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# The Future and Changing Roles of Academic Libraries in the Digital Age

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***Abstract*** **- Libraries are at a turning point. As technology rapidly transforms the way we access information, and resources are increasingly available online and in digital formats, the established role of the library as a physical space housing racks of books is looking increasingly out of step with the needs of students and researchers. Allied with technology, library users' needs and preferences are helping to drive the change in libraries. Students, researchers and teachers now expect to be able to access information around the clock, from almost anywhere in the world and via a growing number of devices, from laptops to phones. As the information technologies are changing day-today and growing at a tremendous speed, the knowledge society is becoming more complex, competitive and dependent on technological changes and information explosion. The need for e-information services to the users are also growing and becoming very essential. The impact of web based e-learning and teaching environment has influenced every facet of library and information services in academic libraries and providing new opportunities and challenges to the library professional for involvement in the knowledge based society including electronic and multimedia publishing, Internet based-information services, global networking, web based digital resources etc.**

## I.INTRODUCTION

Technology will continue to change, and libraries and librarians have to use the changing technology to provide the best access and service to their patrons. Electronic information creates challenges for the library community at its very foundation, moving it away from the traditional paper-and-print format to an ethereal world of circuits and connectivity. The library is no longer defined simply as a building or a physical repository that houses information. Hence ensuring and organizing access to educational materials in the electronic environment is an important factor in determining realistic requests for development and advancement of education.

In the face of this globalization, libraries will need to look beyond walls, campuses, and even borders. University and college libraries will be increasingly expected to open their resources to visiting students and scholars, in the process increasing the need for sensitivity to cultural differences when it comes to space as well as differing levels of proficiency in the English language. Libraries will face greater demands for access to resources, while library staffs will need multiple language skills and be asked to support more learning at a distance. Digitalization of collections will allow rapid access to, and exchange of, resources, which will raise questions of adequate bandwidth and ]the cost of keeping technology current. Globalization will also shape all aspects of teaching and learning. As technology increasingly infuses the curriculum, professors will be able to choose from an international array of source material from which to develop their courses, in turn placing greater demands on libraries to provide needed support services for faculty. Globalization also offers the academic library opportunities to become more effective in serving students and faculty through enhanced partnerships with libraries throughout the world, leading to more open access to knowledge and best practices that will eventually provide more supportive, streamlined services to a new generation of students.

(Ref. Googleimage.com)

Library systems must serve the library in meeting user needs, rather than perpetuating redundant processes. The implications of this for the system, and indeed the library, include the need for:

**Flexibility:** there may be no single solution, so systems and components will need to be flexible and adaptable.
**Interoperability:** systems whether finance or learning systems will need to share data with each other.
**Agility**: systems and services may be shared or hosted elsewhere, but you need to ensure changing requirements can be acted upon fast.

In the future it is unlikely that there will ever be a single system solution that will incorporate all the functionality and integration a library requires.

## II.OBJECTIVES

The aim of the library is to investigate what the future potential of the library systems is: How can library systems ensure they are able to serve the needs of next generation library services and users, as well as being both effective and efficient in meeting reduced budgets and rising user expectations.

1. The primary objective of this study is to analyze and explore the changing vision and the roles of future academic library to meet the changes and challenges in the learning environment.

2. To define and explain the concept of e-literacy and digital learning environment in academic institutions which changes the role of library to the real situation.

3. To discuss about the various skills needed for the library professional to meet the present online and digital needs of the user.

## III. LITERATURE REVIEW

Numerous authors encourage academic librarians to think beyond the foreseeable future. Building upon ACRL's (2011) Futures Thinking for Academic Librarians: Higher Education in 2025 report, which discusses numerous possible futures of higher education, Dr. Charles Lowry and M. Sue Baughman of Association of Research Libraries (ARL) emphasize the value of scenario thinking in the discussion of the future of the university library

Lowry & Baughman, (2011), Scenario planning, the authors argue, can be useful in university libraries' strategic planning processes, and, perhaps more importantly, can be used to facilitate discussion about critical uncertainties (p. 893).

Steele (2011) takes the idea of thinking about uncertainty a step further by pondering "the Singularity", the idea that human intelligence will eventually be surpassed by artificial intelligence; specifically, Steele wonders, how might such a scenario impact libraries? For example, if automation and artificial intelligence replaces nearly all of the jobs that humans can do, will libraries still continue to help unemployed human patrons with job searches? What would librarians' role be if artificial intelligence evolved to the point that humans could retrieve resources and metadata just by thinking about them?

Heather Monroe-Blum of McGill University echoes Neal's (2011) emphasis on envisioning research libraries of the future as entrepreneurial institutions (Monroe-Blum, 2011). However, Monroe-Blum defines entrepreneurship in terms of innovation, noting that "innovation begins with a problem, and entrepreneurs, broadly speaking, are people who identify new problems and crystallize the benefits of solving them."

## IV. VISION OF FUTURE LIBRARIES IN DIGITAL AGE

To meet the challenges in future, academic libraries must make strategic choices in four distinct dimensions, each consisting of a continuum of choices lying between two extremes. Collectively, the choices a library makes along the four dimensions create a vision that it believes will enable it to best serve its patrons and its community.

### *A.Virtual library*

The most realistic step of digital age is , end of the physical to virtual continuum is physical library that has added a Web presence to its substantial physical facilities and a careful selection of virtual media to its extensive physical media holdings, which will probably have become aprimarily off-site collection held jointly with other libraries This virtual library's patrons meet their needs—finding and acquiring media, obtaining answers to questions, participating in meetings—by accessing the library's Web presence from anywhere via the Internet.

### *B.User friendly librarie*

A user friendly system is defined as that in which relatively untrained users can interact easily. It refers to an atmosphere which is congenial, and healthy. It is so designed that it fits most types of users in a friendly environment. It also connotes as a library which is easy to use, attractive, warm and comforting place which welcomes to use the resources. It is, in other words, providing personalized or in-person help to users of a library.

To view this in its correct perspective, it is appropriate to see the existing practices, and make a self-appriasal of professionalism. It will also show, where libraries stand with the onslaught of IT and Internet -- the two virtual competitors, and alternative information providers.

### *C.Collection to Creation Libraries*

Creation library is define as, which has extended its role and become a place where media conveying information, knowledge, art, and entertainment are created. Such a library houses a range of specialized equipment and

facilities to help authors, editors, performers, and other creators prepare new works, alone or in groups, in new or old media, for personal use or widespread distribution. Its users are well positioned to build on the rich base of material readily available at the library.

### *D.Portal Libraries*

Portal is a super discovery tool that specializes in high-quality content. It is fast and powerful, searches across formats and resources and returns results that are deduped and relevancy ranked, delivers full text or information objects whenever available, integrates appropriate applications, and supports authentication and permits customization and personalization, e.g. alerts, saved hits or searches, and custom views of resources. A federated search facility of the portal allows users to do cross-searching of up to several thousand e-databases regardless of their search standards and protocols (Z39.50 and http) or format of the metadata (MARC, Dublin Core, EAD, and XML). The search results are then displayed in one result set eliminating duplicates, providing users with a convenient choice of resources. Searches are often slow, but will improve with the developments in technology.

## V.DIGITAL FUTURE OF THE ACADEMIC LIBRARIES

### *A.E literacy*

Today almost all the academic institutions, universities and college libraries have been automated by library software and have become connected with Internet, intranet and extranet facilities and through which they mare providing access to relevant e-journals and e-books by proxy-server based networks. So the future of the academic library services may be changed accordingly to fulfill the needs of the patrons in the e-learning environment.

E-learning is a means of becoming literate, involving new mechanisms for communication, such as computer networks, multimedia, content portals, search engines, electronic libraries, distance learning, and web-enabled classrooms. Different web based applications such as email, real-time conference, Web Cam, etc. are being used as important tools in the process of e-learning. E-Learning is a catch-all term that covers a wide range of instructional material that can be delivered on CD-ROM or DVD, over a local area network (LAN), or on the Internet. It includes Computer-Based Training (CBT), Web-Based Training (WBT), Electronic Performance Support Systems (EPSS), distance or online learning and online tutorials. The major advantage to students is its easy access. So, providing access to online e-journals and e-books through networks will enhance the self-learning knowledge.

### *B.Library 3.0*

The new Web 3.0 is known as the web of data and as the Semantic Web (Harris, 2008). It is personalization-driven and binds collective intelligence (Harris, 2008). The inspirations of Web 3.0 technologies include personalized learning, search using natural language, filter ad personalizes search results, intelligent agent, interact with more types of web content and provide learning from multiple resources. In education, Semantic Web will impact the knowledge construction, personal learning network maintenance and personal educational administration (Ohler, 2008). Semantic Web brings impact to online instructors and students, as it changes the teaching and learning environment. Ontologies as knowledge representation will allow intelligent agent to search for learning material that is relevant to the student's needs by providing links the student needs and characteristics. The e-learning 3.0 derived from Web 3.0 and it will use artificial intelligence to assist students to obtain a better understanding of the learning process (Rubens et al., 2011). Pedagogy is one that provides e-learning via collaboration, cooperation and communication, and conditional learning methods will be available (Beetham and Sharpe, 2007). The learning theories for e-learning 3.0 include pragmatism and connectivism. Connectivism allows learning to be distributed within a network. E-learning 3.0 provides better collaboration, smarter search, more personalized and flexible technology, better support distance learning, better student engagement and best support for mobile technology.

### *C.Open Access*

OA will have an impact on researchers both as authors and consumers of research information.When it comes to publishing papers, the roundtable participants observed that researchers will do what their funders require them to do, an observation that echoes the predictions about policy shifts impacting OA take-up. However, it was felt that researchers will only comply with OA demands from funders if there are consequences of not complying. OA will certainly change the situation for libraries and their users. Whether it makes them more or less valuable to their institutions and users depends on whether libraries take action to make themselves more useful.There was a general feeling that borders are blurring between teaching and learning, and the traditional role of the library as an institution is also blurring. The focus will instead shift to the information professional. As one participant put it: 'the information professional is the library of the future.'

### *D.Role of librarian*

The role oflibrarian has grown to meet contemporary expectations; no longer a custodian of the collection and guardian of a peaceful environment, today's professional librarian is a knowledge navigator, presiding over a complex, dynamic facility, often open round the clock and supporting a multitude of learning styles. Rows of books,

manuscripts, magazines, and papers indexed by card catalog and housed in a dimly lit room have been replaced by audio recordings, videotapes, CD-ROMs, databases, computer terminals, and networks linking remote resources via the Internet. These and other challenges present an opportunity for the academic library to reinvent itself for the future, to become a catalyst—housing the creation, discovery, and curation of knowledge for current and future generations of students and scholars.

***E.Context-aware computing***

The next generation of digital library embraces the notion of the ubiquitous library, and context-awareness is one of the emerging technologies necessary for its implementation. Context-aware computing technology is a system designed to search and provide the services that users require in their current situation by analyzing and identifying the available contextual information (the current situation of the user) such as the user's current location, time, people and devices in the vicinity, and the user's behavior and inputted data. This contextual information can be identified by analyzing data collected from numerous sensors. Location based services (LBS) are a well-known field of applied context-aware computing technology. The process of context-awareness is similar to human communication, and is divided into the steps of perception, analysis, and execution states. The purpose of the perception step is to acquire information about the user. The collection method for this data is to communicate with devices that have stored previous information about the user and the environment, or acquiring the data directly through the use of sensors. Users' contextual information may be collected by user modeling or through direct input from the user. During the analysis step, the data previously collected is analyzed within a logical structure. In this stage, the system uses the data obtained from multiple sensors to determine the overall state of the target information, and stores the information collected to provide intelligent services based on the analyzed results. The action step recognizes the behavior that users want by analyzing the situation and state of the target environment, thus determining an appropriate behavior for the user. In this way, context-awareness services that fit the user's need are intelligently executed

***F.Future Libraries***

1. University and college libraries will be increasingly expected to open their resources to visiting students and scholars, in the process increasing the need for sensitivity to cultural differences.
2. Librarians must continually assess their current services against the new breed of student they will serve, re- examining how and what they teach students about using libraries while providing a variety of learning experiences through various media
3. To meet the learning styles of future students, libraries will have to rethink existing and future facilities to include a variety of spaces for consultation, collaboration, and instruction to foster varied learning needs. As the demand for more experiential learning grows libraries must invent and present to their communities spaces and facilities that invite, inspire, and support a culture of intellectual engagement and exchange, becoming studios and laboratories for faculty and students to engage in learning activities
4. Libraries will need to respond to the growing interest in interdisciplinary program by improving communication with participants and becoming flexible in supporting program resource needs.
5. As college campuses become more "green," libraries will also have to infuse sustainability into their planning and operation.
6. As libraries shift their centers of gravity from storage and physical collections in central spaces, they must establish settings for a mix of social and academic activity that encourage and support "high energy" learning by providing spaces for communities of learning to happen.

***G. FutureTrends***

1. Closing the gap between biology & technology
2. International Wireless Network
3. Artificial Intelligence
4. Increasing Entrepreneurial/Flex work force
5. Increased free time
6. Virtual Education
7. Prosumers rather than Consumers (producers-consumers)
8. Project-based workforce

***H.Challenges***

1. The collection of materials in order to ensure their long-term access remains the primary challenge and responsibility of research libraries, regardless of changes in technology or ideology. Preservation has been the principal function of libraries since antiquity—and the library as "memory institution" surely remains the one service that justifies the continued existence of research libraries from the standpoint of society at large.
2. Changes in higher education such as online education programs, globalization, cuts in funding for both the university and the library
3. Communicating the library's value in this tough economic environment
4. Keeping up with new technologies cloud-based technologies, social networks, mobile environments
5. Determining the library's role in scholarly communication environment advocate for open

access, become publisher, lead e-textbook initiatives

6. Staffing to meet the new challenges such as data curation digital scholarship, international and area studies, assessment, and instructional technology.

## VI.CONCLUSION

The remarkable growth of Internet has made significant revolution in all the areas of science and technology. Rather than using it as a tool for searching and retrieving information, Internet has become the king of all media, by which we can access virtual information and can build a virtual library to provide timely, quality service to the users. Librarians of this digital era, are in the position to change their role as arbitrary information scientists/gatekeepers and to meet the challenges of the Internet, World Wide Web, online access in the knowledge society. So they must enrich their knowledge with special skills of the latest IT developments, to browse, access and retrieve a particular information across the global networks and to organize and manage the information by building digital libraries and by which they can provide quality e-information service to the knowledge society. Library staff must be capable of working effectively in partnership with faculty members to enhance the strength of teaching and research. To be certain, there are many staff members of this kind in academic libraries today. In this as in other respects, part of the skills, library staff must develop is the ability to educate faculty members, helping them to understand the power and applicability of e-resources.

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