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## **“Library Environment and Digital Literacy”**

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### **ABSTRACT**

*The present society is an information superhighway society where the information is a core factor in the economic, socio-cultural and intellectual development of any nation. The forwardness of any nation depends upon the creation, production presentation, utilization and dissemination of information. In the contemporary society information sources are available in digital and virtual formats. Libraries now serve as information Centre's where most of the information is available in digital formats. Earlier building, lockers, books and other print material were the main ingredients of a library and the librarian was supposed to be a caretaker whose main job was to acquire, preserve and circulate books to users. But now the main ingredients of a library are microprocessors, servers, storage devices, network devices, other hardware equipment, software's, clouding computing etc. and the manager of a library is a cybrarian whose main job is to know, how to know what the paperless society wants to know. This research paper entitled as “Library environment and digital literacy” is an attempt to know the changing infrastructural , information seeking behavior of user and the role and needs of librarian in the present information society. The librarian is supposed to be an expert in handing and using modern IT gadgets while as the successful user needs to have good knowledge of using such gadgets*

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**"Men often oppose a thing merely because they have had no agency in planning it, or because it may have been planned by those whom they dislike."**

—*Alexander Hamilton*

It is apt to mention that the library as a building has been transformed to the library as an environment of electronic services established on a computer server or a network of cooperating servers. The client is not obliged to go to a certain place for searching and retrieving his information, since the information is coded in a binary form being available to any person linked locally or through the Internet to the specific server. Copies of a book are real entities stored somewhere in the selves of a library and each of them can be taken and read by a user. In the virtual environment, the notion of the "copy" has been eliminated, since the information is omnipresent to any person equipped with communication link, communication protocols, and decoding software compatible with the one used by the stored information.

Types of resources have also been expanded. Print is no longer the only way of representing information. Texts, still images, video, audio (sounds, music and speech), and any combination of types are just some of the information carriers in the multimedia era. Resources are digital from the beginning or they are the digitized version of corresponding analog forms. An ongoing transition to digital repositories through immense "retrodigitisation" programmes is taking place. Electronic resources are also available on the Internet (commonly although access to most NIRs is currently uncontrolled and free, controlled access (e.g., through user registration and passwords), and fee-based access (based on networked payment mechanisms) are options, which allow the addition of commercial and copyrighted materials to the range of networked information resources. Electronic documents differ radically from printed ones. Printed documents are typically distinct entities of a static, unchanging nature. Initially, electronic documents were just imitations of printed documents in electronic form. Recently, they have become more and more compound and dynamic. Compound means that the document can consist of various distributed "information objects," discrete components, each of which can be at a different physical location. It can also include metadata (e.g. author, revision history, etc.) and links to external multimedia modules (images, video, audio, graphics, etc.). An electronic document can be nothing more than a set of pointers to a number of components. Dynamic means that any component of the document can change, giving the document a temporary nature. It is obvious that the up-to-date nature of a NIR is its strength but also its weakness. It is exactly what someone needs in a rapidly changing world and at the same time is something that cannot be used as a reliable and constant citation, since the reliability of a resource can be assured only by its maintainer. Another critical factor in the effective use of the resources is the foundation of a common ground of standards, which is absolutely necessary for the improvement of their interoperability. The concept of interoperability includes wide usefulness (re-usefulness), portability (across, networks, systems, and organizations) and longevity (portability across time). The key to the interoperability of content is consistency, and consistency is achieved through the use of standards. The working environment of electronic resource collections is still called a library. Such a library is called digital or virtual, namely, "a library that provides access to a collection of distributed information in electronic format through pointers provided locally ... Or a collection of digital objects housed in the same place, virtual or physical". A digital library

is also described as “a zone of convergence where librarians, computer scientists, electrical engineers, cognitive scientists, cultural anthropologists, organizational theorists and sundry others are forging a lingua franca for better understanding the nature of distributed information Systems and knowledge access As such, the digital libraries sector is a rapidly developing area, combining many areas of research and technology. From a database or information retrieval perspective, digital libraries may be seen as a form of federated databases. From a hypertext perspective, digital libraries could seem like a particular application of hypertext technology. From a wide-area information service perspective, they could appear to be one use of the World Wide Web. From a library science perspective, they might be incorporated in the trend toward library automation. Obviously, a digital library is not confined to any of those fields but it must be considered a union of subfields with great added value, because one can participate more actively in searching and retrieving information in a relatively controlled environment. A digital library remains a library incorporating the existing tradition of physical libraries, but at the same time offering new capabilities, impossible in the previous conventional environment. Following this view, we can make use of the physical library elements as a starting point for discussing the elements and domains of digital libraries, considering three broad classes of library elements: data, metadata, and processes.

### **Access to Networked Resources**

In fact, at the present, libraries tend to use the existing cataloguing rules for the bibliographic control and access to networked resources. This is a natural decision, since it requires relatively little change in familiar practices and procedures and a low investment in systems. In the future this approach will not be satisfactory, since it will provide little support for the complicated task of networked cataloguing and offer the user less functionality and ease of use. Thus, there is an urgent need for a new generation of library systems, designed to cope with the requirements of integrated networked services. It is a question whether automated digital libraries can rival conventional libraries today. Let us see the contrast between web search engines and conventional abstracting and indexing services or library catalogues. The selection of material indexed by a web search engine is automatic based on arbitrary considerations, there is no authority control, and the content can contain many dead links. On the other hand, cataloguing is expensive, while web indexing is cheap. The leading web search engines index several hundred million web pages every month, more than the total number of MARC records that have ever been created. Since it depends on the priorities set by the user. The new kinds of resources demand a new set of skills, and even an entirely new relationship with publishers. During the negotiation process between the librarian and the publisher, the librarian must agree to certain restrictions on photocopying or distribution of electronic materials. The library is responsible for maintaining the awareness in all employees about copyright issues. The number of electronic resources is increasing rapidly. Libraries are paying more attention to their ability to get access to these resources than to archiving and protecting print materials for users in the future. Unlike a print book or journal, electronic resources cannot be considered permanent additions to a collection. It is not the product itself that is purchased but access to the product. The publisher and not the librarian dictates how much access will be provided, which issues will be available, and how much access will cost.

### **Data, Metadata, and Processes**

Data are library materials, metadata is information about them, and processes are functions performed over library elements. We can find digital library data corresponding to physical objects. Texts, still images, videos, and recorded audio can be digitized and stored in the memory of the server. When translating a book into a series of digital images, all of its information is retained except perhaps some exceedingly specific details. Conversion of a printed book into ASCII text to be used in full text retrieval is followed by the need for considerable decision-making and labour regarding its final form: various fonts and letter sizes, graphics and images will be lost, since only the basic text is preserved. A classification scheme such as Library of Congress Classification is an example of metadata. A classification scheme does not have any physical reality itself, but its application is sometimes constrained by the physicality of the objects it classifies. Sometimes it is used as a guide to the physical location of data in a library, since placing similarly-classified objects in physical proximity can aid patrons in locating data. We can see here the superiority of the virtual library, whose abstract space can be used for multiple classifications of a book, a fact impossible in the frame of a physical library. An example of a physical library process a librarian helping a patron find something for which he or she has incomplete information. This process is necessary in an integrated virtual environment, since digital library patrons cannot rely on being near someone who can help them. While the digital library starts at the physical level, it continues with elements and services absent from the physical library environment. Hypertext and active computational objects are examples of new library data. Multiple classification schemes are examples of new library metadata. Lastly, sophisticated human-machine interfaces used for more efficient and user friendly communication and adapted also to users with special needs are an example of new automated library processes.

### **Digital Libraries Initiative**

The Digital Libraries Initiative (DLI) is a major US government initiative funded by the National Science Foundation (NSF), the Defense Advanced Research Projects Agency (DARPA), and the National Aeronautics and Space Administration (NASA). Projects of the DLI pursued deep semantic interoperability, uniting heterogeneous items in a single uniform federated source. In the net of the 21st century there will be a billion repositories distributed over the world, each belonging to a certain community. Semantic indexes operated through scalable semantics and concept switching will be effective in bridging the gaps between the specialised terminologies of the various communities. The arbitrarily hyper-linked Internet will be gradually transformed into a semantic Interspace. For the extension of web searching beyond full-text retrieval, document structure in the short run, and document semantics in the long run, are required. The expanded resource type in the digital library environment has had an unavoidable impact on the query and retrieval processes. The Infor media DLI project at Carnegie Mellon University led to a terabyte digital video library. Automatically derived descriptors were used for indexing, segmenting, and accessing the library contents. Speech recognition, image compression, face and colour detection, and video optical character recognition (VOCR) combined in a very sophisticated manner resulted in an effective multimedia retrieval mechanism.

In general, the query techniques used in the digital library environment will be the result of an

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optimal integration of traditional library facilities and current web-based approaches. The virtual nature of resources could relate them to the ancient concept of Platonic eidos/idea. Capurro gives a very interesting interpretation of the concept of information through its etymological connection to the concept of form. Information in this sense is the process of forming a piece of matter or, metaphorically, human knowledge. Shannon and Weaver in their mathematical theory of communication establish a neutral, independent of the human comprehension, meaning of information content. Carl Friedrich von Weizsacker relates this neutral substance, which is neither matter nor energy to the Platonic eidos and the Aristotelian form. Therefore, information content is meant as an autonomous substance, which drives every kind of process, a pattern archetypon for the changing or informing something. We can consider the virtual resource as the information content beyond and before any information process. The virtual resource coded in a machine language and stored in a machine memory can be transformed to a human sensed resource through the process of information. Something existing but not sensed by the human factor can take many forms, either on the screen or printed, conveying meaning to the human.

This can be considered as analogous to the platonic eidos, something not accessible by the human senses, which can take a multitude of material forms, comprehensible by some species of material life, including human.

Now we will discuss virtual reality in library environment.

## **DIGITAL LEARNING AND LITERACY**

Digital learning refers to the process of learning with the aid of digital content, platform or facilitators. The future of learning would see an increased use of digital components increasingly as more content becomes available, the comfort and willingness of the players in the learning ecosystem changes along with their mindset and pedagogy evolves to leverage the value proposition of digital learning. Digital learning thinking also leads to the fundamental path for the new age learning approach - blended learning.

### **Digital Literacy**

Digital literacy is the knowledge, skills, and behaviors used in a broad range of digital devices such as smartphones, tablets, laptops and desktop PCs, all of which are seen as network rather than computing devices. Digital literacy initially focused on digital skills and stand-alone computers, but the focus has moved from stand-alone to network devices. Digital literacy is distinct from computer literacy and digital skills. Computer literacy preceded digital literacy, and refers to knowledge and skills in using traditional computers (such as desktop PCs and laptops) with a focus on practical skills in using software application packages.

Digital skills is a more contemporary term but is limited to practical abilities in using digital devices (such as laptops and smartphones). A digitally literate person will possess a range of digital skills, knowledge of the basic principles of computing devices, skills in using computer networks, an ability to engage in online communities and social networks while adhering to behavioral protocols, be able to find, capture and evaluate information, an understanding of the

societal issues raised by digital technologies (such as big data), and possess critical thinking skills.

Digital literacy does not replace traditional forms of literacy. It builds upon the foundation of traditional forms of literacy. Digital literacy is the marrying of the two terms digital and literacy; however, it is much more than a combination of the two terms. Digital information is a symbolic representation of data, and literacy refers to the ability to read for knowledge, write coherently, and think critically about the written word. Digital literacy researchers explore a wide variety of topics, including how people find, use, summarize, evaluate, create, and communicate information while using digital technologies. Research also encompasses a variety of hardware platforms, such as computer hardware, cell phones and other mobile devices and software or applications, including web search or Internet applications more broadly. As a result, the area is concerned with much more than how people learn to use computers. In Scandinavian English as well as in OECD research, the term Digital Competence is preferred over literacy due to its holistic use. In 2013, European Commission published a Digital Competence Framework which also includes the notion of digital literacy, but goes further than that, for example, defining problem solving in digital environments as part of the Digital competence.

Digital literacy is a new literacy, and may itself be decomposed into several sub-literacies. One such decomposition considers digital literacy as embracing computer literacy, network literacy, information literacy and social media literacy. Previous conceptualisations of digital literacy focused on the practical skills associated with using computers (now considered computer literacy). These include hardware skills, such as connecting devices, and software skills, such as using application packages. Contemporary conceptualisations of digital literacy add to these traditional skills, and embrace knowledge, skills, attitudes and behaviours, particularly with respect to networked devices (which include smartphones, tablets and personal computers). Digital literacy differs from computer literacy in a number of significant ways.

While it embraces the practical skills that computer literacy incorporates, there is a much greater focus on sociological, political, cultural, economic and behavioral aspects of digital technologies. As a pedagogical approach in curriculum design, the implementation of digital literacy affords far-reaching advantages. The internet is both a source of information and communication that has increased exponentially internationally. Subsequently, integrating technology into the classroom in a meaningful way, exposes students to a range of literacy practices called multi-literacies which broadens their outlook and widens vistas of information and knowledge which is highly constructive. This methodology embraces the constructivist theory of learning (Bruner, 1978) wherein learners draw from their existing knowledge in order to construct new learning.

### **Core Elements and their Educational Effects**

- Cultural - The cultural element of Digital Literacies requires technology use in different contexts and an awareness of the values and concepts specific to the varying contexts.
- Cognitive - The cognitive component of Digital literacies aims to enable mastery of the use of technological tools, software and platforms. Gaining expertise in digital tools helps learners become more digitally literate.
- Constructive - The constructive element requires re-using and remixing existing resources depending on the need; or adapting them into new resources. Through construction, a digitally literate user creates new data and shares their creations with others digitally.
- Communicative - The communicative component requires awareness about different communication devices both digital and mobile. Being digitally literate means communicating in the digital world in several ways.
- Confidence - The confidence element of Digital Literacy means gaining competence with digital technologies and the ability to create an environment for practising skills and self-learning.
- Creative - Through the Creative element of Digital Literacy, digital learners create new data in digital environments based on personal interests. This element places emphasis on taking risks while developing searching skills and producing new things.
- Critical - The critical component requires the digital learner to develop various perspectives. While actively taking part in digital environments, the user should take different circumstances into account.
- Civic - The civic element is all about developing and acquiring the concepts of democracy and global citizenship through digital technologies. This component helps the participation of the individual in society. Part of digital literacy is the ability to form communities online.

## **Digital and Media Literacy**

The topic of digital and media literacy was addressed by the Knight Commission on the Information Needs of Communities in a Democracy, a blue ribbon panel of seventeen media, policy and community leaders, whose purpose was to assess the information needs of communities, and recommend measures to help Americans better meet those needs. Its report, *Informing Communities: Sustaining Democracy in the Digital Age*, was the first major commission on media since the Hutchins Commission in the 1940s and the Kerner and Carnegie Commissions of the 1960s. In the digital age, technological, economic and behavioral changes are dramatically altering how Americans communicate. Information is more fragmented. Communications systems no longer run along the same lines as local governance. The gap in access to digital tools and skills is wide and troubling. This new era poses major challenges to the flow of news and information people depend on to manage their complex lives. In the context of this report, digital and media literacy is seen as a constellation of life skills that are necessary for full participation in our media-saturated, information-rich society. According to Renee Hobbs, author of the white paper, *Digital and Media Literacy*:

### **A Plan of Action**

- Make responsible choices and access information by locating and sharing materials and comprehending information and ideas
- Analyze messages in a variety of forms by identifying the author, purpose and point of view, and evaluating the quality and credibility of the content
- Create content in a variety of forms, making use of language, images, sound, and new digital tools and technologies
- Reflect on one's own conduct and communication behavior by applying social responsibility and ethical principles
- Take social action by working individually and collaboratively to share knowledge and solve problems in the family, workplace and community, and by participating as a member of a community

Digital literacy requires certain skill sets that are interdisciplinary in nature. Warshauer and Matuchniak list information, media, and technology; learning and innovation skills; and life and career skills as the three skill sets that individuals need to master in order to be digitally literate, or the 21st-century skills. In order to achieve information, media, and technology skills, one needs to achieve competency in information literacy,

Media literacy and ICT (information communicative technologies). Encompassed within Learning and Innovation Skills, one must also be able to be able to be exercise their creativity and innovation, critical thinking and problem solving, and communication and collaboration skills. In order to be competent in Life and Career Skills, it is also necessary to be able to exercise flexibility and adaptability, initiative and self-direction, social and cross-cultural skills,

productivity and accountability, leadership and responsibility. Aviram & Eshet-Alkalai contend that there are five types of literacies that are encompassed in the umbrella term that is digital literacy.

1. Photo-visual literacy is the ability to read and deduce information from visuals.
2. Reproduction literacy is the ability to use digital technology to create a new piece of work or combine existing pieces of work together to make it your own.
3. Branching literacy is the ability to successfully navigate in the non-linear medium of digital space.
4. Information literacy is the ability to search, locate, assess and critically evaluate information found on the web and on-shelf in libraries.
5. Socio-emotional literacy refers to the social and emotional aspects of being present online, whether it may be through socializing, and collaborating, or simply consuming content.

### **Digital Natives and Immigrants**

Marc Prensky invented and popularized the terms "digital native" and "digital immigrant." A digital native, according to Prensky, is one who was born into the digital age. A digital immigrant refers to one who adopts technology later in life. These terms aid in understanding the issues of teaching digital literacy, however, simply being a digital native does not make one digitally literate. Digital immigrants, although they adapt to the same technology as natives, possess a sort of "accent" which restricts them from communicating the way natives do. In fact, research shows that, due to the brain's malleable nature, technology has changed the way today's students read, perceive, and process information. This means that today's educators may struggle to find effective teaching methods for digital natives. Digital immigrants might resist teaching digital literacy because they themselves weren't taught that way. Prensky believes this is a problem because today's students are "a population that speaks an entirely new language" than the people who educate them.

### **Focus on Digital Writing**

Digital writing is a new type of composition being taught increasingly within universities. Digital writing is a pedagogy focused on technology's impact on writing environments; it is not simply using a computer to write. Rather than the traditional print perspective, digital writing enables students to explore modern technologies and learn how different writing spaces affect the meaning, audience, and readability of text. Educators in favor of digital writing argue that it is necessary because "technology fundamentally changes how writing is produced, delivered, and received."

### **Social Networking**

With the emergence of social networking, one who is digitally literate now has a major voice online. The level of digital literacy needed to voice an opinion online today compared to the Internet before social networks is minute. Websites like Facebook and Twitter, as well as personal websites and blogs have enabled a new type of journalism that is subjective, personal,

and "represents a global conversation that is connected through its community of readers." These online communities foster group interactivity among the digitally literate. Social networks also help users establish a digital identity, or a "symbolic digital representation of identity attributes." Without digital literacy or the assistance of someone who is digitally literate, one cannot possess a personal digital identity. This is closely allied to Web Literacy. Government officials around the world have emphasized the importance of digital literacy for their economy. According to Hot Chalk, an Online resource for educators: "Nations with centralized education systems, such as China, are leading the charge and implementing digital literacy training programs faster than anyone else. For those countries, the news is good."

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