICT tools to improve literacy and to support the spirit of Right to Information. This is provided with seamless communication connectivity of PCs and communication devices which is interoperable on Internet. In addition to these, web based interoperable systems and platform, Rediff, Aptech, Zeenext, Cetech, schoolnet, Growell, Infotech, etc are also attempting to provide e-literacy in India.

10. E-Information Literacy Course

A set pattern for adequacy of e learning for the novice and tactical learners is required to be envisaged. The course content of e-information literacy program may be structured as given in the description along with the speculated training [17].

1. Information literacy: definition, information sources, document types, reference sources, databases, library catalogues. Training: Information literacy pre-test.
2. Consulting libraries: Web pages, library resources, library services. Training: exposures to libraries' OPAC
3. State technical Libraries: OPAC, union catalogue—foreign periodicals. Training: OPAC and union catalogue in integration
4. Electronic Information sources available: Network, Web science, citation index, Mathsci, Full text databases. Training: searching databases like COMPENDEX, INSPEC
5. Document delivery services: web based resource availability Training: Integration of interoperable resources and re-packaging
6. Searching the Internet: on-line databases and off-line databases. Training : searching by topic and comparing the hits.
7. References: bibliographic record and citations. Training: practicing the standardized pattern of references

E-information literacy course can be conducted in following different ways.

- Class room lectures
- Seminar /workshops
- Trade literature describing guidelines
- Audio-materials
- Individual instructions
- Industry-academia interface
- On-line course/tutorials
- Conducting refresher courses

Sarah McNicol[18] advocates that future strategic research shall be on e-information literacy skills and digital video content. He stresses on teaching and learning to integrate the skills into courses to make the best use of resources.

11. Strategies for Promoting E-information Literacy

A well thought strategies could be worked out to promote e-information literacy through various programs and campaigns at various levels.

1. Government's policy for National Information literacy for educating the use and handling of traditional and digital information formats.
2. Initiatives by Educational institutions to design and develop the e-information literacy curriculum at different levels of learning.
3. Organizing forums for campaigning about the needs of information literacy in the changing scenario
4. Guidelines and norms shall be decided by the state and central government bodies under the control of Right to information Act.
5. Creation of dedicated website/home page with interlinking provision facilitating the e-learners when felt necessary.
6. Professional library associations/societies to play vital role launching the information literacy movement at national, regional and local levels.
7. Combining the information literacy mission with the curriculum at schools.
8. Consortia approach with INFLIBNET, NIC, and DELNET to share the expertise for e-learning objectives.

12. Conclusion

The new domain of information in the digital form is rapidly replacing the traditional printed resources, resulting in increased knowledge of computer skills, processing tools and fast communication network connectivity. Digital information or e-information is more abstract, dynamic and vulnerable, that further needs of how to enhance its value and safe handling. It becomes an important pre-requisite for users those who are progressing for information in digital rich society. As information is increasingly codified in digital forms, new skills and competencies are required to operate to handle this fragile technology for searching, organizing, managing, using and re-using them.

With the changing scenario of hypermedia and web culture, information literacy is understood as digital literacy. Today, e-learning mainly takes the form of online courses. The e-learning thus can be introduced in the university education system by introducing the programme as a project. By making a project, it intends to design and establish a sustainable and lasting system of support, as well as network of experts to promote and support e-learning programs and promote successful application of e-learning methods and technology as a tool for improvements in education.

The present Information society is witnessing vast quantities and constantly generating of information embodied in a variety of formats. To lead the way in IT culture, the users have to be not only e-information literate but also be well competent to capture and understand the value and economics of information use. It is beyond any doubt that the new technologies, especially e-learning technologies introduce many new possibilities in the process of learning, provide for new quality and new forms of communication and cooperation between teachers and students.

In this respect library professionals have great responsibility not only to provide information available in all kinds of sources for productive information work but also work with the policy makers to ensure that an information literate society becomes a governmental priority. As described earlier e-information literacy

endeavors in India are still at threshold and more interoperable inputs are needed to understand the complexities and intrinsic difficulties in the national and regional economic framework, to prepare people for digital habitat to live in. The e-information literacy is possible only through developing net works accessible to all sectors of the society, which demands a lot of cooperation in various levels. For this, the policy makers may come forward to find out fruitful solutions to this great work. But among all, the Library professionals and the web-technologists have to play the key role for its proper implementation and developing high bandwidth, high quality communication technology which can reach to every sectors of the society. It is now high time for all of us to think in this direction of socializing the benefits of e-information literacy in our country in every sector and find out the ways and means to shift to the information-highway without further delay. Because the progress of nation is only possible when each one of entire population is accessible to all kinds of latest information under RTI Act 2005.

To be "information literate" in digital environment, users must be "technology literate". Understanding how to use technology must be a pre-requisite of an e-culture to actualize proficiency in finding, using, and evaluating information successfully.

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About Author



Dr. Gayatri Mahapatra is a Reader in P. G. Department of Library & Information science, Utkal University . Earlier Lecture in Sambalpur University. Received Master's degree in Botany from Utkal University. Obtained M.LI.Sc. Degree from BHU, and Doctoral degree in LIS from Utkal University. Earned long teaching experience and done several research works on Bibliometrics and related areas. Published more than 30 papers in leading Indian and foreign journals. Published book on Bibliometric studies. Produced two doctoral scholars.

E-Mail : gayatri858@yahoo.com