

International Journal of Advance Research in Computer Science and Management Studies

Research Article / Survey Paper / Case Study

Available online at: www.ijarcsms.com

Knowledge and Skills Requirements for the Health Science Library Professionals: A review of Health Science literature

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Abstract: *Health Science Library profession in the 21st century is very crucial. The role of medical professionals has been changed in the lot in the clinical aspects, medical treatment and in the general aspects also. Medical professionals required time, acquisition of materials in the need basis and information transaction is very important in the timely provided for required purpose. Therefore information professional has to provide information to user in a changing scenario. This article attempt to literature search, and developing a tool to provide literature in the form of databases and recent trends in the medical field, techniques and so on.*

Keywords: *Health Science, Knowledge Skills, Medical Librarianship, Medical literature.*

I. INTRODUCTION

The goal of the service professionals like librarians and information is the ‘ultimate satisfaction of the users’ and ‘meaningful and constructive participation of all the stakeholders’. It is more important in case Health science professionals, as they are caring human health, required up-to-date information suits to different working environment like education, research and clinical activities including community health care. To enhance knowledge to meet the reflective needs of Health Science professionals, by acquiring skills, facilities and expertise to critically appraise and develop good information environment to the best of user’s satisfaction. The enhancing professional knowledge requires domain specific information, clinical environment, patient environment and information environment (both in physical and digital environment). Actually HSL professionals require to learn auditing their own practice and develop positive changes in the light of the findings and work within (various stakeholder) a multidisciplinary team, not work in isolation. Further HSL professionals should be able to demonstrate the competences of shared leadership so as to enhance learning experience and ensure their knowledge up-to-date and on par with changing environment. Of course, user feedback and interaction both in physical and virtual environment helps develop system reflective to immediate needs of individuals or groups.

II. REVIEW OF LITERATURE

Rios, Gabriel R, (2004) The Claude Moore Health Sciences Library at the University of Virginia is one of several libraries taking a leadership role with personal digital assistants (PDAs). The mission of the Library is to provide information management expertise and institutional leadership to connect students, researchers, clinicians and staff with the biomedical information they need to advance the education, research, patient care and public service programs of the University of Virginia Health System. As a corollary to the mission, the Library’s PDA services are built around the premise that users need the skills and knowledge to effectively use PDAs in their workflow.

Brown, Helen-Ann, (2004), Clinical medical librarians stepped out of the library and joined the patient care team in the early 1970s, beginning in Kansas City, Missouri and then Hartford, Connecticut. Now they are present to report the literature, take literature search requests and, most importantly, perceive information needs at Morning Report, bedside rounds, or weekly

conferences. Within 24 hours or less, they return to the patient care team with literature to aid in patient planning. Clinical medical librarians also teach online searching in an evidence-based way and help patient care team members with other research needs. In 2000, the concept of the informationist was introduced. It can begin with clinical medical librarianship and expand to this information specialist in context, being based and salaried in a clinical setting, having information-seeking skills, knowledge of informatics and the clinical subject area. Both the clinical medical librarian and the clinical informationist contribute to better patient care, medical education and clinical research.

Augustinaitis, Arunas, (2004) in this article is to analyze the fundamental changes in such important field of activities of the contemporary world as the literacy development in general. The development of societal processes and the features of competitiveness in the global context depend on the comprehension of literacy basically. The main conception of this article is that there are the other qualitative criteria and the other archetype of literacy in knowledge society. The perception of new literacy paradigm is the main precondition for efficient solutions of today's complex practice. The notions like "learning society" or "learning economy" reflect these leading tendencies of contemporary world. The modern entrepreneurship and innovation policies are depending on the core model of literacy. The analysis of criteria of knowledge society literacy is important for education systems transformation as well. Following the requirements of the European Union for development of science and education it is necessary to create the new knowledge models and instruments in order to promote, maintenance and develop of economic progress and competitiveness. Therefore this article seek to answer the key questions: how does society demand for educational change; why does the classic educational background not fulfill the needs of activities in the European and global environment; how to create new patterns of modern education and their applications to strategic goals of society; how to bridge traditional education system to changing environment, cultural contexts and globalization of economy. We can outline three levels of possible analysis of knowledge society literacy: general criteria of society literacy, organizational knowledge, the personal needs for education and adaptability opportunities in the knowledge environment. In the methodological perspective the article focuses on the following tasks: To define what literacy paradigms are needed for development of European and national competitiveness; To contribute to modernization of regional development and cultural interactions; To solve the problems of social cohesion; To apply new knowledge instruments for complex decision making and for sustainable development; To improve labour market and labour relationships; To transform the national education system according demands of knowledge society. Special attention is given to "learning society" understanding in the context of Lisbon processes and research frame of European Foresight. As the result of above-mentioned tasks we can draw up main conclusions related to formulation of qualitative criteria of knowledge society literacy. Gorman, Linda (2004) Librarians know MEDLINEplus as a useful tool to obtain reliable, accurate health information, yet the general public has little or no knowledge of it. To address this problem, in this article the author developed a four-week short course introducing the public to MEDLINEplus and other reliable health information sources via the Net.

Harrison, Janet; Sargeant, Sally J E (2004) this study of the role of the Clinical Librarian (CL) in the UK. A qualitative method of semi-structured interviews was used to explore in-depth the role of the C L. The interviews provided a rich source of data and give insight into this new and emerging role as practiced in the National Health Service (NHS). Similarities and differences are examined between the CL populations and reported within themes, personal qualities and skills required, training for the CLs, marketing the CL service, working in the clinical environment, monitoring and evaluation and the acceptance of the CL in the NHS. A common understanding of the skills and knowledge required to undertake the CL role was shared by the respondents. However, practice differed as this was often dictated by local circumstances. The study confirmed the need for the CLs to work with clinical colleagues in the clinical setting to enhance patient care. The importance of using best evidence to support patient care is a message that is slowly becoming the norm in the NHS and the CL role in this practice is demonstrated by this study.

Abubakar, Tijjani (2005) the author applied a questionnaire survey of library schools in Nigeria to derive information to enable library and information science (LIS) departments to review and revise their curricula by analyzing the strengths and weaknesses of their degree programmes and the suitability knowledge, skills and attitudes to job requirements, and to solicit views from the employers of LIS graduates on whether or not the employees meet their job requirements. The results are discussed and used to address areas where a major review of the curriculum might make improvements.

Harris, Martha R (2005) the author is an observational case study that chronicles a librarian's required involvement, skills, and responsibilities in each stage of a real-life systematic review. Examining the review process reveals that the librarian's multiple roles as an expert searcher, organizer, and analyzer form an integral part of the Cochrane Collaboration's criteria for conducting systematic reviews. Moreover, the responsibilities of the expert searcher directly reflect the key skills and knowledge depicted in the "Definition of Expert Searching" section of the Medical Library Association's policy statement, "Role of Expert Searching in Health Sciences Libraries." Although the librarian's multiple roles are important in all forms of medical research, they are crucial in a systematic review. As an expert searcher, the librarian must interact with the investigators to develop the terms required for a comprehensive search strategy in multiple appropriate sources. As an organizer and analyzer, the librarian must effectively manage the articles and document the search, retrieval, and archival processes.

Summers, James Bradley (2005) Writing a paper, thesis, or dissertation is not an activity enjoyed by all students, but it is a requisite skill needed to complete many course and degree requirements in undergraduate and Postgraduate programs. One aspect of manuscript preparation that is important, but oftentimes needs additional emphasis, is the accurate compilation of citations or references into a bibliography. Particularly for individuals preparing a paper for publication or completion of a degree requiring a thesis or dissertation, accurate references are important so that others can quickly access them when evaluating the document. Librarians with knowledge of reference databases could assist authors to improve the quality of a publication, thesis, or dissertation.

Bartlett, Joan C (2005) Program was to provide formal bioinformatics education within a master of library and information studies (MLIS) programme. As bioinformatics becomes increasingly integral to biomedical research, there is a need for librarians to expand their practice into the domain of bioinformatics, supporting the efficient and accurate use of these complex resources. We developed this course, the first such course offered in a Canadian library school, in response to the demand for librarians to be able to support bioinformatics information needs. For that the course was offered in the winter term of 2005 in the Graduate School of Library and Information Studies, McGill University. Course participants were MLIS students. The course took a library and information science perspective to bioinformatics. The goal was to provide students with the skills and knowledge to provide information services in the domain of bioinformatics and to collaborate in the design and development of bioinformatics resources. This included understanding the field of bioinformatics and the range of resources, the needs and requirements of user groups, practical searching skills, the creation of resources, and the role of the librarian. The course represents one approach to providing formal bioinformatics education for librarians. Librarians who are knowledgeable and proficient in bioinformatics will be able to expand the role of the library into this domain; apply their knowledge, skills, and expertise in a complex, chaotic information environment; and develop the essential role of the librarian in the domain of bioinformatics.

Chester, G. & Neelameghan, A. (2006), discusses the types of knowledge, skills, and experience that an information professional (IP) needs to acquire within and outside the formal library and information science curriculum so as to be able to generate information products and services to satisfy the needs of marginalized communities (indigenous and rural communities), effectively manage marginalized community knowledge, as well as empower and improve the information literacy of members of the community. Communication skills and knowledge of the history, culture and language of the communities are discussed as are focused self-designed programs and the application of appropriate information communication technologies in support of out-reach work. Some modalities for training IPs are suggested based on our experiences.

Kristiansson, Michael Rene, (2006) referring to Gibbons et al: The new production of knowledge, 1994, compares traditional research (modus 1) with the new, modus 2, knowledge production. While traditional research is organised in scientific disciplines in universities and transmitted through peer reviewed scientific journals, modus 2 is produced in a broader social and professional context and the results are evaluated by different interested parties. The knowledge is generated only if considered useful. The problems to be investigated are not planned by an authority and flexibility is therefore important for modus 2 production, requiring new organizational forms. People with different skills are brought together in temporary networks formed to solve specific problems and creating new specialities. The knowledge production takes place, not within the framework of one discipline, but trans-disciplinarily. Participants need to agree on a common understanding of the requirements of the results. The involvement of the general public has increased the demand for research with a political or social aim, involving other values than those of traditional, objective research. Original article in Danish.

Petricin, Tatjana1, (2007) the aims of the study were to examine whether and how librarians with a generalist background can transfer to roles demanding more expert knowledge in the health sector. The main findings confirmed that structured continuing professional development (CPD) is required to meet the rapidly changing needs in the health sector. The emphasis ought to be on teaching skills, outreach work, marketing and promotion, research skills and methods, subject knowledge and terminology, and management skills. Library school curricula do not appear to meet the demands of medical library posts. A first degree in scientific subjects is advantageous in the early stages of a career but diminishes with continuing training and experience. There is no evidence of a significant difference in training needs and provision between the librarians in NHS posts as opposed to those in higher education (HE) posts. The conclusions suggest that library schools need to update their programmes to include teaching skills, advanced search skills, project management skills, research methods, with more practical exercises. Particular attention should be given to librarians with a first degree in non-scientific subjects in terms of time allocated for CPD, quality of training and access to reliable mentorship.

Namita Santra (2007) this study was conducted among academic medical librarians in Malaysia to learn what activities they were engaged in, their awareness of the skills and knowledge required for the emerging roles of medical librarianship and to find out their education and training needs. Face-to-face and telephone interviews were conducted with librarians attached to academic medical libraries in Malaysia. Results indicated that instructional roles had increasingly become part of the librarians' tasks. Activities that would have granted them some knowledge of the domain or expertise in searching specific medical information was missing. Awareness of the skills and knowledge of the emerging roles was poor. Training and education to specialize in the field was limited. It is recommended that creating opportunities for further training and education can establish a specialist group and improved performance.

Amar Nath, Gautam Bahl, Parveen Kumar,(2007) exploring the increasing use of technology as a means of accessing information and the recent shift towards cooperative learning and group study have brought changes in the way patrons use libraries and library resources. This article is based on the part of a survey that investigated the ICT knowledge and skills of librarians at the Chandigarh City. A study population of 21 librarians of Chandigarh city were surveyed by a questionnaire to establish in what ways librarians were using ICTs, what were the level of ICT knowledge and skills amongst the librarians, what problems the librarians faced in the use of ICTs and what their ICT training needs were. Interpretation of the results revealed a low level of ICT knowledge and skill amongst librarians and a general lack of formal training for ICTs amongst the academic librarians.

Lee, Sooun, (2008) says that, there is a dramatic changes in the U.S. economic situations and offshore outsourcing trends in the IT (Information Technology) industry have affected the IS (Information Systems) job market and recruiters with regard to IS knowledge/skills that their new hires should possess. Keeping pace with these changes presents a challenge for IS recruiters and students. There is an urgent need for a study that investigates the perception gaps between IS recruiters and students about the

knowledge/skill sets required for a new entry-level IS hire. This study reports the findings from a survey of IS recruiters and IS students in the U.S., detailing the differences of their understanding about the knowledge/skills requirement.

Kay, Deborah, (2008) explores that, the library can expect when the educational requirement is a library technician diploma. In Canada, the diploma awarded to library technicians is the result of successfully completing a two-year program, usually offered through a college. Currently, there are seventeen library technician programs in Canada. The name of the diploma and the program are the same, with the majority of programs granting a Library and Information Technology diploma. In Ontario, a Library and Information Technician diploma is awarded. Library technician programs prepare graduates to perform the skills required for the day-to-day operations of a library. The library technician, equipped with applied knowledge, is immediately able to work on tasks in the library: acquiring materials, ordering and receiving, or subscribing and checking-in for serials; charging and discharging items for circulation; or borrowing materials and obtaining copies through interlibrary loans and document delivery.

Zhang, Li1, (2008), this study examines academic and research librarian positions that require foreign language skills. Technical and public services are most likely to require language knowledge, while administrator and system librarian positions are the least likely. Overall, the requirements show a continued rise until the mid-1980s and a declining trend after this point.

Knight, Jennine (2009) The contemporary Library and Information Services (US) environment employs a multifaceted group of employees who are better educated and more expensive to recruit than in previous times. In order to maximize these talents and resources available, this modern setting requires managers -- at all levels -- who are versatile and fitted out with the right skills and knowledge to maintain group cohesion and to propel this dynamic environment to continuously move in unison with the society. This article identifies and discusses the required skills and knowledge of the contemporary manager. In doing so, the concepts of skill and knowledge are defined and their interrelationship is highlighted.

Heinrichs, John, (2009), Computers and productivity tools help library patrons to access information, generate insights, structure results into a useful format, and produce knowledge. The use of these productivity tools by patrons requires librarians to alter their traditional professional role, which was primarily to provide information access for patrons, so that they can also provide expanded services and support to these patrons. This study focuses on understanding the computer and productivity tool skills that librarians desire for their new role in assisting patrons with information integration. Many aspiring and working librarians perceive their computer and productivity tool competencies as ranging from novice to proficient, and hope to increase their competencies to very skilled.

Robb, Beth G1; Zipperer, (2009), The future of hospital librarians is measured by how successful they are in adapting to new demands and in seeing innovative opportunities that have impact in the acute care setting. The authors share their experiences working with information professionals from corporate and hospital environments to envision how the concepts of knowledge management and transfer -- as applied in the corporate environment -- could be applied in a hospital/health system. The workshop session used the process of Appreciative Inquiry to facilitate a positive conversation. Participants shared their experiences in knowledge transfer activities -- both traditional and expansive in nature. Together they build a list of skill sets that librarians already embody to help organizations support their knowledge transfer efforts that may have not been recognized by leadership or the librarians themselves. The participants' positive experiences illustrated how these skills might enhance knowledge-sharing activities in hospitals. The group discussed how an expanded, proactive knowledge role could be implemented by hospital librarians. They drafted descriptions of Plan-Do-Study-Act projects to test the potential outcomes of this expanded application. The authors hypothesize that an explicit role for hospital librarians in sustaining successful knowledge transfer will contribute to organizational learning about error and quality improvement. The work begun by this group aimed to launch future discussions and studies on the role of librarians in knowledge management activities in hospitals.

Komolafe-Opadeji, Helen1 E. (2009), the adoption of information and communication technology has increased the quantity of information passing through the library, and health librarians must be well-versed in knowledge management and dissemination. The study found that the training of participating library staff was inadequate, although training in information technology driven would allow them to provide knowledge management service.

Helen Partridge, Julie Lee, and Carrie Munro (2010) In 2005, Stephen Abram, vice president of Innovation at SirsiDynix, challenged library and information science (LIS) professionals to start becoming “librarian 2.0.” In the last few years, discussion and debate about the “core competencies” needed by librarian 2.0 have appeared in the “biblioblogosphere” (blogs written by LIS professionals). However, beyond these informal blog discussions few systematic and empirically based studies have taken place. This article will discuss a research project that fills this gap. Funded by the Australian Learning and Teaching Council, the project identifies the key skills, knowledge, and attributes required by “librarian 2.0.” Eighty-one members of the Australian LIS profession participated in a series of focus groups. Eight themes emerged as being critical to “librarian 2.0”: technology, communication, teamwork, user focus, business savvy, evidence based practice, learning and education, and personal traits. This article will provide a detailed discussion on each of these themes. The study’s findings also suggest that “librarian 2.0” is a state of mind, and that the Australian LIS profession is undergoing a significant shift in “attitude.”

Ndwandwe, Siphon Cyril (2011) explored the job functions and requirements for knowledge management practitioners through the analysis of job advertisements appearing on 12 major jobsites in South Africa. It aimed to provide vital information that can assist in re-examining knowledge management education in library and information science (LIS) schools in South Africa. A total of 32 knowledge management-related job advertisements were retrieved using 'knowledge' and 'knowledge management' as search terms. Details regarding the date and location of the advertisement, job requirements (i.e. qualification, skills, knowledge, experience and attitude) and, most importantly for the purpose of this study, the job functions (i.e. responsibilities, duties, description) were captured from the advertisements and analysed. The majority of the jobs were based in Gauteng with a few based in KwaZulu-Natal and Limpopo. The findings revealed that a variety of job titles are used to refer to knowledge management practitioners, with 'knowledge manager' appearing in a majority of the advertisements. Taking into account the multidisciplinary nature of knowledge management, there was diversity in terms of the qualifications required. Some of the common job functions or responsibilities listed in the advertisements were designing and executing a knowledge management strategy, identifying knowledge and information needs, conducting research, conducting knowledge audits, and developing, implementing and maintaining knowledge repositories/databases. The study recommends that LIS schools should endeavor to align their offerings to market requirements so that their graduates may have the required academic qualifications, knowledge, skills and attitudes. Areas of further research are recommended.

Lewis, Suzanne (2011) this guest feature from Suzanne Lewis, a long-time advocate of evidence based library and information practice (EBLIP) in Australia, discusses a current trend within the movement that focuses on the skills, knowledge and competencies of health librarians. In particular, the feature describes three specific Australia-based research projects, on expert searching, indigenous health and future skills requirements for the health library workforce respectively, that exemplify this trend. These projects illustrate how the evidence base can be strengthened around the skills and knowledge required to deliver services that continue to meet the changing needs of health library and information users.

Gaines, Julie K1; Levy, Linda S; Cogdill, Keith, (2011) The SMILE project represented a partnership among the University of Texas Health Science Center at San Antonio Libraries, the Gateway Clinic in Laredo, and the San Antonio Metropolitan Health District. The project focused on improving dental practitioners' access to reliable information resources and integrating the best evidence into public health dental practice. Through its training program, SMILE cultivated a set of 'power information users' among the dentists, dental hygienists, and community health workers (promotores) who provided public health preventive care and oral health education. The dental public health practitioners gained information literacy skills and increased their

knowledge about reliable sites such as blogs, PubMed, and MedlinePlus. This project fostered opportunities for expanded partnerships with public health personnel.

Edwards, Simon, (2013) As well as developing and launching its new Professional Knowledge and Skills Base, CILIP's Future Skills Project has reviewed and revised the process for the Accreditation of Academic and Vocational qualifications. The key changes that will further benefit members are the requirement for learning providers to engage with employers in the development and delivery of programmes. Alongside this, it has reviewed CILIP's Framework of Qualifications. Among other things, it will include: Broadening the appeal and relevancy of CILIP qualifications to encourage more members to participate, providing clearer guidance and information for candidates and those that support them, and developing clearer assessment criteria so that candidates understand what CILIP is looking for and why.

Breeding, Marshall, (2014) More than ever, libraries depend on a varied assortment of technologies to carry out almost every aspect of their work. This blend of generalized and specialized components forms a rather complicated technology infrastructure that increases in complexity especially in larger-scale organizations. Put together in the right way, technology can streamline the work of the library and strengthen its ability to carry out its mission. When implemented in a less optimal way, technology can seem frustrating and inefficient. Libraries benefit from having specialists within their organization tasked to manage all the various aspects of technology with the ability to shape it to their specialized requirements. A skilled individual or team tasked and enabled to design and implement the library's technological infrastructure can mean the difference between efficiency and frustration. To handle this role effectively, those responsible need to have an in-depth knowledge of technology a keen understanding of the strategic and operational needs of the library, and the insight to ensure that technology operates in ways that respect its key principles and values.

Husain, Shabahat; Nazim, Mohammad (2014) Purpose - The study aims to explore the relevance of knowledge management (KM) education within library and information science (LIS) educational courses in India. Design/methodology/approach - The study used a quantitative research approach. A Web-based questionnaire survey was designed and distributed through FreeOnlineSurveys.com for the collection of data. A link for attending the survey was sent via electronic mail to the teachers (95 in numbers) of 65 LIS schools. A total of 43 responses (approximately 45 per cent) were received. Findings - The findings show that there is a strong interest among LIS community towards the inclusion of KM education within LIS educational courses to impart the knowledge and skills related to KM among LIS students, and to facilitate their entry into the KM job market. Most of the respondents believe that a curriculum which embodies core elements of LIS, management and information systems and technology would best meet the needs of LIS students for their involvement in KM activities. Practical implications - Findings of the present study may be used as the groundwork for the revision of current LIS educational courses as well as the revision of LIS curricula to impart the knowledge and skills-related to KM among LIS students for working in KM environment. Originality/value - As no empirical study on the relevance of KM education to LIS professionals in India has been carried out before, this study closes this gap and provides a framework to modify existing LIS courses or curricula to fulfil the requirement of KM competencies of LIS students.

III. CONCLUSION

These dramatic changes have impacted significantly on the knowledge and skills requirements for LIS professionals practicing in this environment. While there have been studies in other parts of the world which have investigated the knowledge and skills requirements for the digital era academic library environment, to date no comprehensive study has 'drilled' down into this area in the South African context. This paper reports on a preliminary study which is part of a wider study aimed at developing a comprehensive skills statement which would provide an objective framework against which professional LIS practitioners in the modern academic library environment in South Africa may both measure their existing competencies and also identify the need for further skills acquisition. The research question guiding this preliminary investigation was key knowledge and skills are required for LIS professionals to effectively and efficiently practice in a digital era academic library in

South Africa? The triangulated findings (using content analysis of job advertisements and semi-structured interviews) from this preliminary investigation are used to ascertain an initial picture of key knowledge and skills sets required for LIS professionals in this environment. These preliminary findings also proved useful in teasing out some of the parameters for the wider study targeting the development of a comprehensive skills statement for higher education libraries in South Africa. The study reported here has relevance for the academic library context in other parts of the world as well.

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