ROLE OF INFORMATION LITERACY IN THE PRODUCTIVE USE OF INTERNET INFORMATION FOR ACADEMIC AND RESEARCH GROWTH

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Abstract

The Paper discusses the issues related to information literacy in I;the context of internet

Keywords : Information literacy, Internet Information

1.   Introduction

The popular phrases-information society, the computer age, the electronic revolution, cyber society, and the information Age-are all labels currently used to describe the contemporary world that has undergone profound changes in work, play and relate to the last three to four decades. *Learning and knowledge* have come to the centerstage of the time and have emerged as superhighway to a productive and satisfying life. Information—in particular, electronically derived digital information—and new communication technologies are the important factors of societal transformations. There is an increasingly high value placed on information as a means of enabling the progress and enhancement of virtually every sphere of endeavor. Access to information is one of the dominant factors for the well-being. The need to determine what information is needed, where to obtain it, how to select, evaluate it and utilize it, purposefully for the collective progress is of critical importance. This paper emphasizes the importance of information literacy in promoting Internet use for academic and research growth. Other aspects discussed here are information overgrowth, growth and development of information and its usefulness, various forms and formats of information sources, problems in accessing electronic information and the various modes of teaching information literacy to use Internet effectively. The paper concludes that information literacy efforts are needed in academic libraries for the organized growth and also to speed up the research activities.

2.   Information Overgrowth

The amount of new information being produced is so large that it is almost beyond the imagination of the humans .The information overgrowth also termed as data smog, information overload, information glut. The overgrowth of information is making people sick, creating many setbacks in the workplace environment. It gives rise to 'analysis paralysis' and 'information anxiety'. Proliferation of information these days can be compared to tsunami. In this context, evaluating, understanding and using information is becoming a daunting task. It is estimated that, more than 1.3 trillion new documents are produced each year in the US alone. It would take years, decades or even centuries to cover even 1/10th of 1% of available information in any given field of science or technology. Information systems have created a raging torrent of information. There has been more new information produced in the last 30 years than in the previous 5,000[2]. Added to this the absolute explosion of the World Wide Web in the 90's – an explosion that overnight turned telecommunications from a specialized thing done by propeller heads who spent their spare time waxing their modems for higher speed tin something deeply embedded in the public consciousness. Today the number of users can be measured in hundreds of million.

3.   Information Literacy

Information literacy has become a hot topic in higher education as learners encounter a rapidly expanding and increasingly complex information landscape. Both students and teachers need a new set of skills, knowledge and values to be successful in the 21st Century. In recent years considerable attention has been paid to the concept of "information literacy" as a prerequisite for lifelong learning. Information literacy refers to a constellation of skills revolving around information research and use. Information Literacy is an umbrella concept that encapsulates a range of literacies and skills and draws them together on the understanding that all literacies involve effective interaction with information within different formats, contexts and settings. The concept is no longer just a library issue. It is the critical campus wide issue for the twenty-first century and is of keen importance to all. Information literacy skills can be seen as a multiple extension that relates to the total information acquisition, filtering, interpretation, production, communication and legal and ethical process irrespective of the technical or media form. Digital information literacy or electronic information literacy refers to a person's ability to use information literacy skills in electronic environments such as the Internet or digital databases. According to report of ALA "ultimately, information literate people are those who have learned how to learn. They know how to learn because they know how knowledge is organized, how to find information, and how to use information in such a way that others can learn from them" [3].

3.1   Goal of Information literacy

The goal of information literacy is to ensure that people understand how to, and why they need to learn about sources in the information society. Some of these sources will be in the library, others will be in the world at large. Information literacy instruction is tied to preparing students to enter the world of scholarship. The shift in focus from teaching to learning in higher education can be paralleled in the shift from bibliographic instruction to information literacy. Learning theories state that successful learning includes the persons ability to increase their knowledge, to memorise and reproduce that knowledge, to apply it and understand what was done, to see something in a new way, and finally to change as a person. Learning information literacy gives people the ability to question, research, find meaning, develop ideas, analyze, evaluate, synthesize, reason, communicate, transfer, solve problems, make decisions, understand nature of information, reflect, use technology effectively, use information safely and responsibly and produce new knowledge. It is necessary to make the learners feel more confident and skilled in their ability to manage information. There is a strong link between information skills, lifelong learning and professional skills. To ensure that firstly students are given the necessary skill sets which enable successful completion of their higher education, whatever their educational background; secondly to create marketable graduates who can function effectively in the knowledge economy. For all this learners are to be made information literate. Information literacy is also needed to avoid plagiarism. Cheating, especially Internet cheating which is increasingly becoming very common in the academic world. Plagiarism is the deliberate or unintentional use of someone else's work and not giving proper credit to its creator. It is as simple as buying a research paper from a term paper mill, or as minor as not properly citing a source. The Internet may have made it easier for the "cut-and-paste generation" to copy and use plagiarized works.

4.   Rapid growth of Internet as a viable mechanism to information, communication and research

The Internet is global. This global capability has created online communities of people with common interests. It has facilitated research and human interchange and interaction. It is a common belief that the Internet has diminished the need for good libraries. But, worldwide the opposite has occurred because the Internet and its growth has enabled all kinds of libraries including the academic libraries to improve

their resources and services thereby attracting more number of users. The web is enhancing the value as people turn to it for help in getting online and finding what they want, relying on this the librarians are able to navigate and link an increasingly complex world of information.

The Internet has become an increasingly important feature of the learning environment for teenagers. Research by the Pew Internet & American Life Project shows that teens use the Internet as an essential study aid outside the classroom and that the Internet increasingly has a place inside the classroom. It is estimated that: the Internet has over four billion pages. 7,000,000+ new Web pages are created daily. Information on the Internet doubles every six months. More than 60% of all children, and 78% of those between the ages of 12 and 17 go online, and almost all of them use the Internet for schoolwork. Adults, like teens, use the Internet to teach themselves new things or to satisfy their curiosity about a subject. Eighty percent of all Internet users have done an Internet search to find the answer to a specific question that they have, and 16% of adult Internet users go online on a typical day to get an answer to a question

It is aptly stated that, "when there was no Internet one was to go to the library and walk around looking for books. In today's world one can just go home and get into the Internet and type in your search term. The results are endless. There is so much information that you have to ignore a lot of it." Searching for information is no longer relegated to the traditional library or media center. Learners rely on professors and other students more than on librarians for help in completing their research. In the academic environment, students are being embedded to Net more and more. Young generation soon realize that their rewards on the Internet will be in proportion to their investment in learning Net skills, and learn all the more for it. Both teachers and students can be invigorated by the freshness and immediacy of the Net. The Internet will help the students to become 'prepared citizens'. Desktop computers connected to the Internet can lead students to data anywhere in the world, providing extensive resources for their research questions. Video conferencing, newsgroups, e-mail and chat groups offer further contacts for students to expand their knowledge of a particular subject.

4.1   Usefulness of Internet

The Internet is in fact extremely useful for all kinds of things in academic research. For example, opinion and analysis of current events, research findings, policy statements, official statistics, etc on all kinds of things, from almost any country - are a few keystrokes away from a couple of skilled index fingers. Much of the information sources are available from the Internet for free and are easily downloadable. And there's much more. Science students can swap data, exchange ideas and collaborate on projects, entirely online. Focusing on strengthening skills for online research enables students utilize the Internet in ways that make their study and learning more interesting, challenging and rewarding. And all this can be done in real time and is very efficient. Internet is indispensable, but also inescapable. From an early age, computer literacy is now deemed almost a basic survival skill, across the education sectors and attempts are being made make schools, colleges and universities 'wired' for the Internet.

Using the Internet wisely and effectively is going to be the 21st century core competency. Therefore, it should be seriously taught. There is no other opinion that training and awareness in using the Internet is urgently needed to

- mitigate the risks of cyber security breaches
- protect the huge technology assets
- redress the havoc of stealing, cheating and crimes against children in cyberspace
- ensure that all citizens have the tools to participate fully in the democratic process and
- optimize the technology investments that schools have made over the past decade
- create a 21st century workforce[5]

4.2   Possible barriers to access Internet Information

In recent years, the information environment in which learners and scholars work has become simultaneously simpler and at the same time more complex. It has become simpler because …now more information products and online systems are designed so that they are user-friendly and don't require trained information professions to teach the users thus increasing the chances of easy information retrieval. Even the catalogs, indexes and reference tools such as encyclopedias, dictionaries, thesaurus, and subject bibliographies are now available through the World Wide Web and in places other than the library and information centers. The information environment has become more complex because users have wide variety of information sources that greatly vary in form, structure, purpose and mechanics. New skills, knowledge and conception capabilities are needed in information search processes to exploit the appropriate information sources. There are many complexities involved in Internet information access as compared to printed resources. The use of Internet efficiently requires high level of information competence, clear thinking, patience, good knowledge about the Internet facets, good grasping power, ability to learn faster and active, critical bent of mind. While searching on a specific topic of a subject, good knowledge about the subject too is essential. Apart from these, training in using different tools available on the Internet is an additional advantage. Though all these qualities are present in the Internet information user, he/she needs to continuously update his knowledge about the internet issues and the related topics like intellectual property rights, plagiarism, new inventions in the field of Internet, frequent changes and to keep his/her skills active by constant touch. Experience shows learning by doing is the most effective way to learn the Internet skills though it is OK to take the assistance of other users.

Durack, writing on introducing new users to the Internet warns: "Novice network users - like many television viewers - may easily fall into the trap of taking everything they read, see, or retrieve from the Net as the truth.... almost everyone with a computer and a connection can "publish" whatever they want to on the Net. On the good side, people have access to ideas and information that otherwise might be unavailable; on the other hand, no one entity is responsible for verifying facts and evaluating the usefulness of files to ensure any standard of quality, so there is a lot of junk out there in addition to the gems"

Information technology, in particular the Internet and the web, have introduced a new society called network society where people can share information freely, anywhere, at anytime and in any format across the globe. Information networks have become an essential element in the present global economy. Clear, rapid, and effective communication that takes advantage of the networked information contexts of ICTs will be central to students' success. Students routinely produce decent papers without knowing much about research. The World Wide Web has made a lot of information available at one's fingertips, and this means that the students can get more of it for their papers, still without knowing much about research.

There are several kinds of barriers that may cause the exclusion of users from the benefits of the new technology such as: *technical barriers:* energy, telephone, servers, hardware and software; *economic barriers:* costs of acquisition, use and updating and *cultural barriers:* information illiteracy, biases, dominance of English. The interconnectedness and pervasiveness of the Internet and its related services make it difficult to limit access to online information once it is part of the vast, diverse information flow. Current ethical issues online focus on balancing the need for users to conserve their privacy while enabling commercial companies to collect appropriate information about (potential) customers and enabling social scientists to conduct research via online media. The particular protection of the *intellectual property* is one of the most important and difficult ethical, moral and legal questions in the information field[7]. These barriers make it likely that, for the immediate future, the Internet's potential to promote democracy will be exploited only by an educated elite with financial resources and information literacy skills. Education for citizenship, including information literacy, is necessary, if the virtual systems are going to succeed and higher levels of pluralistic competition and political participation are encouraged to provide more opportunities for civic deliberation and public debate [8].

4.3   Access to Electronic Media Made Easy

New literacies are needed along with traditional foundational literacies to make information accessing an easy task in the electronic environment and information literacy is one of them. The new literacies are multiple in nature. These include the skills, strategies, and disposition that allow us to use the Internet and other ICTs effectively to identify important questions, locate information, critically evaluate the usefulness of that information, synthesize information to answer those questions, and then communicate the answers to others. One encounters new literacies nearly every time one trys to read, write, and communicate with the Internet and other ICTs. Examples of new literacies include

- using a search engine effectively to locate information;

- evaluating the accuracy and utility of information that is located on a web page in relation to one's purpose;

- using a word processor effectively, including using functions such as checking spelling accuracy, inserting graphics, and formatting text;

- participating effectively in bulletin board or listserv discussions to get needed information;

- knowing how to use e-mail to communicate effectively; and

- inferring correctly the information that may be found at a hyperlink on a web page [9].

With unlimited access to information via the Internet, the need for and practical value of a physical repository for printed and other material are less compelling today. Research has proved that the size of the online community doubling every year, the number of sites on the Internet increasing exponentially and the costs of transmission decreasing exponentially. The Internet assumes ever-increasing importance for transforming the way people live, work and play; concomitantly, it is fast becoming the way organizations communicate, trade and do business. Information literacy skills are particularly crucial in the Web environment, where authority of information can be difficult to determine, and where many sources that are neither comprehensive nor indexed. Educators must know the context and information needs of communities in order for instruction to be effective.

For librarians to be effective instructors librarians have to develop a basic understanding of contemporary learning theories; Training in the application of critical thinking; Practice in and assessment of successful current teaching techniques and strategies and an understanding of methods and the need of evaluation of teaching, and training in team building. Internet Librarians are better at managing information, know how to track down information, are better at establishing information standards, have credibility, are in a better position than all to teach about internet information literacy, keep a watch in systems to sort information, teach how to think critically about the internet information, more empowered by professional training and creed to articulate freedom of speech, have thoughtful constructive role to talk about copyright and information and help in giving awareness about new norms which say what information is public and what information is private.

4.4   Information Literacy Teaching & Training in Internet Environment

Information literacy instruction seeks to change the information seeking behaviour of students through the repetition and more complex use of research skills and the development of appropriate research strategies. This may be best achieved through online tutorials and other methods instructional reinforcement. Development of instructional tutorials, whether they take the form of web-based modules or other online formats, have proven to be successful in reinforcing basic research skills. The growth of the new technologies like e-mail, chat, streaming audio and video, and Java-enabled web-pages has

created a confusion over whether online formats and real time desktop-delivery methods equate to an IL program. "The unfiltered universe of information that comprises the web makes it a striking example for Information literacy; it presents both the need and opportunity to help students learn to locate, evaluate, and use information effectively…. In the increasing complex realm of information seeking, librarians must prepare students to use the web meaningfully as one step in developing their lifelong skills for gathering and evaluating information"[10]. Courses need to be designed for students to introduce www as an increasingly important research tool for information. Through discussions, hand-on-practice in researching the web, and exploring some advanced applications, students were expected to develop some basic understanding of the nature of the Internet and necessary web search skills they may use throughout their college careers.

Information Literacy addresses the research process. It establishes strategies that students can apply to differing pedagogical situations (i.e., online, but on campus).

Thomas P. Mackey and Trudi E. Jacobson in their paper "Integrating Information Literacy In Lower- And Upper-Level Courses: Developing Scalable Models For Higher Education", explain that the development of student skills must be focused in three key areas: research methods, writing, and Web (Internet) production. Information literacy not only prepares students for college research but also introduces a way of thinking about information that is device-independent. That is, information literacy focuses on the analytical evaluation and production of information in a variety of forms regardless of changing technology. Information literate students pursue knowledge and understanding through research, writing, and communication while advancing these activities through ongoing practice. This integrated approach to information literacy informs three proposed teaching models:

1. The Art of Annotation: Teaching students to conduct research in the library and online to synthesize and document information for the development of an annotated bibliography;

2. Research and Composition: Teaching students to incorporate discipline-specific resources (i.e., scholarly journal articles and professional Web sites) in properly documented research essays;

3. Writing for the Web: Teaching students to develop content for the Internet with a specific focus on primary and secondary research methods.

All three models illustrate how different approaches to information literacy teaching strengthen courses at varying levels of instruction. This integrated approach is equally appropriate at a wide range of institutions of higher education. While some of the assignment ideas are not entirely new, the planned, graduated nature of the three models, specifically designed to enhance students' research skills, offers a novel and practical way to teach information literacy [11].

4.5   Matrix of pre and post Internet information literacy

The common characteristic shared by the older and newer literacies is being able to critically evaluate information sources. Yet while evaluative skills are equally necessary for digital and print literacy, what has occurred is a fundamental transformation in the magnitude of the skills that are needed. The following matrix presents the converging and diverging skill sets required for print and digital literacies:

Literacy	Required skill sets	Evaluative skills	Access skills
Pre Internet Information	Read Write	Critical thinking within a Information Environment	Catalog Vocabulary Indexes/Abstracts/citation Indexes
Post Internet Information Literacy	Read, Write, Type	Enhanced Critical Thinking within a filtered unfiltered information Environments Engine	Computer Skill/Vocabularies Online Catalog/Internet Vocabulary Search

The matrix clearly reveals that literacy in the digital society requires a quantitative growth in the skills needed to locate vastly expanded information sources as well as a proportional qualitative shift in evaluative skills. Due to the increased amount of information that is now available, enhancing evaluative skills is clearly essential for post Internet literacy[12].

4.6   Selected Projects demonstrating the access and use of Internet Information

The ALIA Report, "Feasibility Study for the Development of a National Coalition for Information Literacy Advocacy Final report" provides a list of important information literacy projects undertaken to teach Internet skills and information literacy in USA, Canada, Africa, Australia and other countries [13]. This is an useful reference to know about the successful case studies conducted on information literacy. Some of them are listed below:

4.6.1   Internet Navigator

http://www-navigator.utah.edu/ This web-based instructional module created by the Utah Academic Library Consortium is an online, self-paced and independent study course that is intended to assist tertiary students with using information resources.

4.6.2   Project JSTOR (Journal Storage Project)

http://www.mellon.org/jstor.html Project JSTOR in Minnesota, North Dakota and South Dakota is a three-year initiative that aims to promote 'digital library use and scholarly research'. Currently there are 35 colleges and universities in the JSTOR network http://www.mncolleges.org/projectjstor/index.html. Another source of grants is the Faculty/Librarian Instructional Partnership (FLIP) grants that are used 'to encourage partnerships that will be models for strengthening teaching methods and student learning with information resources and digital tools'. One funded initiative is the Collaboration for Program Enrichment: Exploring JSTOR and Nursing project at the South Dakota State University. One of the aims of this project is 'to establish a uniform framework for insuring that information literacy competencies are attained. The Information Literacy Competency Standards for Higher Education will be the framework used to incorporate the essentials throughout the program to insure outcomes related to information literacy'.

4.6.3   Uwired (University of Washington)

http://www.washington.edu/uwired/projects/index.shtml Its goals are to provide access to the tools and resources needed to use technology to enhance teaching and learning; promote fluency with information and information technology (for example, by offering workshops for students offered on a drop-in basis and by encouraging teachers to share teaching ideas and approaches); and to foster innovation in technology-enabled teaching and learning

4.6.4 ICT Use in Education Project (Korea)

http://aemm.moe.edu.sg/asp/asp_aemmpaper/paper/9)_IT_Case_Study_ROK_4_Mar_00.PDF   In keeping with the Korean Government's 1999 'Cyber Korea 21' strategy, which aims to make Koreans 'the most proficient and knowledgeable computer users in the world', this project aims to prepare students at both school and tertiary levels for the knowledge-based society 'by realizing lifelong learning via a cyber-education system'. The initiative recognizes the importance not only of providing access to computers for all students but of ensuring teachers have the necessary ICT skills to teach students. The government has also offered free ICT training to 500,000 economically disadvantaged students. Educational and multimedia software is provided for students, teachers and parents via a Networked Educational Information System (EDUNET) which was set up in 1996. The priority given to computer skills is evident in the fact that from 2001 all Korean students will be taking ICT education as a compulsory course. On completing this course every middle and high school student receives a Student Information Literacy Certificate.

4.6.5 The Big Blue (UK)

http://www.leeds.ac.uk/bigblue This project, funded by JISC and managed by the Manchester Metropolitan Library and Leeds University Library, is looking at current practice in information skills training for students in higher and further education in the UK. While the initial aim of the project was 'to establish a blueprint for the future, ensuring a coherent approach to the development of an information literate student population in the UK', it is now acknowledged that the aim was 'rather naïve in its conception'. The project now aims 'to promote and advocate a mixed bag of good practice which colleagues from a wide variety of institutions can pic'n'mix to suit their individual circumstances'.

4.6.6 Networks For You (http: (http: //www.iepo.sa.gov.au/networks/networks/)

Provides a free introduction to the internet (such as how to use e-mail, how to search the Web, how to get online at home, how to access local ISP services) in rural and regional areas. The program is a project of the South Australian Information Economy Policy Office and is jointly funded by the Commonwealth (through the Networking the Nation initiative) and South Australian Governments. These 'internet awareness and facilitation programs' are carried out in Network Centres, which are located in existing community venues such as libraries, schools, council offices, telecentres and neighborhood centres. Coordinators, project staff and volunteers staff the Network Centres.

4.6.7 Australian and New Zealand Institute for Information Literacy (ANZIIL)

http://www.library.unisa.edu.au/about/anziil.htm This organisation is still evolving under the auspices of the University of South Australia. It is based on the US Institute of Information Literacy model and aims to promote information literacy and 'integrate information literacy within the total educational process'.

4.6.8 Council of Australian University Librarians (CAUL)

http://www.anu.edu.au/caul/ CAUL's 2001 Literacy Information Standards document is document is based on the United States model and provides a framework 'for embedding information literacy in the design and eaching of educational programs, and for assessing the information literate individual'. The standards provide the opportunity or a continuum to be established from secondary to tertiary educational levels. They also encourage students to become more aware 'of the need for a metacognitive approach to learning, making them conscious of the explicit actions required for recognition of need, gathering, analyzing, and using information'.

5.   Suggestions

Considering the prevailing situation in India about the Internet use and the programmes that are in vogue the following suggestions are offered for the enhancement of Internet use for academic and research promotion:

It is necessary to prepare librarians and other educators to become effective teachers of information literacy programs and campaign for the training of all information intermediaries in information literacy skills.

*   Support the development and implementation of information literacy policies and programs and forge new relationships throughout the educational community to work the need of the hour.

*   Enough encouragement is to be given for information literacy research, growth and development since the field of information literacy is changing.

*   A national monitoring organization needs to be formed to locate the critical areas of information illiteracy, so that funds and resources can be properly targeted.

*   More awareness about information literacy needs to be created among the students, scholars, faculty and library & information professionals through information literacy seminars, conferences, training sessions, meetings and discussions and exchanging the ideas on information literacy through online forums.

*   Promote Education for Citizenship among school children; promote improvement of computer skills and information literacy skills among adults; promote places where Internet access is free or at reduced cost.

*   Appropriate authorities be authorized to formulate standards and guidelines on the basis of the established standards available in some of the developing countries.

6.   Conclusion

New technologies generate new literacies that become responsible for academic and research growth. Information literacy is an issue well discussed at the international level, with calls for the development of a conceptual continuum to promote a coherent approach to its development within all educational sectors. To reach the ultimate goal of developing information literate students with a capacity to grow as lifelong learners- information literacy must be a pervasive and enduring part of the learning environment. In fact, the Internet has become a local resource, as evidenced by the location of computer terminals at the reference desk to be used in working with users. The Internet is not only a rich source of research information and facilitator of collaborative research contacts, it provides a rich, complex setting and medium for qualitative research. Teaching Internet information literacy within the context of continuous change requires from trainers continual updating of skills and knowledge about the world of information available on the Internet and an informed understanding of what students need to be taught. In future, models of instruction whether taught in conventional/traditional ways or online will rely more and more heavily on assessment. Most universities will take advantage of different models of delivery via web: streaming video, audio, white board, blackboard, etc. Although reactive information literacy training is an essential component of an academic library's mission, a strong case can be made for developing a proactive program.

Information literacy is the need of the hour. The efforts of INFLIBNET in educating the academic community in making the optimum use of INFONET facilities extended to Indian Universities are laudable. The modus apperendi of the INFLIBNET Information Literacy Movement is the model example to follow in all the Universities so as to make the users to be perfect users of the facility. In fact, there is a urgent need for a Information literacy kit which can be easily fit into the local environment to develop the familiarity of the bewildering Internet giant. To stay fit in the 21st century information world, it is only live information literacy programmes, which can protect the academic community and make them not only productive but also lifelong academic learners.

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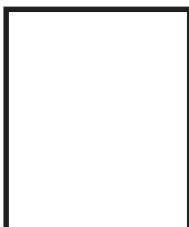
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