University Librarians Association (ULA) Sri Lanka

Conference proceedings

ICULA 2011

7th International Conference of the University Librarians Association

16th & 17th August 2011

"Contribution of the Academic Librarians towards a Knowledge Society"

Editors

Dr. Chaminda Jayasundara

Sajeewanie D. Somaratna

Hotel Galadari
Colombo Sri Lanka

Proceedings of 7th International Conference of ULA held from 16th- 17th August at Hotel Galadari Colombo, Sri Lanka

"Contribution of the Academic Librarians towards a Knowledge Society"

ISBN: 978 – 955 – 1359 – 05 – 8

Lassana Printers and Publishers
749, Avissawella Road, Wellampitiya.
Tel: 011-2572297/2572515
Fax: 011-2547662
Email: lasprint@sltnet.lk

Preface

Annual International conference of the University Librarians Association is a significant event of the University Librarians Association of Sri Lanka. This is the 7th International conference organized by ULA, and this volume comprises of full length research papers presented at ICULA 2011 held on 16th and 17th August 2011 at Hotel Galadari, Colombo, Sri Lanka.

The theme for ICULA 2011 is *"Contribution of the Academic Librarians towards a Knowledge Society*". The conference proceedings cover different facets of knowledge management and it highlights the role of the academic librarian in the knowledge society. This conference serves as a discussion forum that supports the sharing of creative, supportive ideas with LIS professionals, researchers, academics, and other professionals related to the field of academic librarianship in Sri Lanka and other Countries.

A Large number of colleagues and professionals contributed to making ICULA 2011 a success. We would like to thank the conference committee, the conference organizers, paper reviewers, paper editors, our sponsors and the printer for their efforts in producing yet another landmark in the milieu of academic librarianship in Sri Lanka. Finally, we would like to acknowledge and convey special appreciation to the Chairman, UGC and Chairman of the Standing Committee of Library & Information Science (SCOLIS), Vice Chancellor University of Peradeniya, Vice Chancellor University of Colombo, keynote speaker, lead paper presenters and the other presenter who delivered theme papers and the session chairs, who did an excellent job of keeping the conference on track.

Dr. Chaminda Jayasundara
Sajeewanie D. Somaratna
Editors - ICULA 2011

CONTENTS

PART 1: Role of Librarian in the Knowledge Society

PART 2: ICT for Knowledge Society

PART 3: Information Literacy: the Essential Tool for Knowledge Society

PART 4: Celebration Sri S. R. Ranganathan Birth Anniversary

PART 5: Institutional Regime for Knowledge Society

PART 6: Innovative Research for Knowledge Society

PART 7: Copyright and Intellectual Property Rights in the Knowledge Society

PART 1

Role of Librarian in the Knowledge Society

Session Chair – Prof. R. Senaratne

Vice Chairman, University Grants Commission, Sri Lanka and

Chairman of SCOLIS

Library & Information Science (LIS) Education: Best Practices in LIS Education in Thailand

Butdisuwan, Sujin[1]., Reddy, E. Rama[2]

Best Practices are contingent, context dependent and defy generic description. If these practices are to be useful, we need to identify the practices that contribute to value addition to institutions in general and disciplines in particular. This requires purpose, judgment and one cannot write an ideal of best practices applicable to all contexts. This paper aims to discuss best practices in Library & Information Science (LIS) Education. It is limited to LIS Education within Thailand. This paper describes the input factors, the process factors and output factors that should be taken into account in identifying the criteria for best practices. The criteria of economy, efficiency and effectiveness may be used in identifying them. Another way of identifying the best practices is the inductive approach. This paper adopted this approach by asking the LIS divisions to describe their best practices and the criteria they have applied in their identification, justifying their choices logically. The literature review indicates that there is absence of generally accepted best practices within LIS Education. This paper describes the LIS Education in Thailand and also the Best Practices that are identified and implemented in other countries including the practices adopted by the National Assessment & Accreditation Council (NAAC), India focusing other disciplines. The paper also details about the benchmarking the best practices in LIS Education. The compilation of best practices received from the selected LIS divisions in Thailand is appended to the paper.

***Keywords**: Best Practices, Best Practices in Higher Education, Library & Information Science Education*

Introduction

The Library and Information Science (LIS) has grown into a multidisciplinary subject. The subject also gradually attained the status of a scientific field and emerged subsequently as one of the highly multidisciplinary with a blend of theories; philosophies and practices incorporated from different

[1] Dr. Butdisuwan, Sujin , Assistant Professor, Mahasarakham University, Thailand
Sujin.b@msu.ac.th

[2] Dr. Reddy, E. Rama, Visiting Professor, Mahasarakham University, Thailand
enukondar@yahoo.co.in

other subjects. The LIS subject covers diverse areas like; Psychology, Statistics, Linguistics, Management Science, Computer Science, Information Science and Communication Technology and also many other related fields. The convergence of these fields with LIS has led to its transformation towards a new professional profile to attribute only to libraries, and now expresses itself as a field intensively dealing with information science and technology. The other side, the new millennium opened several opportunities and challenges at global level in identifying, organizing, storing and providing access to the learning resources and information resources to support research and development. Libraries no longer can survive and sustain in meeting the User demands for information without sharing the information resources. This is also true with the changing scenario of teaching-learning process in the educational institutions in general and LIS education in particular.

This millennium brought in new challenges and opportunities to the LIS Education apart from other disciplines. Training for the library & information professional is essential for effective functioning of the libraries and information centres. Education and training should be based upon the demands of the profession. But, since the demands of the profession are always changing due to various factors, such as, growth of literature, complexity of subjects, changes in the formats of documents etc, and the training methods must adapt to such changes. LIS Education, as a professional course needs revamping to address the present and future developments in technology as a tool in identifying, organizing, storing, providing access facilities to the end user. It is necessary to identify the best practices in LIS Education to bring in uniformity in the teaching and learning processes in a Country apart from entering into collaborative activities.

Objectives

- To Study the status of LIS Education in Thailand
- To survey the existing practices in teaching that add value to the LIS education in the departments in Thailand
- To list some of the Best practices, the LIS departments in Thailand have identified that added value in the teaching and learning process.

Scope

Examining the LIS Education in Thailand, who are offering LIS degrees at Undergraduate, Postgraduate and Research levels and listing some of the best practices that added value to their departments.

Methodology

- Review of literature of similar works
- Developing a structured format to gather data along with interviews, and
- Listing the identified Best practices after evaluation

LIS education in Thailand

The basic courses that were developed by the Fulbright Foundation Scholars at Chulalongkorn University, Thailand in the year 1951 in Library & Information Science later became full-fledged degree programs in 1959. This was the first library school to offer a diploma program. The objectives of the School are to promote librarianship, provide well educated librarians to work in various types of libraries, and to support educational programs which depend on extensive library materials (Suthilak Ambhanwong 1964).

Over a period of time, several Institutions, including Public, Private and Rajabhat Universities started different LIS programs at undergraduate, postgraduate and Doctoral levels. LIS Education Programs have different names in different Universities, like Library Science, Library & Information Science, Information Science, Information Studies, Information Management and Information Technology & Management. However, all these programs fall under Undergraduate and Postgraduate Courses. At present most universities offer undergraduate programs; 13 universities offer postgraduate programs and Khon Kaen University and Sukhothai Thammathirath Open University are offering doctoral program in LIS in Thailand. Most of the Undergraduate programs are offered in the faculties of Humanities, Humanities and Social Sciences, Arts, and Liberal Arts as full-time, part-time or both. These programs are developed keeping in view of the requirements of library professionals at the entry level. The Undergraduate program in LIS is for four year duration by most of the departments but some departments also offer two-year duration program with total number of credits ranging from 120 to 150 according to the standards set by the Ministry of University Affairs. The course content consists of general courses, core courses and electives. Few Universities also offer Certificate course in Information Work and Diploma in Library & Information Science apart from the Undergraduate and/or Postgraduate Program in LIS.

Undergraduate and graduate programs continue to be updated and expanded in Thailand. Graduate Studies in LIS in Thailand include Master Degree program, advanced graduate diploma program and a doctoral program. Objective of these programs is to prepare high level professionals to work in Libraries using ever changing technologies and also teach in LIS departments. Master degree program is offered as full-time or part-time in most of the Universities with 36 or 42 credits.

Rapid expansion in LIS education and changes in the economic and social climate in which this education is provided have raised numerous problems. The Thai LIS departments' share common set of problems for which solutions must be sought co-operatively. These include staff capabilities, course content, student selection and employment opportunities for graduates (Butdisuwan & Gorman 2001).

There have been efforts to improve staff capabilities by sending them to other Countries for higher qualifications (doctoral program) and training to strengthen the departments when they came back. Course content is a serious concern and it needs innovations, application of new technologies, addressing the contemporary issues using ICT etc. This may change gradually in many Universities as and when the teachers comeback with higher qualifications and training etc. Apart from sending the faculty members to acquire higher qualification, the institutions can create facilities for in-service training programs specially designed to train the trainers. Selection of students and employment opportunities largely depend on the credibility of the courses that are taught based on the market requirements. Thai Library Professionals should also learn English to look at global opportunities. LIS Education should focus on specialized areas to train the graduates to handle specialized works to work in various types of libraries in Thailand and also outside Thailand apart from improving communication skills and soft skills.

It is important to learn from each other's experiences, from within and also from outside of Thailand. This is possible, if a database of best practices is created and constantly revised as the changes that take place in LIS Education in Thailand. Such database will help the LIS departments to adapt and add value to their courses.

Best Practices

What is meant by best practice? In the management literature, best practice has a more technical definition than the informal concept. One definition states that best practices are those "that have been shown to produce superior results; selected by a systematic process; and judged as exemplary, good, or successfully demonstrated". The systematic process used by organizations usually involves "benchmarking", by which they measure themselves against others in their field.

In other words, best practices can be defined as the most efficient and effective way of accomplishing a task, based on repeatable procedures that have proven themselves over a time for large number of people. Establishing benchmarks through best practices is not a new concept in higher education. It has already been tried by the Association of Commonwealth Universities (ACU). First stage of benchmarking process is to address the identification of aspects and processes.

The Australian Universities and The National Assessment and Accreditation Council (NAAC) India, and few other countries, introduced a methodology to look into how various policies and processes of the institution determine the educational provisions and consequently, the quality of its performance. The seven criteria statements adopted by NAAC serve as benchmark to assess quality of education following best practices. The seven criteria are: Curricular Aspects; Teaching-Learning and Evaluation; Research, Consultancy and Extension; Infrastructure and Learning Resources; Student Support and Progression; Organization and Management; Healthy Practices.

The successful application of the best practices approach depends on our ability to adopt the following five-stage strategy according to the NAAC, India.

- Identification
- Implementation
- Institutionalization
- Internalization
- Dissemination

Identification

Identification of best practices depends on many variables: such as institutional goals, pedagogic requirements, global concerns, and local contexts, nature of learners, competencies of staff, infrastructure facilities and governance requirements. All these should be kept in mind while identifying the best practices and the complexity of choice of best practices. The best practices should be dynamic and revised periodically; recognize diversity, cultural and historical contexts; not lead to dominance of one specific view or approach; and promote quality of performance. These principles should be interpreted and applied appropriately to different contexts, while identifying the practices.

Implementation

The implementation is the next step and there are some genuine limitations in the application of best practices, but many are imaginary. Instead of finding solutions to problems, sometimes 'academic eminence' may lead to find problems in every solution. The implementation strategies include planning, resource mobilization, capacity building, monitoring and evaluation. The implementation approach focuses more on performance.

Institutionalization

Institutionalization is the process of making the best practices an integral part of the institutional working. Many best practices are institution-specific and are individually managed. In most cases, individual happens to be the leader or head of the institution. Leaders who innovate have been the change agents in many institutions, mobilizing and ensuring the wide-spread support of the campus community for the best practices. This approach results in improvement in the quality of institutions. The continuance and sustainability of these practices depend mainly on individual initiative may run the risk of disruption, if the individual is displaced for any reason. If such a practice is formalized or institutionalized, the risk can be circumvented. Secondly, many best practices require extra efforts. To sustain that effort, gradually it has to become an integral part of the functioning of the institution. Institutionalization is an effort to make it more institution centric than leader or individual centric and also to make the best practices as a normal practice.

Internalization

What is described as institutionalization in the context of institutions may be considered as internalization when it refers to individuals in the institution. Internalization refers to making things as part of one's nature by conscious learning and assimilation. Internalization of best practices means making excellence an integral part of one's habit and nature. We are what we repeatedly do and then Excellence becomes a habit not an act. Such internalization may also be looked upon as making permanent the principle and essence of the best practices as part of the performance of an institution. The internalized best practices will become tradition of an individual institution. Internalization is an attitude formation to sustain quality in higher education.

Dissemination

The institutions not only have the social responsibility of application of best practices, but also an equal social responsibility of dissemination of these practices for wider application in the system. Many higher education institutions do not attempt certain practices due to lack of information about the feasibility and adaptability of the best practices. The best practices are the borrowed practices. We must learn and benefit from each other's experiences. Institutions may have to evolve suitable strategies like creating a database of good practices, review forums, recording evidences for success etc. to discuss within and among institutions.

Benchmarking

Best practice benchmarking or process benchmarking is a process used in management and particularly in strategic management, in which organizations evaluate various aspects of their processes in relation to best practice, usually within their own sector. Benchmarking answers the following questions:

How well are we doing compared to others?

How good do we want to be?

Who is doing it the best?

How do they do it?

How can we adapt what they do to our institution?

How can we be better than the best? (Kempner 1993)

Establishing benchmarks through best practices is not a new concept in higher education. It has already been tried by the Association of Commonwealth Universities. First stage of benchmarking process is to address the identification of aspects and processes. The National Assessment and Accreditation Council (NAAC) India, like other countries, introduced a methodology to look into how various policies and processes of the institution determine the educational provisions and consequently, the quality of its performance. The criteria statements adopted by NAAC serve as benchmarks to assess quality of education following best practices. The criteria are:

- Curricular Aspects
- Teaching-Learning and Evaluation
- Research, Consultancy and Extension
- Infrastructure and Learning Resources
- Student Support and Progression
- Organization and Management
- Healthy practices

Best Practices require widespread acceptance by groups, social systems and also by the individuals in the institutions. Then only it becomes successful to put into practice by the institutions and to be adopted by other institutions. For most institutions of higher education the desire to learn from each other and to share good practice is almost as old as the institutions themselves. At present, they manifest in numerous ways in the institutions. The newness is to create a database of best practices and validate them to include in the database only those that are beneficial and add value to its functioning providing evidence for the success of the practice.

Literature Review

The Australian government commissioned an investigation of innovations and best practices in ICT education. University educators were invited to submit examples of innovation and best practice in their teaching, via a website. From the resulting submissions, many related to web-based teaching, a number of examples of innovation and best practice were chosen to be included in the report. The inclusion process raised issues about the nature of innovation, particularly when viewed from a national perspective. Best Practices in Higher Education (2002) has compiled Websites dealing with Best Practices in Higher Education. The areas include: Active Learning, Assessment and

Evaluation, Critical thinking, collaborative learning, Instructional Technology, Learning Centred Syllabus, Course Design and Problem based Learning etc.

Best Practices in Higher Education: a report of the National Conference organized by the NAAC, India (2004) introduced the concept of best practices in its methodology through criterion statements. The self-study of the institution provided information on existing practices of the institution with reference to criterion statements. Consequently, the Peer Team reports had a wealth of information on the best practices which were in implementation in the higher education institutions. Identifying the best practices from these reports and disseminating them resulted in strengthening the quality enhancement activities of the higher education institutions in India.

Benchmarking and its Relevance to the Library and Information Sector, Margaret Kinnel and Penny Garrod (1995) assessed current activities and attitudes toward quality management in library and information services (LIS). Definitions and types of benchmarking are described, and the relevance of benchmarking to LIS is evaluated. Examples of current practices revealed the problems faced by LIS in both the academic and commercial sectors. Benchmarking is a 'quality' tool which should form part of an overall quality program aimed at improving services. Quality management is considered beneficial to the library and information sector, but a model suiting the exact needs of the sector has not yet been identified.

Ian Smith (2006) in his paper, Benchmarking human resource development: an emerging area of practice, examined the potential for the application of benchmarking to human resource development (HRD) practice in the LIS sector. He outlined the principles of benchmarking, examined dimensions which may be useful in benchmarking HRD and focused in particular on the potential for the application of benchmarking principles to HRD activity in the LIS sector. Several examples of emergent HRD benchmarking practice in the LIS sector are used to illustrate the application of benchmarking principles and methodologies. The paper found that HRD benchmarking has significant potential to become a powerful tool in ensuring good and improving HRD practice in the LIS sector. The paper offered practical information and advice to the Institutions that are considering the application of benchmarking principles and practices to HRD.

Literature reviews indicate the efforts made so far in identifying the Best Practices in Education and LIS Education and bench marking issues by several Institutions. Many of the studies and papers published in academic journals were based on the data acquired using different methodologies including the questionnaire method.

Compilation and analysis

The LIS profession in the Asian Region has often looked to the Western World for ideas and leadership. LIS educators and professionals in the region are often unaware of valuable developments, innovations and expertise in neighbouring countries. Each country in the Asia-Pacific and South Asia has their own history of LIS education and research, shaped by socio-economic, political and cultural factors. As a result, LIS education and research in Asia-Pacific and South Asia exhibit a wide variety of characters, flavours and areas of strength. There is so much we can learn from one another and the data that we received from some Universities is a beginning towards that direction.

A format was designed with explanations, wherever necessary to capture the best practices that are being implemented in the Divisions of LIS in selected Universities in Thailand. Explanations illustrated the inputs to be taken into consideration while identifying the best practices in their divisions covering the Institutional Goals, Pedagogic Requirements, Global Concerns, Local Contexts, Nature of Learning, Competencies of Staff, Infrastructure of Facilities and Governance requirements etc. We could translate the explanations into Thai Script for better understanding in identifying their best practices that added value to the LIS Education in their divisions. The format covers to identify the Practice (new idea/change); statement of the goal of the Practice; the Process (how the practice is implemented); impact of the Practice (how it added value to the course); resources required to implement the Practice; contact details of the LIS Dept. to ask for any assistance or clarifications.

A list of best practices that are being identified, implemented in the divisions of LIS in select Universities in Thailand, to add value to the course content, enhanced the quality of the teaching and learning, impediments faced during implementation, resources and infrastructure that was required are added as Annexure to this paper.

Conclusions

Identification and implementation of the best practice approach is an inductive approach to quality management in higher education institutions with a focus on practice and continuous improvement in the LIS Education. The five-stage approach of NAAC, India will help institutions of higher education to play their role effectively in quality sustenance and enhancement. The best as an ideal should be the vision of every higher education institution in general and LIS education in particular in every country. Policy makers in education have an important responsibility of creating an enabling policy framework for effective functioning of the institutions. The Management should ensure proper infrastructure and effective governance systems. Teachers in the divisions of LIS

more specifically have a critical role in building competencies of learners through best pedagogic practices. Finally, students, for whom the whole system is designed, should desire and demand the best.

References

Butdisuwan, Sujin (2000). Library and Information Science Education in Thailand: general scenario. *Singapore Journal of Library & Information Management*. 29, 44-49.

Butdisuwan, Sujin & Gorman, G.E. (2001). *Education for Information*. 19,1-13.

Hagan, D and Markham, S. (2003). Defining Innovation and Best Practices in Teaching. Proceedings of Computers and Advanced Technology in Education. ACTA Press, Australia

Kempner, D.E. (1993). The Pilot Years: The Growth of the NACUBO Benchmarking Project. *NACUBO Business Officer*, 27(6), 21-31.

Kinnel, Margaret and Garrod, Penny (1997). Benchmarking development needs in the LIS sector. *Journal of Information Science*. 23, 111-118

Pimrumpai Premsmit (1999). Library and Information Science Education in Thailand. In Proceedings of 65th IFLA Council and General Conference, 20-28 August, Bangkok.

Prasad, V.S and Stella, Anthony (2004). Best Practices Benchmarking. In the Higher Education for quality enhancement in Best Practices in Higher Education. NAAC India.

Saladyanant, T. (2006). Quality assurance of information science program: Chiang Mai University. In C.Khoo, D. Singh & A.S. Chaudhry (Eds.), Proceedings of the Asia-Pacific Conference on Library & Information Education & Practice 2006 (A-LIEP 2006), Singapore, 3-6 April 2006 (pp. 432-435). Singapore: School of Communication & Information, Nanyang Technological University.

Report (2006). Best Practices in Library & Information Services: NAAC India.

Smith, Ian (2006). Benchmarking human resource development: an emerging area of practice. *Library Management*, 27 (6-7), 401-410.

Suthilak Ambhanwong (1964) “Library Education at Chulalongkorn University.” in Librarian 2507, pp.6-10. Bangkok: Department of Library Science, Chulalongkorn University.

Business Performance Improvement Resource (BPIR). What is best practice? http://www.bpir.com/benchmarking-what-is-best-practice-bpir.com.html [Accessed on May 22, 2011].

Varlejs, Jana. Continuing Professional Development: Principles and Best Practices http://www.ifla.org/VII/s8/unesco/eng.htm [Accessed on May 22, 2011].

ANNEXURE

(1)Title of the practice: Using Blackboard Learning System Technology in the class room to strengthen teaching and learning process

Description(s) / Detail(s):

The Blackboard Learning System is a family of software applications designed to enhance teaching and learning. Intuitive and easy-to-use for instructors, the Blackboard Learning System is built on a scalable enterprise technology foundation that facilitates growth and performance.

(2) Title of the practice: Offering the Library and Information Science Education through Distance Education Mode with blended learning model

Description(s) / Detail(s):

Students can study from their homes, offices or from their workplaces. Courses are offered through extension centers througout the Country. Distance Education is now recognized throughout the world as a viable alternative to campus-based education and remains occupationally competent in today's digital era and knowledge society. The instructional system used is a combination of on-campus instruction and distance learning through mail, radio, television, and other modern facilities. Students may choose either or both modes of instruction to fit their learning needs. Textbooks, learning materials, recorded audio and video lessons are available to students to study at home.

(3) Title of the practice: Producing reading materials and textbooks in Library & Information Science program for traditional and web based learning.

Description(s) / Detail(s):

Each course is supported with well written text-books by the experts in the area. These materials are distributed to the students enrolled in the distance learning program apart from posting on the web. This is supplemented with audio, video and radio lessons that are broadcasted or telecasted in all the provinces of Thailand

(4) Title of the practice: Externalization of Library and Information Science Program

Description(s) / Detail(s):

In the process of externalization of the LIS education Memorandum of Understandings were signed with several Universities and some are in the process. This arrangement could enable us the facilities for exchange programs for the staff members to get exposure to the global working and learning environments, inviting experts from other countries as visiting professors and visiting

scholars, and also undertaking study visits for establishing collaborations in teaching, learning, research and conducting joint research programs in LIS.

(5) Title of the practice: Working with the local authorities of schools, libraries, and other institutions

Description(s) / Detail(s):

Library and Information Science could get into Memorandum of Understanding with the local authorities. This activity strengthened our academic activities to address the problem areas as part of teaching the students. Several students got into student apprentship in the local authorities to get practical knowledge.

(6) Title of the practice: Creating a program committee for decision making in the library and information science education program

Description(s) / Detail(s):

The Program Committee meets to brain storm on the issues that needs attention on academic matters periodically. The committee has been taking accurate decisions in a transparent way looking at diverse needs of the LIS program.

(7) Title of the practice: Modern Knowledge Management to achieve sufficiency by using knowledge economy

Description(s) / Detail(s):

Students are encouraged to study from the existing documents apart from arranging them to go on field trips to any other universities where the LIS courses are offered. This will enable them and also the teachers to analyze and compare the practices including the administrative management form, courses and teaching, personnel etc. The teachers and students are encouraged to visit to any university where the LIS courses are offered successfully. It is necessary to arrange in-service training programs to lecturers to develop their skills.

(8) Title of the practice: Increasing the number of Lecturers and improving efficiency in LIS education

Description(s) / Detail(s):

It is necessary to know the best practices that are adopted in other LIS Departments to learn from their efforts to improve efficiency. The lecturers can develop their knowledge by attending training programs, seminars both in Thailand and abroad to provide better education to their students. The

teachers need to be encouraged to go for higher studies and also attend to their academic tasks continuously.

(9) Title of the practice: Introducing Basic Structure of Information Technology Management Education

Description(s) / Detail(s):

Considered details of all courses together to find the best practice and methodology to get more potential and build the IT structure to develop students who major in Information Management. Moreover, we pay attention to the result with the proper duration. If there is any problem, we should cooperate to solve the problem.

(10) Title of the practice: Good methods to propose the thesis proposals by the students

Description(s) / Detail(s):

Students propose the proposals of their thesis in order to get the approval of the committee. The Committee meets periodically to review the proposals and approve them to enable the students to proceed further on the topic.

(11) Title of the practice: Establishment of Library Education, B.A. in Information Education"

(12) Title of the practice: The Open System of Study

Description(s) / Detail(s):

To give the alternative to students to choose which one is suitable to their abilities. They can be in a class or study by themselves using various media and technology system.

Information Seeking Behaviour of Faculty and Staff Members in an Engineering Institution: A survey work

Mukherjee, Debalina[1], Mukherjee, Koyal[2], Mukherjee, Soumen[3]

The Second Law of Library Science tells "Every Reader his/her Information". This statement conveys the message to the librarian that any reader who is coming to the library in search of information must have it. Thus the information seeking behaviour of a reader creates a special significance for the librarians. Different efforts are being made to analyze the information requirements of different categories of readers. Here in our paper we have performed, analyzed and discussed about the results of the study done in a growing technical educational institute situated in Kolkata, India. The study done in two phase with a gap of around three years in an AICTE approved engineering college named RCC Institute of Information Technology. We have made a comparative analysis of the personal and professional reading habit of staffs of RCCIIT found in the study. Here in this paper first of all we have discussed the objectives, need, scope and methodology of the study. Then the results are given with discussion. Finally we conclude with some important findings. The data and graphs are given in the appendix.

Keywords: *Information Seeking Behaviour, Reading Habit, Online Access Catalogue, Information Communication Technology.*

Introduction

The spirit of the second Law that is "Every Reader his/her Information" cannot be fulfilled until the librarian understands the information need and the information gathering habits of his readers. However, this is easier said than done. It is one thing to meet the articulated demand of the reader, it is altogether different when it comes to meeting the unexpressed, the unfelt and yet the potential information need. Another dimension of the problem is that the information needs of different categories of readers- scientists, social scientists and human scientists-are not of the same nature;

[1] Mukherjee, Debalina, RCC Institute of Information Technology, India.
mukhdebalina@gmail.com

[2] Mukherjee, Koyal, Calcutta Public School, Bidhan Park, India
amikoyal@rediffmail.com

[3] Mukherjee, Soumen, RCC Institute of Information Technology, India.
soumou_601@rediffmail.com

they differ qualitatively, quantitatively, and geographically. The present era is the era of information and knowledge revolution. Many electronic resources are available in the library. The increase in information available on the web has affected information seeking behaviour. Innumerable type of information in a large variety of containers and in many different locations, are all available in one place. In the modern society, the type of information and the media, which present them, have become manifold and multifarious, offering men and women a vast selection.

Objectives of study

There are some specific objectives of the study which are given here:

- The study is to examine information seeking behaviour (both personal and professional) of faculty members and non teaching staffs in RCCIIT situated in Beliaghata, Kolkata, India;
- The study is to determine the what kind of information are used by faculty members and non teaching staffs in RCCIIT;
- The study is to explore the use of information technology by the faculty members and non teaching staffs in RCCIIT;
- The study is to reveal how, when, how frequently and what type of reading materials used by faculty members and non teaching staffs in RCCIIT;
- The study is to find out the problems faced by users of RCCIIT library while seeking and use of information they want.

Need of the study

The nature of information is not easy to describe. Perhaps the most explicit definition in the literature defines information as recorded experience that is used in decision-making. Today, information technology has developed rapidly and has had a huge impact on access to information and on information seeking behaviour. Librarian and library-staff have to know and examine the criteria of information seeking and information used by users for providing information services, designing new information systems, intervening in the operation of existing systems, or planning in service programs.

The following questions had been asked to get the answers from the respondents:

- What kind of information is sought by faculty and staff members?
- What are the personal and professional reading habits of the faculty and staff?
- What methods are used for seeking information of faculty and staff members?
- How information technology is used by faculty members and staff?
- What are the problems of seeking information and how it can be solved?

Scope of the study

The scope of present study was limited to the staff members working in the engineering college named RCC Institute of Information Technology (RCCIIT), a unit of RCC Institute of Technology, an autonomous Society of Dept. of Higher Education, Govt. of West Bengal situated in Canal South Road, Beliaghata, Kolkata- 700015 which offers MCA & B. Tech degree in CSE (Computer Science), IT (Information Technology) & ECE (Electronic & Communication), EE (Electrical Engineering). In later we will extend this survey to all of the private engineering colleges in West Bengal and also in India.

Methodology of the study

A structured questionnaire was developed for the purpose of data collection and personally distributed among the respondents. Total 20 questionnaires were distributed, out of which 15 useable questionnaires were received back. The response rate is 75%. Data collection began in February 2007 and was completed by April 2007. The respondents are faculty members of Computer Science (CSE) faculty, Information Technology faculty (IT), Electronic and Communication (ECE) faculty and Master in Application (MCA) faculty. In the first phase non teaching staffs are not included in the study but in the second phase they are included. A second phase of Data Collection & Analysis Began on July 2010 and was completed by September 2010 with 24 questionnaires and faculty members of Computer Science (CSE) faculty, Information Technology faculty (IT), Electronic and Communication (ECE) faculty and Master in Application (MCA) , Electrical Engineering (EE) and Science and Humanities and non teaching staff. In this survey 40 people were surveyed from different departments. From these 24 male members and 16 female members were surveyed. 32 are teaching and 8 non-teaching staffs were included. These members were divided into two age groups which are from 25-35 are 31 members more than 35 of age are 9 were surveyed. Through this paper it is found that how the technical college teachers are indulge in reading books.

Table1: Number of faculty and staff studied in first phase

Department	**Faculty Members**
IT	4
CSE	3
ECE	5
MCA	3

Table 2: Number of faculty and staff studied second phase

Department	Faculty Members
IT	8
CSE	7
ECE	7
MCA	8
Library	1
Science & Humanities	7
Training & Placement	1
Office	1

Analysis and result

The findings of the study are summarized and presented here with and tables are provided.

Type of Institute

Basically the said institute, named RCC Institute of Information Technology (RCCIIT), is an engineering college, an autonomous society under department of Higher Education, Govt. of West Bengal.

Table 3: Department Strength

Department	Students/Dept.	Faculty/Dept.
Information Technology (IT)	60	25
Computer Science (CSE)	60	20
Electronic and communication (ECE)	60	10
Electrical Engineering(EE)	60	5
Master in Communication (MCA)	60	10

Table 4: Percentage visit to library

Type	Percentage (%)
Daily	20
Twice a week	33.3
Weekly	20
Rarely	26.7

From table, it reveals that 20% respondents visit the library daily and 33.3 twice a week, 20% visit the library weekly and 26.7% visit the library rarely.

Types of Resources

The following types of resources are in library

Books in printed form- basically technical i.e. IT and CSE oriented printed materials are available in library, which are helpful for course curriculum. Besides this there are so many reference books under computer science and IT disciples suitable for research work.

Technical journals- library contains 10 printed journals and 20 online journals, which will be available through net from college premises. And also it subscribes online digital library journal named, ACM which contains journals of computing part and available through net www.acm.org in the college premises.

Internet- Internet is available for 24 hours in the college from computers, installed in different lab.

Table 5: Search method used by user

Methods	**Percentage (%)**
Books	100
Scientific-technical journals	60
Internet	40
OPAC	60
Meeting/Seminars/Workshop	40
Online Journal (ACM)	20

The question was asked about the method used by the faculty member for seeking information from library. Result shows from the table that all faculty members search books for information.

Table 6: Percentage of seeking information by user

Purpose	**Percentage (%)**
Research work	60
Preparing class notes	80
Preparing answer to questions	20
Reading/ Thinking purpose	40

Problem with Seeking Information

The respondents were asked to mention the problems they faced while seeking information. Most of them indicate that the following services are very poor.

- Display board service
- Interlibrary loan
- Newspaper clipping service
- Reprographic service
- Technical enquiry service

Personal Reading Habit of User

Females are more passionate towards reading. Age more than 35 is keen towards reading than age group between 20 to 35.Where as age group 20 to 35 about 26% is not interested towards reading. From the teaching and non teaching staffs, non teaching staffs are more interested towards reading. About 44% of females and 21% of males are interested in fiction and 6% of females and 17% of males are interested in non-fiction. Among fiction readers age group more than 35 are more interested towards classics. Males are more fascinated towards classics and comics whereas females are fascinated towards thriller books. Among non teaching group most of them are thriller book reader. Among the non-fiction books magazines are most popular among the male and female faculty members. Least non-fiction book preferred is philosophy among both the genders. Autobiographies are better liked by the females than males. About 81% of females read for 2-4 hours whereas 58% of males read for the same hours. Among 38% of non-teaching staffs reads for less than an hour whereas 22% of teaching staffs read for the same time. 92% of male members and 69% of female members read newspaper every day. About 25% of females and only 4% of males do not read newspaper regularly. All the members whose age is more than 35 read newspaper daily whereas 77% of faculty whose age is between 20 – 35 read newspaper daily. 56% faculty members of more than 35 years of age group are focused on the author, whereas 20-35 age group faculties about 61% are most interested in the summary before reading the entire materials. Least information male members get from their family on the other side female gets least information from library. Most of the non-teaching staffs (63%) rely on library for new books. 63% of Male members acquire books from library for reading and 69% of females buy books .Whereas only 17% of male reads online and only 31% of female members lend books from friends to read. Due to advent of T.V there is a decline in reading habit among the 50% of male members and among the 38% female members along with this reason lack of patience is another for decline in reading habit. 63% of Non-teaching staff members thinks lack of patience is the reason for decline in reading habit. About 67% of male and 63% of female members thinks that encouragement by the family members or friends will increase the number of readers.

Professional Reading Habit of User

About 63% of male members use the college library. Members of the age group more than 35 about 78% use the college library. Majority of faculty members i.e.72% of teaching staffs get the required book from the library.75% of female members and 63% of male members get the required books from the college library. 83% of male members and 69% of female members take the help of outside source to get reference books. About 8% of male they do not take help from outside the library and 19% of female they do not prefer to use outside sources. 67% of male members and 56% of female members every month take help of the books available outside the college. Whereas 50% female thinks they do not get recent edition of books from the library. 75% of male staff issue books from library rather than reading it inside the library and 88%of female staff issue books from library rather than reading it inside the library. 67%of male members are satisfied with the library services provided by college while 69% of female members are satisfied with the library services provided by college. 63% of females go through the online journals at least once in a week but 46% of male members see the online journals at least once in a week. 71% of male members are comfortable in handling the online journal whereas 56% of female members are easy in the usage of online journal. 75% of male members feel easy to use the hardcopy rather than softcopy whereas 69% of female members feel the same. 58% of male members get to know the arrival of recent journal in their field through internet while 56% female members get to know the arrival of recent journal in their field through internet .25% of male and 19% of females get to k now the same from the library. 75% of male and female members get to know the current development in their respective field through internet. The detailed results and few charts are given in the appendix.

Conclusion

The successful operation of any library depends to a large extent on the choice of library collections. The choice of the collection should meet the need and requirements of the end users. Consequently, Librarians must be aware of how the faculty members seek information. The first three preferences given by the faculty members to seek information are textbooks, periodicals and newspaper. It is also observed that the majority of faculty members sought information for preparing lectures, keeping up-to-date knowledge and research work. ACM is used by faculty members, which is popular electronic journal of computing part. The problems they faced while seeking information are incomplete information, lack of information and also lack of time etc. In regard to information seeking behaviour of users in RCCIIT library in Beliaghata, Kolkata, India, it is recommended that library staff or reference librarians could use their time in a better way by focusing on assisting users. Reference librarians should help users to improve their skills in information need. Librarians should also assist users in learning the use of OPAC (Online Access Catalogue), search engine, e-mail, and CD-ROM techniques, and inform them of the web sites available through the various

networks. Hence, the library must provide adequate ICT (information communication technology) facilities for reference librarians, such as Internet, laser printers, scanners, fax machine, telephone, etc to offer various services in the library. Although, users have expressed sentiment concerning argumentation of periodicals available, it is also suggested to acquire printed journals and electronic journals. To know the available resources properly orientation program is necessary. Hence, it is suggested that advanced training for users at different levels should be started.

References

Shokeen and Kaushik (2003). "Information seeking behaviour of Psychologists and Sociologists: A case study", *ILA Bulletin*. July-Sept; 11-14.

Mahapatra and Panda (2001). "Information seeking behaviour: a conjectural approach. *SRELS journal of information management*", June; 121-138.

Prasad and Triphati (1998). "Information Seeking Behaviour of social scientists: A report", *Annals of Library Science and Documentation*. 41-48.

Singh (1995). "Survey of Indian Institute Technology Library", Madras, *Journal of Library and Information Science*, June-December; 1-33.

Kay H. Braguglia (2005). "Reading Habits of Business Students", *Journal of College Teaching & Learning* – March, 2, (3).

Mengxiong Liu and Bernice Redfern, "Information-Seeking Behavior of Multicultural Students: A Case Study at San Jose State University".

Mann, "Reading Habits of Faculty Members in Polytechnic Colleges in Punjab: A case study of Adesh and Bhai Maha Singh Polytechnic Colleges Muktsar (Punjab)".

Gary Barker, "Adolescents, social support and help-seeking behavior", WHO.

A.K. Sharma, S.P. Singh (2005). "Reading Habits of Faculty Members in Natural Sciences: A Case Study of University of Delhi", *Annals of Library and Information Studies*", 52, (4), 119-123.

Angela Phillip, "The reading habit - a missing link between literacy and libraries".

Gregg V.H. (1988). "Introduction to Human Memory London", Routledge & Kegan Paul, 1986.

Herman J.,"*ESL Reading in Post-Secondary Institutions PNG Journal of Education*" 24, (2) :204-213.

Krashen S. D. (1984) "Writing: Research, Theory and Applications Oxford: Pergamon".

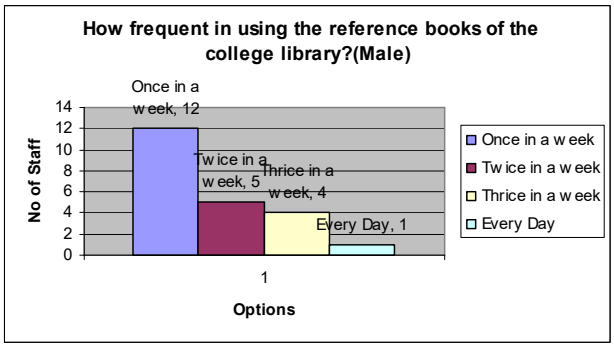
Luria A.R. (1976). "Cognitive Development: Its Cultural and Social Foundations".

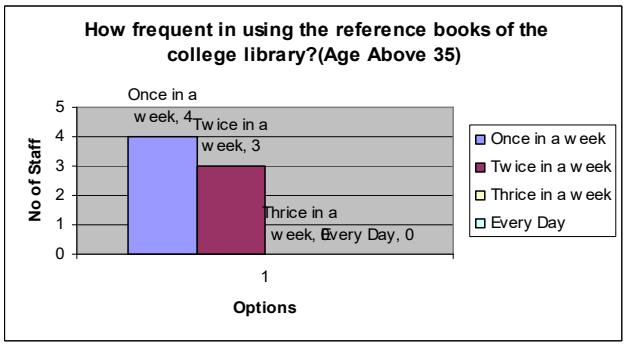
Risoleide Cristina da Costa Barbosa, Edson Marcos Leal Soares Ramos, Adrilayne dos Reis Araújo and Silvia dos Santos de Almeida (2006). "evaluating the socioeconomic relation with

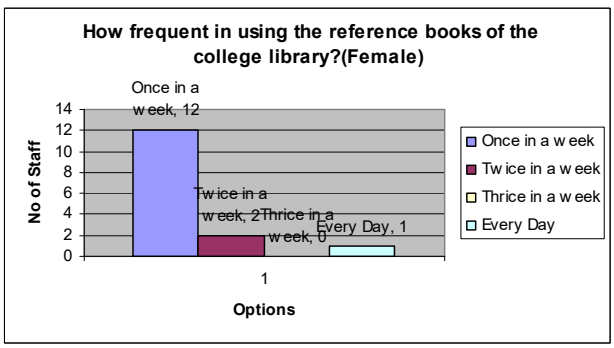
reading habit between the students from a particular school and a public school" ICOTS-7, Barbosa, Ramos, Araújo and Almeida.

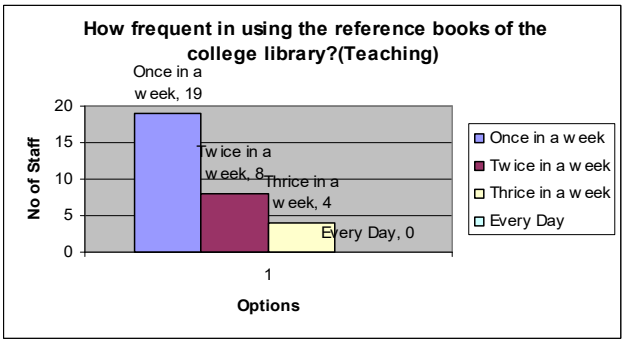
Richard Bamberger, "Promoting the Reading Habit", UNESCO, ISBN 92-3-10211 8-5. http://www.rcciit.in.

APPENDIX








How frequent in using the reference books of the college library?(Teaching)
Once in a week, 19
Twice in a week, 8
Thrice in a week, 4
Every Day, 0
No of Staff
20
15
10
5
0
1
Options
Once in a week
Twice in a week
Thrice in a week
Every Day

Institutional Repositories in India

Christy, Cynita[1] and Hirwade, Mangala Anil[2]

Digital repositories are considered essential information tools for scholarly communication. The present study deals with major institutional repositories in India. To understand the current status and identify the issues to be considered for developing institutional repositories in India, 43 major institutional repositories in India are evaluated. These institutional repositories have been taken from Directory of Open Access Repositories (DOAR). These repositories have been analysed based on selected study criteria like scope and coverage; problems and difficulties, software used, metadata, interoperability, preservation policies and Intellectual Property Rights issues.

Keywords: *Digital Repositories, Interoperability, OAIS, Metadata*

Introduction

As the traditional custodians of cultural heritage, libraries, archives, and museums are actively addressing methods and strategies for preserving digital materials. As collections grow, the needs associated with their maintenance and long-term viability grows too. All research resources need care and attention to survive, but digital research resources need more attention, often much sooner than resources on paper. A necessary outgrowth of this process has been the development of digital archives or digital repositories.

Internet and web technologies provide many opportunities in terms of registering ,keeping ,and archiving digital materials and dedicating them to the service of users through institutional repositories (Akbulut, 2011).Universities, in particular, benefit from institutional repositories, as they can manage their intellectual heritage resources, usually scattered all over the campus both off-line and online, and serve their users.

1 Christy, Cynita, Contributory Lecturer & Research Scholar, Department of Library & Information Science, RTM Nagpur University, India
bcvarkey@rediffmail.com

2 Dr Hirwade, Mangala Anil, Assistant Professor, Department of Library & Information Science
RTM Nagpur University, India
hmangala@rediffmail.com

Types of repositories

Digital Repository

Digital repositories are considered essential information tools for scholarly communication. Their acceptability and extensive use by communities and institutions, as well as the users' commitment in self archiving, highlight the need for developing alternative channels of communication to expose scholarly productivity. Furthermore, the digital repositories community is interested into transforming them into viable, reliable and useful systems. This interest is primarily expressed by intense research activity, the evaluation and the usability of the technological solutions that support these services. On an institutional level, digital repositories are systems supported by physical organizations, such as libraries, which undertake many tasks in order to enable a variety of processes associated with these systems, such as submission, editing and access. (Koumoutsos, 2010)

Institutional Repositories

The term institutional refers to the educational or research parent body that controls the repository that usually is the university library or Research institute. IR according to (Lynch, 2003)] is a set of services that a university provides to the members of its community with the purpose of management and dissemination of digital materials created for the members of the university community. This service also implies the safekeeping of this material through long-term preservation if appropriate including the organisation, access and distribution of the collected material.

Discipline-Based Repositories

This type of repository also known as Subject or Research repository is based around a specific discipline. The first and best known is the arXiv http://www.arxiv.org a repository of research papers in the fields of physics, mathematics, non-linear science, computer science and quantitative biology. (Jones, 2006)

Learning Objects

A Learning object refers to a repository of electronic learning materials use for support teaching and learning, this material is often created in small chunks of information and is re-usable, examples of learning objects include files such a video clip, a text or an Uniform Resource Locator, a power point presentation etc. (Wiley, 2003).

Defining the digital repository

- According to (Digital Repositories: Helping Universities and Colleges, 2005) In simplest terms, a digital repository is where digital content, assets, are stored and can be searched and retrieved for later use. A repository supports mechanisms to import, export, identify, store and retrieve digital assets.
- According to (RLG-OCLC Report, 2002) A trusted digital repository is one whose mission is to provide reliable, long-term access to managed digital resources to its designated community, now and in the future.
- According to (OAIS) A Digital Repository is an archive that aims at the preservation of digital information for access and use by a Designated Community and satisfies specific requirements.

Requirements of Digital Repository

Dimitrios A. Koutsomitropoulos , Anastasia A. Tsakou recognized a series of six requirements that every digital repository has to satisfy. In the following, each of these requirements is explained and justified in brief.

Long Term Preservation / Access to the repository's content

A significant step towards preserving digital assets and ensuring their accessibility in the long term is to develop a digital repository conformant to the OAIS specification.

Metadata

Metadata should be used during the whole life-circle of the digital content. The main objectives are description of digital content, support for its management and facilitation of access to it, even in the long term (descriptive, administrative, preservation metadata). However, it is important for the metadata to follow a widely adopted standard (Dublin Core (DCMI 2003) can be used in general, MPEG-7 (MPEG 2003) for multimedia content, DIG-35 (DIG 2000) for digital images and METS (DLF 2003) for wrapping and encoding all the above).

Interoperability/Import-Export Capability

Interoperability can be achieved by adopting well-known standards during the repository's development. One of them is the platform-independent language XML (and XML Schema). Implementation of the OAI-PMH protocol is highly recommended in order to accommodate mass metadata import/export to and from the repository. Support for the Z39.50 (ANSI/NISO 1995) protocol is also of crucial importance, especially for transparent and remote search in a huge amount of documents. Interoperability and accessibility of the digital repository are enhanced by exposing its services as Web Services.

Security/ User Certification

It is clear that none but the Designated Community will be allowed to access the repository's content. A practical way to achieve this is to establish a set of access policies for each Consumer or Consumers' Community, to support their authentication using login/password pairs and/or digital certificates and to cipher access to the repository's services.

Intellectual Property Rights Management:

The need for copyrighting original content and for economic exploitation of the repository necessitates the management and encoding of IPR information into the content. Watermarking not only for digital images but also for any type of multimedia content is widely used.

Knowledge Representation / Management:

Repository's content will not be restricted within only one thematic domain, but it may also span over several domains or their combinations. An ontology-enabled system can assist the user in his search by supporting automated reasoning, even if the information being sought is not explicitly defined in the metadata. Ontologies can also be used for the management of a digital repository.

Functions of Digital Repository

According to Swan(2008) Digital repositories have a number of functions:

- To open up and offer the outputs of the institution or community to the world
- To impact on and influence developments by maximizing the visibility of outputs and providing the greatest possible chance of enhanced impact as a result
- To showcase and sell the institution to interested constituencies – prospective staff, prospective students and other stakeholders
- To collect and curate digital outputs (or inputs, in the case of special collections)
- To manage and measure research and teaching activities
- To provide and promote a workspace for work-in-progress, and for collaborative or large-scale projects
- To facilitate and further the development and sharing of digital teaching materials and aids
- To support and sustain student endeavours, including providing access to theses and dissertations and providing a location for the development of e-portfolios.

Advantages of Digital Repository

Traditionally Digital Repositories and research libraries role is to capture, preserve and disseminate their university collective intellectual output, thus becoming an indicator of the institution's academic quality output (Crow, 2002). The advantages are as follows:

Research Advance

Today, with the arrival of the Web there is an increase pressure for institutional repositories to release their output Because for research to advance in medical advances, in engineering and other scientific areas it have to be available sooner than later, not only to satisfy researchers own career ambitions, but to speed up progress in humankind (Jones, 2006).

Benefits for Authors

For researcher digital repositories are more flexible archives in terms of use, offering greater security and long terms access to researcher's own material. Another benefit for authors is the ability to access a wide range of materials in different format through repositories compared with traditional print-based publications.

Cost Involved

Here are two types of costs that should be closely examined before setting up a repository, firstly, the cost associated with acquiring the software and the hardware, these costs according to (Crow, 2002), are relatively modest compared with the costs in staff time, in terms of organising, promoting and maintaining the repository. Secondly, balancing the costs of an e-print repository compared to purchasing a large bundle of e-journals from publishers should also be examined.

Software for Digital Repository

Some of the open source software products available are: DSpace, GNU Eprints and Fedora.

DSpace

DSpace allows deposit of digital content and metadata [Dublin Core] into the repository by users [researchers or librarians on their behalf]. DSpace allows a wide range of digital material types. [http://www.dspace.org/]

GNU E-Prints

E- prints also was developed to provide greater access to research material, but can also be used for many purposes such as teaching resources, museum exhibits and administrative materials and can also be configured to act as an archive of published research material such as journals, books, theses, pre-prints and technical reports. E prints provides a free web interface for managing, submitting and downloading documents, and the major advantage of this software is that is OAI-compliant. [http://www.eprints.org/software/]

Fedora [Flexible Extensible Digital Object and Repository Architecture]

Fedora is different software because the model is abstract; making no difference what kind of data is represented by the digital object including text, images, video, sound etc, making this software is a flexible tool for archival and institutional repositories as well as a good resource option for education and teaching. [http://fedora.redhat.com/]

OpenDOAR

OpenDOAR was created in 2005 as a joint project between the University of Nottingham and University of Lund to register and categorize academic Open Access repositories. One of its mains aims was to act as a comprehensive and authoritative repository directory listing. It is currently maintained by SHERPA. Repositories are registered and categorized by the OpenDOAR team with the aim to provide a quality-assured listing that catalogues and describes the repositories it registers. This entails that each repository is viewed and evaluated manually. A description for each repository is written, the information about the repository is verified, the content viewed and so forth. Another main driver is to offer tools, such as search, filter, analyse and query, in order to facilitate user research. OpenDOAR registers the following information about each repository: Name, Description, OAI base URL, Type, Software, Size, Subject, Content type , Languages, Policies

Open DOAR classifies repositories as one of four types: Aggregating, Disciplinary, Institutional and Governmental. There are 3 Disciplinary Repositories, 1 Aggregating Repository and 43 Institutional Repositories. The details are appended below.

1. Librarians' Digital Library, Documentation Research and Training Centre (DRTC) and Indian Statistical Institute, Bangalore Centre (ISI) http://drtc.isibang.ac.in/oai/request
2. Open Access Agricultural Research Repository (OpenAgri) OAARR,Agropedia, IIT Kanpur http://agropedia.iitk.ac.in/
3. OpenMED@NIC Bibliographic Informatics Division, National Informatics Centre (NIC), India http://openmed.nic.in/perl/oai2
4. Catalysis Database (ePrints@NCCR) National Centre for Catalysis Research (NCCR), India http://www.eprints.iitm.ac.in/cgi/oai2
5. CMFRI Digital Repository (Eprints@CMFRI) Central Marine Fisheries Research Institute (CMFRI), India http://eprints.cmfri.org.in/
6. Delhi College of Engineering RepositoryDelhi College of Engineering, http://202.141.12.109/dspace

7. Digital Knowledge Repository of Central Drug Research Institute (DKR@CDRICentral Drug Research Institute (CDRI), http://dkr.cdri.res.in:8080/dspace-oai/request
8. Digital Library at Indian Statistical Institute, Bangalore (ISI Library) Indian Statistical Institute, Bangalore Centre (ISI), http://library.isibang.ac.in:8080/dspace/
9. Dyuthi (Digital repository of Cochin University of Science & Technology Cochin University of Science & Technology (CUSAT), http://dyuthi.cusat.ac.in/dspace-oai/request
10. DRS at National Institute of Oceanography (DRS@nio) National Institute Of Oceanography (NIO), India http://drs.nio.org/oai/request
11. DSpace @ GGSIPU at Guru Gobind Singh Indraprastha University, http://dspace.ipu.ernet.in:8080/oai/request
12. dspace @ sdmcet at SDM College Of Engineering and Technology Dharwad, India http://210.212.198.149:8080/jspui/
13. DSpace at CUSAT(Cochin University of Science and Technology), India http://dspace.cusat.ac.in/dspace/
14. DSpace at IBS Ahmedabad (DSpace@IBSA) http://202.131.96.59:8080/dspace-oai/request/
15. DSpace at Indian Institute of Management Kozhikode (DSpace@IIMK) http://dspace.iimk.ac.in/dspace-oai/request
16. DSpace at National Chemical Laboratory (DSpace@NCL) http://dspace.ncl.res.in/dspace-oai/request
17. DSpace at NCRA Indian Institue of Technology, Bombay (IITB), India http://ncralib.ncra.tifr.res.in:8080/dspace/
18. iDSpace at Vidyanidhi, University of Mysore India http://dspace.vidyanidhi.org.in:8080/dspace-oai/request
19. DSpace@IITB Indian Institute of Technology, Bombay (IITB), India http://dspace.library.iitb.ac.in/dspace-oai/request
20. DSpace@INFLIBNET at Information and Library Network Center (INFLIBNET), India http://dspace.inflibnet.ac.in/dspace-oai/request
21. Dspace@NITR at National Institute of Technology, Rourkela (NITR), India http://dspace.nitrkl.ac.in:8080/dspace-oai/request
22. DSpace@PDPU at Institute of Petroleum Management, Pandit Deendayal Petroleum Univeristy (PDPU), India http://library.pdpu.ac.in:8080/xmlui/oai/request
23. DSpace@TU at Thapar University (TU), India http://dspace.thapar.edu:8080/dspace/
24. DU Eprint Archive at University of Delhi, India http://eprints.du.ac.in/perl/oai2

25. eGyankosh at Indira Gandhi National Open University (IGNOU), India http://www.egyankosh.ac.in/
26. Electronic Theses and Dissertations at Indian Institute of Science (edt@IISc) at Indian Institute of Science, Bangalore (IISc), http://etd.ncsi.iisc.ernet.in/dspace-oai/request
27. Eprint@NML at National Metallurgical Laboratory, http://eprints.nmlindia.org/
28. Eprints@IARI at Indian Agricultural Research Institute (IARI), India http://eprints.iari.res.in/
29. EPrints@IITD at Indian Institute of Technology, Delhi (IITD), India http://eprint.iitd.ac.in/dspace-oai/request
30. ePrints@NII at National Institute of Immunology (NII), India http://eprints.nii.res.in/cgi/oai2
31. Eprints@SBT MKU at School of Biotechnology (SBT), Madurai Kamaraj University (MKU), India http://eprints.bicmku.in/cgi/oai2
32. ICRISAT Open Access Repository at International Crops Research Institute for the Semi Arid Tropics (ICRISAT), India http://openaccess.icrisat.org/
33. Bhagirathi (IIT Roorkee Repository) at Mahatama Gandhi Central Library, Indian Institute of Technlogy Roorkee, India, http://bhagirathi.iitr.ac.in/dspace/
34. IMSc Eprint Archive at The Institute of Mathematical Sciences, India http://www.imsc.res.in/eprints/cgi/oai2
35. Indian Institute of Astrophysics Repository (DSpace@IIA) at Indian Institute of Astrophysics, India http://prints.iiap.res.in/oai/request
36. Institutional Repository of Intectual Contributions of Delhi Technological University at Delhi College of Engineering, India http://dspace.dce.edu/oai/request
37. Kautilya Digital Repository at IGIDR (Kautilya@igidr) at IGIDR Library, Indira Gandhi Institute of Development Research (IGIDR), India http://oii.igidr.ac.in:8080/dspace-oai/request
38. E-Repository@IIHR (Knowledge Repository of Indian Institute of Horticultural Research) at Indian Institute of Horticultural Research (ICAR), India http://www.erepo.iihr.ernet.in/
39. Mahatma Gandhi University Theses Online at Mahatma Gandhi University, India http://www.mgutheses.org/
40. Management Development Institute - Open Access Repository (DSpace@MDI) at Management Development Institute (MDI), India http://dspace.mdi.ac.in/dspace-oai/request
41. National Aerospace Laboratories Institutional Repository (NAL Repository) at Information Centre for Aerospace Science and Technology (ICAST), India http://nal-ir.nal.res.in/perl/oai2

42. National Science Digital Library (NSDL) at NISCAIR (National Institute of Science Communication and Information Resources), India http://nsdl.niscair.res.in/
43. NOPR (NISCAIR Online Periodical Repository) at NISCAIR (National Institute of Science Communication and Information Resources), India http://nopr.niscair.res.in/
44. Open Access Repository of IISc Research Publications (ePrints@iisc) at Indian Institute of Science, Bangalore (IISc), India http://eprints.iisc.ernet.in/perl/oai2
45. RRI Digital Repository at Raman Research Institute, India http://dspace.rri.res.in/dspace-oai/request
46. ePrints@SVNIT at Sardar Vallabhbai National Institute of Technology, India http://eprints.svnit.ac.in/perl/oai2
47. Vidya Prasarak Mandal-Thane at Vidya Prasarak Mandal, http://dspace.vpmthane.org:8080/jspui/index.jsp

Librarians' Digital Library Open Access Agricultural Research Repository (OpenAgri) and OAARROpenMED@NIC are Disciplinary Repositories, Catalysis Database (ePrints@NCCR) is aggregating repository and all other are Institutional repositories. All the repositories are in English language. The e-gynkosh repository is in Hindi and English and Vidya Prasarak Mandal-Thane repository is in Marathi and English language.

Software Used by Institutional Repositories

Analysis of different software used by 43 institutional repositories. It is observed that the most commonly used software is DSpace (72.1%) then ePrint (25.58%) and Nitya (2.32%)

Content Type of Institutional Repositories

Analysis of various content types of the 43 institutional repositories shows that articles (28.57%) are the most common content in the repositories followed by conference papers (19.64%) theses (17.85%) Learning objects (10.71%) Books (8.03%) Multimedia (7.1%) Patents (4.64%) and reference (3.57%)

Subject-wise Analysis of Institutional Repositories

Analysis of the subjects covered by the 43 institutional repositories shows that most of the repository are Multidisciplinary (36.84%) followed by the subject Physics/Astronomy (10.52%) Science and Technology, Maths /Statistics and Chemistry/Chemical Technology (8.77%) Humanities and Biology/Biochemistry (7.01%), Engineering/Computers (5.26%) and Health/Medicine and Library and Information Science (3.50%)

Common barriers in building IR

The following are the common barriers in building Institutional Repository (IR) are

- Difficulty of content recruitment
- Lack of institutional policy
- Funding problem
- Lack of skilled HR
- Lack of necessary infrastructure
- Lack of interest shown by authorities
- Problem regarding copyright issues
- Lack of coordination of a national body for IR
- Unwillingness of faculty/ researcher for submission of their materials
- Lack of policy to safeguard the long term preservation of the deposited materials.
- Software Problem
- Integration of repository into workflow and existing structure.

Conclusions

It has been argued that an IR provides a valuable and essential service in terms of the availability of information. The argument continues by implying that the benefits of a repository outweigh the time and costs invested in the development of the repository, and that a repository is a sustainable endeavour. The World Wide Web has created a revolution in the accessibility of information. The institutional repositories provide access to research publications and other digital documents of respective institutions. The popularity of this concept is growing rapidly in the higher educational and research institutions to disseminate newly emerged knowledge and expertise. Some institutional repositories in India have just started its operation. Their popularity can be increased through postings in list servers, web search engines, metadata harvesting services and publicity campaigns.

The value of an institutional repository depends on the number of authors contributing their works to it. Voluntary self deposit has limited success. The trend appears to be moving towards mandatory deposit, but each institution needs to set the policy that best meets its own local conditions. Regardless of the institutional deposit policy, research repository service needs to show authors tangible and direct benefits from depositing their works.

References

Akbulut, M. (2011). Developing a DigitalRepositoryfor International Symposium on Information Management in a Changing World. BOBCATSSS 2011: Finding New Ways. Szombathely (Hungary).

Crow, R. (2002). The case for Institutional Repositories: A SPARC position Paper http://www.arl.org/sparc/IR/ir.html [Accessed on May11,2011]

Digital Repositories (2005). Helping Universities and Colleges.

Digital Repositories - Overview. (n.d.). CENLTSO: http://www.cen-ltso.net/main.aspx?put=200 [Accessed on May11,2011]

Dspace .http://www.dspace.org/ [Accessed on May 10, 2011]

GNU E-Prints http://www.eprints.org/software/ [Accessed on May 10,2011]

en.wikipadia.org/wiki/repository [Accessed on May 1, 2011]

Fedora [Flexible Extensible Digital Object and Repository Architecture] http://fedora.redhat.com/ /: [Accessed on May 10,2011]

http://www.jisc.ac.uk/uploaded_documents/JISC-BP-Repository(HE)-v1-final.pdf [Accessed on May 15,2011]

Jones, R. (2006). The Institutional Repository. http://arrow.edu.au[Accessed on May 16,2011]

Koumoutsos, K. M. (2010). Evaluation Insights to Key Processes of Digital Repositories. Libraries In the Digital Age 2010, (62-72). Zadar (HR).

Koutsomitropoulos, D. (2006). Towards the development of General- Purpose Digital Library http://www.hpclab.ceid.upatras.gr/viografika/kotsomit/pubs/iceis04.pdf. [Accessed on May 20,2011]

Lynch, C. (2003). Institutional Repositories: Essential Infrastructure for Scholarship in the Digital Age. http://0-se.jhu.edu.library.vu.edu.au/journals [Accessed on May 15,2011]

OASIS UDDI Specifications TC, (2002). UDDI Version 3.0 Published Specification. http://.org/pubs/ _v3.htm20 [Accessed on May 16,2011]

RLG-OCLC Report. (2002). Trusted Digital Repositories:Attributes and Responsibilities. california: Mountain view. http://www.oclc.org/research/activities/past/rlg/trustedrep/ repositories.pdf [Accessed on May 12,2011]

Swan, A. (2008). The Business of Digital Repositories. http://plip.eifl.net:8080/eifl-oa/training/reading/business-digital [Accessed on May 12,2011]

Wiley, D. (2003). Learning Objects: Difficulties and Opportunities. http://wiley.ed.usu.edu/docs/lo_do.pdf [Accessed on May 16,2011]

Information Management in the Digital Era: A Study of Selected Websites and Digital Libraries

Hasan, Nazmul[1] and Begum, Dilara[2]

The sole purpose of a Digital Library is to provide information to numerous individuals in a digitized format, so it is easily accessible for them. The gathering, storing, preserving, and disseminating of information are what Digital Library defines a Digital Library. Digital Libraries aim to provide users with a vast amount of information that can be accessible from the comfort of their home. The seven main benefits of a Digital Library include: no physical boundaries, 24-hours availability, multiple access for users, access to search engines, preservation and conservation of information, space, added value, and cost effective. This paper will outline how a Digital Library is similar and different from websites. Although websites provide some of the same benefits as a Digital Libraries do, the two are not one in the same entirely. A website may be categorized into personal, commercial, government, educational, and non-profit organizational websites. Each website has a domain name through which the type of the website can be recognized. Digital Libraries do not categorize information, but Digital Libraries can have specific information pertaining to one specific subject or topic. The user oriented, system oriented, information oriented, and organization oriented entities define and clarify what a Digital Library is. In order to understand the similarities and differences between Digital Libraries and websites, three well-known websites were analyzed based on certain variables. The variables that were selected for this study are as follows: construction, content, user, assessment, outcome, measures, and mission supported. In addition, particular indicators were used to measure each variable to understand how the websites operate. An observational method was used to better evaluate the websites. The findings of the study portray how websites operate uniformly and adversely from Digital Libraries.

Key Words: *Digital Library, Information Retrieval System, Websites, and Information Management (IM).*

[1] Md. Hasan, Nazmul., Assistant Professor, Department of Information Science and Library Management, University of Rajshahi, Bangladesh.

[2] Begum, Dilara., Head of Library, East West University, Dhaka, Bangladesh

Introduction

From the beginning of human civilization, there was an inherent desire to achieve knowledge, which initiated a convenient and permanent format. The human society during early era of civilization observed the establishment of various famous ancient libraries, such as the Assyrian Library and the Alexandria Library. They also found that clay tablets, Papyrus, parchment, and vellum were the prime library materials on which the valuable fields of knowledge were preserved. Although the preserved documents were destroyed due to the existing religious and political conflict at that time, the desire to gather and store knowledge did not cease. In the middle ages, many monastic and Muslim libraries were established. Those libraries were also ruined for the same religious and political reasons. However, the process of acquiring, preserving, and permitting easy access to knowledge did not stop. In today's society, easier ways have been discovered to share knowledge, thus, the Digital Library is born.

Libraries in general offer information and allow knowledge sharing amongst users. However, a Digital Library is different from a traditional library because every component in a Digital Library is presented in a digitized format. In a traditional library, there are limited copies of information that cannot be shared by many users, which can mean that some users have to travel to other libraries to find the information that they are seeking. However, in a Digital Library, the information can be accessed by many users at the same time because they are displayed electronically in a computer screen. Therefore, users can access the information locally or remotely without having to travel to a different location. It is wrong to assume that Digital Libraries are formed by the de-construction of the original libraries or that they are a replacement for traditional libraries. According to *How to Build a Digital Library*, Digital Libraries are created so knowledge can be preserved, accessed, organized, and collected with a new method.

The question then becomes, how are websites any different from Digital Libraries? This research study will bring forth the similarities and differences between Digital Libraries and websites, and will attempt to determine whether they are the same or they are different. Digital Libraries are accessed via the Internet by entering a URL (uniform resource locator) or a website address; however, not all URL or websites are Digital Libraries.

Objectives of the Study

1. Find the similarities and differences after comparing the content, information management, information retrieval system, and user access of Digital Libraries and websites.

2. Compare three popular websites based on variables and indicators to analyze how they disseminate information to users.

3. Determine if websites are fulfilling the needs and demands of users as Digital Libraries are in terms of giving access to an abundant amount of information.

Website Categories

Websites are divided into five categories based on their content: (1) personal, (2) commercial (.com), (3) government (.gov), (4) educational (.edu), and (5) non-profit organization (.org). Each type of website has a different way of providing information to users.

Personal Website

A personal website is created by an individual that contains personal information rather than information on behalf of an employer or institution. Personal websites are often used for informative or entertainment purposes. The content of personal websites varies. Based on the analysis of various personal websites, it was determined that personal websites can include biographical information, resumes, blog posts, the author's hobbies, and other related information that are mainly being offered to share with families and friends of the author.

Commercial Website

A commercial website is often business related because the content of those websites aim to advertise certain products or services to consumers. This type of business transaction is also known as e-commerce because everything is being purchased through an electronic marketplace via the Internet. In other words, the business is not a traditional brick and mortar building. Hyperlinks can be provided in commercial websites that link various other websites to provide the user with more information. Examples of commercial websites include Ebay, Amazon, Google, Yahoo, etc. It is important to understand that not all commercial websites are business related. Personal websites could also have a (.com) domain name at the end of the URL.

Government Website

A government website helps to create a comfortable, transparent, and cheap interaction between government and citizens (G2C – government to citizens), government and business enterprises (G2B – Government to business enterprises), and relationship between governments (G2G – inter-agency relationship). Users can learn about the government of Bangladesh by looking into the National Web Portal of Bangladesh website. This website is a governmental website and it consists of information about the president, prime minister, council of ministers, parliament, judiciary system, statutory bodies, ministries and divisions, citizen services, business services, circular/gazette, education, passport information, market price, utility services, and the district portal (bangladesh.gov.bd).

Educational Website

These types of websites are mainly geared towards students, educators, school principals, university personnel, and other school, college, or university related entities. Their main goal is to provide education to people about a certain subject or to provide information about their educational institution. For example, the University of Rajshahi (RU) website features information about the institution, campus life, admissions information, achievements of the university, computer centre, library, contact information, academic facilities, alumni, notice board, and conference and seminar (ru.ac.bd). These types of information are provided to assist students or teachers in learning more about the university and what it has to offer.

Non-profit Organizational Website

Non-profit organizations do not distribute their surplus funds to owners or shareholders, but instead uses them to help pursue their goals. Examples of non-profit organizational websites include charitable organizations and foundations, trade unions, voluntary associations, and public arts organizations. The Bangladesh Rural Improvement Fund (BRIF) is an example of a non-profit organizational website because their aim is to "raise the socio-economic condition of some of Bangladesh's most disadvantaged and vulnerable communities by mobilizing local resources in an effective and pragmatic way" (brif.org).

Digital Library Collections

It is important to understand that Digital Libraries are not categorized into different sections as websites are. However, different Digital Libraries may have different collections of materials. In other words, Digital Libraries can be subject specific such as: African studies, agriculture, American Literature, Art & Art History, Botany, Biochemistry, etc. For example, the FSU Digital Library has a collection gathered at the Florida State University site, which includes 47 nineteenth-century

children's books, over 9,000 pages of materials and over 2,500 pages of photos digitized from collections in 'FSU Libraries Special Collections' (lib.fsu.edu). Similarly, the Minnesota Digital Library (MDL) consists of library and museum professionals who work with cultural heritage organizations to digitize the state's resources and collections. There are more than 4,000 images in the 'Minnesota Reflections' collection alone, including materials from Hennepin Country Medical Centre History Museum, the Minnesota Streetcar Museum, and the Minnesota Annual Conference of the United Methodist Church (mndigital.org). MDL and other participants have managed to digitize more than 45,000 unique photographs and images, maps, journals, documents, letters, and works of art (mndigital.org). These types of primary information and images are stored in Digital Libraries through a digital archive, which provides a secure environment for storage of these original works. The digital archive is what helps Digital Libraries store such vast amounts of information available to the public.

Digital Library – Benefits

There are several benefits that are associated with Digital Libraries. Table 1.1 identifies a few of those benefits (ncsi.iisc.ernet.in).

Table 1.1: Benefits & Description

Benefits	**Description**
No Physical Boundary	People do not need to travel anywhere to access information. They can access information as long as they have the Internet connection.
24-hour Availability	People can access information at any time.
Multiple Access for Users	People from around the world can access the same information simultaneously.
Access to Search Engine	Users can search for a particular information by specifying what they are looking for through a search engine by entering the title, author, subject, etc.
Preservation and Conservation	Digitization is not a long-term preservation process; however, digitization allows information to retain its quality which would otherwise not be possible due to repeated use by many users.

Space	Digital information does not need much physical space, which make it more affordable than the management of a traditional library.
Added Value	Digitization allows images or documents to appear more crisp, which is helpful for users.
Cost-Effective	Digital storage helped reduce cost by about 30% per year (ncsi.iisc.ernet.in). Conventional libraries are more expensive due to building, professional staff, and maintenance. As the cost of technology declines, new tools become available making Digital Libraries much less expensive than traditional libraries.

Digital Libraries are defined in a unique way; however, it is possible for Digital Libraries to be confused with websites because websites also have the ability to store digitized information, which can be accessed by many users at the same time. There are four main entities that closely define what a Digital Library is. These entities are user oriented, system oriented, information oriented, and organization oriented. A user oriented aspect suggests that all attributes and challenges are being presented from the user's point of view. The components of a Digital Library are defined by the system oriented aspect. It highlights the digitized collections of a Digital Library, but it undermines the activities of the users. According to the information oriented definition, a Digital Library is concerned with the credibility, reliability, currency, quality, and format of the information that are being provided. That is one of the reasons why a Digital Library is different from a website. Lastly, the organization oriented aspect defines the information collection and management aspect of Digital Libraries.

Definition & Explanation of a Website

A website or a WWW site (world wide web) is a collection of web pages that are either HTML (hypertext mark-up language) or XHTML (extensible hypertext mark-up language) documents that can be accessed via HTTP (hypertext transfer protocol) on the Internet. The pages within a website are accessed through a common root URL (uniform resource locator), also known as the homepage (en.wikipedia.org). An organization or entity is primarily responsible for managing, expanding, and updating the contents of a website in order to let consumers have access to the most recent and relevant information. This type of organizational management is known as Information Management (IM). Organizations must be held accountable and must also hold its employees

accountable to capture, manage, store, preserve and deliver information appropriately and responsibly. Information Management is one of the key factors in making sure that a Digital Library or a website has updated information for users to access. It is what helps to evaluate and process new information, so that an organization can function and progress effectively. The evaluation process is an important aspect of Information Management because it ensures that value and credibility of the information is retained. This can mean copyright laws as well. Credible websites have copyright laws, which prevent users from copying and disseminating information to the public because only the author or creator of the information have exclusive rights to copy and distribute his or her information.

Websites – Benefits

Table 1.2 identifies the benefits associated with websites, and briefly describes each benefit (webworldindex.com).

Table 1.2: Benefits & Description

Benefits	**Description**
Convenient	Website is self-service; individuals can go through a website anytime at their own privacy and comfort without stress and/or distractions.
Market Expansion	No geographic barriers; individuals may virtually access a website from anywhere in the country if there is Internet availability
Website can be accessed 24/7	Individuals may access the website at anytime without worries
Vast amount of information on website	Individuals can gain much knowledge from a website due to its large storage capacity
Multiple access	Many individuals can access the website simultaneously, without any overlaps or problems
Creativity	A website can be creative in the way they provide information; not all information has to be in text; videos and interactive web pages within the website can also provide users with a vast amount of information

Digital Library vs. Website

Digital Libraries and websites both collect, process, evaluate, and disseminate information to the public. Therefore, they are similar in many ways, yet different in other aspects. Tables 1.3 and 1.4 highlight the similarities and differences between Digital Libraries and websites.

Table 1.3: Similarities

Digital Library	**Website**
1. Information retrieval system via a search engine	1. Users can search for information within a website by using a search engine
2. Information is accessible through computers	2. Users need computers to access information on websites
3. All information are digitized	3. Information is presented in an electronic format
4. Digitized Information require little physical space, which saves cost	4. Websites have a vast amount of information because they require little physical space
5. Information can be accessed by multiple users simultaneously	5. Information can be accessed by multiple users simultaneously

Table 1.4: Differences

Digital Library	**Website**
1. Organization affiliated	1. Can be created by an individual; does not have to be organization affiliated
2. Information is credible because it comes from a primary source	2. Information does not have to be credible; it can be based on the website creator's opinion (example: personal websites)
3. Information can be stored locally in CD-ROM with read-only access to users	3. Information can only be accessed remotely via the Internet
4. A collection of documents, images, videos, books, etc. that are in a digitized format	5. Collection of web pages containing information in a HTML or XHTML format

Website Comparison – Variables

Anything created by the community members could be placed in the digital collections. To create an effective Digital Library, it is necessary to evaluate other Digital Libraries regardless of their broad or narrow aspects. An effort is made here to compare and contrast some websites such as Youtube, Digg, and Joost, which are like the Digital Libraries of broader aspects. The reason these particular websites were chosen was because they are well-known and have a numerous collection of information that are accessible to users.

A set of variables were chosen to understand the operation of each website. The variables that were selected were as follows: (1) Construction, (2) Content, (3) User, (4) Assessment, (5) Outcome, (6) Measures, and (7) Mission Supported. Each variable was measured by certain indicators. These indicators were set to research about each website more effectively. Each variable and its indicators are depicted in Table 1.5:

Table 1.5: Variables & Indicators

Variables	**Indicators**
Construction	- Homepage display - Links or Filters - Search engine - User account
Content	- Type of digital information - Tools to help users sort through information - Extra Features
User	- Types of users - User rights
Assessment	- Contributions of users - Help centre - Special opportunities for users
Outcome	- How information is retrieved - How users can utilize filters and links - Navigation system
Measures	- Relevance of information - Number of items retrieved when information is searched
Mission Supported	- Goals or main purpose of the website - What the website offers to users - How users can be benefited

After identifying each variable and its indicators, the observational method was used to better understand each website. The table is annexed that outlines the components of each website.

Methodology

The data for this research paper was collected by direct observation and research. After the research of various websites and Digital Libraries were conducted, the data was analyzed to evaluate whether or not websites and Digital Libraries are the same, similar, or different. Three random websites were selected for this research based on their popularity. Those websites were evaluated individually based on a specific set of criteria. Lastly, the findings from the evaluation of websites were compared with the information about Digital Libraries.

Set-Up of Variables & Indicators

Different variables and indicators were selected to uniformly evaluate each website. Indicators helped to identify what each variable will measure, which helped with the organization of this research.

Data Collection

Based on the variables and indicators that were set prior to the selection of the websites, each website was examined thoroughly to form a comparison table. The investigation of the websites were based on design, information and other contents, information retrieval systems, links to other information sources, user access, and their mission. Qualitative data was collected for each of the variables by direct usage of the websites and their resources.

Data Analysis

After data was collected through the observational method, the data was organized into a comparison table for analysis. The comparison table was set up based on analysis of similarities and differences between each website. By using the resources available in each website, it was helpful for observing the contents and the information retrieval system.

Findings of the Study

After analyzing all the data that were collected, the following information was discovered based on each variable and their indicators.

Construction

The websites being analyzed for the purpose of this paper were seen to display part of their content**s** in the homepage. The homepage displayed contents that were being viewed by other users during that period and information and/or videos that were the most popular. Users are able to sort information to view the most recent information or older information. In addition, the websites provided tabs to allow users to leap through different categories within the sites. Links are provided for users to gain access to other sources of information which were displayed in the homepage. All three website**s** allowed existing users to sign in to their account, and allowed new users to create an account. Users with accounts have more benefits and access to all parts of the site. Sharing information is possible for users with accounts through various means. On Youtube, users may leave messages for other users through the “inbox” link or leave comments under videos posted by users. Moreover, the analyzed websites included a search engine to help users search for information more effectively. All features available on the sites are helping to guide users to the information they are searching for in a convenient manner.

Content

The main types of information that were available in all three website were videos. However, each website differentiated themselves through other features. Youtube only provides users with videos and allow users to save videos in favourites, quick list, play list, etc., if users open an account. Youtube also ensures that copyrighted materials are removed from the site. Everything on Digg is provided by the community. Digg provide users with videos and news articles. Users have the option to advertise their campaigns, work on current projects, or come up with a new project through Digg. Joost features broadcast-quality videos from TV networks and gives the ability to users to view shows that are playing currently. In addition, Joost provides users with an opportunity for a job in the computer entertainment field. After completing an analysis of these three websites, it was determined that each website had something unique to offer to its users in order to differentiate themselves. However, all of these websites aim to provide users with easy access to their materials anytime without schedule restrictions.

User

After analyzing all three websites, it was determined that all of them provide users with the ability to share information with other users on the website if they decide to create an account. Creating an account allow users to leave comments, feedbacks, postings, questions, and concerns should any problems arise. Both Youtube and Digg allow users to flag or spam any material they deem inappropriate. Joost goes one step further and allow users to send text messages, instant messages, chat, and much more benefits. Although each website has something slightly different to offer to its users, the main purpose of having these websites is to help users collect and share information to a wide group of people.

Assessment

Youtube, Digg, and Joost all accommodate to the users' needs and expectations. Job opportunities in the computer entertainment field are available for users on the sites as well as the requirements for the jobs being offered. Information about the sites is also provided through links, so users can get more acquainted with the site. In addition, users are able to communicate their problems on the site with other users or the managers of the site to alleviate the issues or problems. Youtube and Digg are community-based, meaning users are able to post up original videos or information about topics to make it available to other users. Youtube is a video sharing website because it's main function is to enable users to upload videos. It can also be considered as a rating site because members can rate videos that are uploaded by other members. Digg is community-based because it is a place where people can collectively determine the value of the content. Digg allow users to work on projects with hi-tech companies. Joost also provides community-based features for its users

to make it more interactive. Furthermore, Joost regulates high quality and professionally generated programming to its users around the world.

Outcome

All three websites aim to make its information easily accessible to users. Users are able to view and obtain the information they need through hyperlinks, search engines, and information tabs. Information can be sorted to view the most recent information posted on the website. Sub-categories under broader subjects allow for a more refined set of information, which make is easier for users to look at the specific information that they are seeking.

Measures

Each topic holds a different degree of popularity among users of a website. Certain topics are more popular amongst users, thus more information can be found about it. One has to keep in mind that a lot of information about a topic leads to the question of relevancy and reliability. Not all information that comes up after a search is relevant. It is learned through analysis that the topic 'stem cell research' is popular; however, the recall percentage of this subject varies between the three website. Joost showed the least percentage of recall, 8%, compared to Diggs, which showed the highest recall percentage, 62%. The percent recall is important in determining information relevancy.

Mission Supported

It was found that each of the websites wanted to provide useful information to users. The goals for each website were slightly different because of the contents within the sites. However, all of the sites featured user-related functions which allowed users to ask questions, post comments, rate the contents, and search for jobs. The mission to disseminate information was maintained through the community-based features provided in all of the websites. Videos and information provided are filtered, so recent materials appear on the homepage of the sites. The information provided can easily be accessed by users through the features and help displayed on the sites.

Discussion

After this research study, it was concluded that Digital Libraries and websites are not entirely different from each other; they are similar in many ways in terms of information storage and retrieval. However, Digital Libraries are much more advanced because they store thousands of pages of information such as photographs, letters, articles, research studies, scripts, etc., which can be accessed by multiple users simultaneously. Websites are also able to accumulate a profound amount of information like Digital Libraries, but the relevancy and reliability of the information becomes a concern to some degree. Digital Libraries have worked hard to maintain the reliability and relevancy of the information they present to users, but not all websites are keen on those two aspects. With that in mind, it is fundamental to note that certain websites such as educational,

governmental or non-profit organizational websites do provide relevant and reliable information to its users.

Conclusion

This study established that Digital Libraries and websites are similar in many ways. The analysis of Youtube, Digg, and Joost helped to understand that Digital Libraries and websites want to share information with users. Both Digital Libraries and websites maintain the goal of providing easy access to information, which is why they are viewed via a computer. Through Digital Libraries, multiple users are able to view the same information simultaneously, which could not be possible with traditional libraries. The mission is to preserve new and old information, so that the original work is not lost or damaged. This mission has been accomplished by Digital Libraries through their information archiving system. Websites are able to store information as well, but the relevancy and reliability of that information must be measured by the user. Overall, Digital Libraries and websites share similar characteristics, but Digital Libraries have more capacity to store original works, and users do not have to question the relevancy or reliability of the information they find. It is this aspect which distinguishes Digital Libraries from websites.

References

Bainbridge, David, Witten, Ian (2003). How to Build A Digital Library. Morgan Kaufmann Publishers: San Francisco.

Bangladesh Rural Improvement Foundation. (2005). Retrieved from http://www.brif.org/ about _us. htm .

Digg, Incorporated. (2010). Retrieved from http://digg.com.

Joost. (2010). Retrieved from http://www.joost.com.

Minnesota Digital Library. (2009). Retrieved from http://www.mndigital.org/.

Rajashekar, T.B. (2005). Digital Library and Information Services in Enterprises. National Centre for Science Information (NCSI). Indian Institute of Science. Retrieved from http://www.ncsi.iisc.ernet.in/raja/is214-2006-01-04/topic-1.htm.

Simms, John. (2005). 12 Benefits of Having A Website. Web World: Quality Sites on the Web. Retrieved from http://www.webworldindex.com/articles/12-Benefits-Of- Having-A-Website.html.

The Florida State University Libraries. (2010). Retrieved from http://www.lib.fsu.edu/.

University of Rajshahi. (2010). Retrieved from http://www.ru.ac.bd/.

Website. (2010). Retrieved from Wikipedia: http://en.wikipedia.org/wiki/Website.

Youtube. (2010). Retrieved from http://www.youtube.com.

Annexure

Table 1: Compare and Contrast Between Youtube, Digg, and Joost

Variable	***Youtube*** <http://www.youtube.com>	***Digg*** <http://www.digg.com>	***Joost*** <http://www.joost.com>
Construction	• The homepage displays all featured videos along with the videos that are currently being viewed by others. • There is a search engine, and above that, there are tabs such as: videos, categories, channels, and community. • At the top there are links that allows one to log into his or her account, signup for an account, view the history of videos, get help, and upload personal videos. • Youtube is also designed for communication purposes. There is a link to an Inbox, where other members of the Youtube community can send and retrieve messages. • Youtube is constructed so videos can be shared among members and non-members. • At the bottom of the videos, the duration of the video and the number of viewers that watched the video is displayed.	• Different categories such as: Technology, World & Business, Science, Gaming, Lifestyle, Entertainment, Sports, and Offbeat assist in the process of sorting information. • The homepage exhibits the most popular articles, and news stories. • Users can search for information using the 'Search Digg' engine, or sort information by clicking links such as: most recent, top in 24 hours, 7 days, 30 days, or 365 days. • The bottom of the website displays links to help users find contact information, job opportunities, about digg, FAQ, archive, mobile, dialogg, digg store, digg labs, and diggtv. • The separate digg lab feature filters out the content that is submitted each day. This option has four hyperlinks: arc, stack, swarm, and bigspy, which displays the stories in different forms. • The arc displays the stories in a sphere. The arc gets thicker as more stories become available. • The stack link presents the content in a stack, in real time and the most popular stories, meaning the ones with the highest diggs, gets	• Includes login with Face book, login, and signup links at the top right-hand corner. • There are tabs at the top such as: Joost Beta, Shows, Film, Music. • A column on the left showcases Joost Picks, Channels, and top 10 videos. • Users can use the 'Search For' field to search for videos, shows, music, etc. • At the bottom there are links that users can click to know about Joost, find contact information, go to blogs, look for job opportunities, and review the terms and policies.

		placed at the top of the stack. • The swarm link draws a circle on the stories that are researched on, and the community can help it grow by browsing through them. Lastly, the bigspy link displays the current story that is being viewed at the top and the older ones in the bottom. • The right side of digg.com posts the top ten stories from all the different types of categories.	
Content	• The video collection ranges from cartoons, interviews, home videos, clips from movies, international dramas, political speeches, music videos, and much more. • The Quicklist feature allows one to save the videos in his or her computer. • When a Youtube user signs in with his or her account, a list of videos that have been added by the user appears when the Quicklist link is clicked. The videos can be played simultaneously or one at a time. • An account holder can choose to flag a video as being inappropriate; therefore, another person wanting to view that material has to sign in and confirm that he or she is 18 years of age or older. A group of videos may be stored in a playlist and the videos can be played at the same time. • Contents that violate Copyright laws are automatically removed from Youtube; however, every individual has the right to post a video about anything, which means that	• Articles, videos, and podcasts can be found. Subcategories under each topic allow one to find specifically what he or she is looking for. • Digg has its separate store including various items such as hoodies, hats, shirts, and other specific searches. • The community may also advertise their campaigns in digg with advertising partners. • The digg tools option helps one create his or her own tools, or use the provided tools and integrate it into his or her site or into Google. • Digg also allows community members to participate in projects that are already being worked on, or they may come up with their own project and share it with the rest of the digg community. • For new users, digg provides a separate section where links are found that let's the users know more about diggs, how it is used,	• Videos are from actual tv networks. • Joost partnered with the Creative Artists Agency (CAA) to deliver secure and entertaining content to its users through their online platform. • Currently playing shows can be viewed by clicking on the What's on tab, and there are sub-links underneath that tab, which contains the channel names. • Joost features more than 150 channels with programming across all genres that ranges from music channels, sports channel, travel, adventure, wildlife, sci-fi, and animation. • Includes extra features such as chat, instant messaging, searching, and so on. • One may watch the shows they want without the restriction of schedules, meaning he or she may view the show whenever and as often as they choose to. Joost also contains a hyperlink

	not every video is credible. • The option of adding a video to the Favorite list is also available.	contact information, the blogs, jobs offered at diggs, questions that have been frequently asked by other users, and the podcasts.	that provides job opportunities for the people seeking jobs in the computer and entertainment field. • Joost is the first online, global TV distribution platform that brings advertisers, content owners and viewers together in an interactive, community-driven environment.
User	• Maintains a large community of users and each user may sign up for his or her own personal account in order to receive the full advantages. • Advantages help users post their personal videos to share with other users. Users can post comments on videos and rate them. • Users may flag other videos if they should find it inappropriate. • Users have the option to add comments and rate videos that are posted.	• The users may share the information they find through the digg e-mail option. • Account holders can blog articles and post their personal comments on the content. • Users have the option to spam items to remove it. • Users can enter contests. Prizes are given out to the top three winners. • Digg has an advertisement facility, where users can promote their advertising through an advertisement partner.	• Users can create account and sign up for newsletters. • Users can benefit from the extra features such as searching, chatting, instant messaging, and much more. • Joost forums allow the user to ask questions about any problems he or she is facing to other joost members and give any suggestions about any new joost features. • The knowledge base facility provides some questions, problems, and its quick solutions that have frequently occurred before.
Assessment	• Youtube meets user expectations because it is a community run site; therefore, it provides different types of original videos about various topics. • Contests are held by various groups, where the members may participate. Job opportunities in various fields are available, where teamwork is valuable. • A large help center with detailed information on how to get started, troubleshooting, account policies, and the community of Youtube. • Has a separate search engine, which allows the	• The community can use this facility to contribute to projects that are already being done by certain hi-tech companies, or the community can visualize and suggest a new project. • Digg also satisfies the users' needs and expectations because it provides job opportunities to the community. • There are various positions that one can apply for and under these positions, an overview of what is required and what is expected by digg	• Joost suffices the user expectations as well by providing jobs, which are in computer related fields. • The jobs and positions that Joost is seeking are listed under the jobs link, and one may go there and glance through the various positions and requirements for each job positions available and apply online.

	public to ask specific questions about the specific types of problems that they are facing.	employers is provided.	
Outcome	• There are buttons and links that help users go around the site smoothly. • Videos can be searched through the search engine quickly. • Clicking on the tabs that appear directly above the search engine: Videos, Categories, Channels, Community, allows searching facilities.	• There are hyperlinks and buttons that direct users to the sources of different types of information. • The search engine allows one to retrieve what he or she is searching for quickly and effectively. • Under each category of information, there are subcategories that help narrow down the searches. The articles and other information posted are displayed in a chronological order, so it is easy to navigate the most recent and updated topics to the ones that are dated back.	• There are various channels such as the comedy central, mtv, music channels, and sports. • Navigating Joost is simple because there are hyperlinks, buttons, and tabs that help users locate and find the needed information. • Joost is updated frequently, so the most recent channels and shows may be offered to the public.
Measures	• It is important to understand how many of the sources that are searched are relevant. • The higher the percent recall, the higher the relevance is. • The results may vary due to the popularity of the topic. • A topic like stem cell research is very popular among the Youtube community and there are 523 total results, and out of that number 260 of them were relevant based on the highest rating. • The percent recall formula (B/A+B * 100), the recall for this search is about 50%.	• A lot more articles and information that shows up when stem cell research is searched because digg does not only have videos and podcasts, but it also provides news articles. • A lot more searches need to be filtered out in order to figure out which sources are relevant and which sources are irrelevant to the particular search. • The total number of searches retrieved was 2415. Out of all those searches, about 1500 is the most relevant according to the highest number of diggs. • The recall for this search in Digg is about 62%.	• Joost does not offer a separate search engine to navigate about certain topics to nonmembers. • Once the search about stem cell research was done under the Forum section, a total of 24 posts were found. Out of those posts, two were relevant. • The recall percent for stem cell research under the Forum section was 8%, but the result may vary for members because the search engine would be available for use.
Mission supported	• One of the goals of Youtube is to make certain that the user-needs and requirements get fulfilled.	• One of the primary goals of diggs is to make sure the user is provided with the	• The main purpose of Joost is to make sure that users may watch their favorite channels

	• This goal is met successfully because Youtube provides various features such as the quicklist, favorite list, playlist, history, and other hyperlinks that guide the users to their information. • Youtube gives its users the opportunity to create their personal accounts so they may make use of other advantages such as rating videos, giving feedbacks, adding videos to blogs, filtering out inappropriate information, and much more. • The second goal of making sure that human expectations are met is also fulfilled quite well because Youtube provides a variety of videos for all age groups on various topics. • Youtube offers certain activities that the members can engage in such as contests and job opportunities. • Furthermore, the goal of having rich content is met by making sure that a variety of videos are posted under each topic and filtering out any irrelevant sources. • The percent recall varies depending on the popularity of the search, but overall, that goal is met with content because most of the searches have importance to them since irrelevant information gets filtered out by the members. • The goal of construction is supported by Youtube successfully because it provides hyperlinks, buttons, and tabs that allows the users to access the information effectively. • The outcome of Youtube is perfectly met because the navigation of the site is simple due to the effective	information he or she is searching for and to make sure that the information is easy for the user to find. • Diggs makes that possible through its search engine, other hyperlinks, and tabs. • Diggs not only provides the user with recent information on his or her search, but it also provides older information on the searched subject, and these information are in chronological order, so the user knows which items are most recent and which ones are not. • Diggs provides various types of information in various ways, meaning it does not only have articles, but it includes videos and podcasts as well. • Another goal of diggs is to share the knowledge and information with the community, and diggs does that by allowing the users themselves to share the information with others through their emailing option and through its advertisement facility. • Diggs' assessment goal is met because there are various project opportunities provided by diggs.com that users may apply for. • The users have a choice to either come up with their own project ideas and work towards that or help with and participate in current projects that are already being worked on by other members.	and television shows whenever and wherever without the restriction of schedules and times. • The first goal of joost.com is to make sure that the users' necessary requirements are met. • Joost fulfills this goal by providing various types of channels for all different users. • Joost meets user expectations because it provides many channels, and most of them are popular and known around the world, because there are international channels as well. • Moreover, joost.com allows one to share their videos with members and nonmembers. • Furthermore, if the viewer shall need aid with a certain item, the forum allows him or her to ask questions to other members of Joost or view the frequently asked questions. • The overall construction of Joost is met because the overall site is organized very well. • The overall navigation of the site is easy to follow, and with an account, the user gets the full benefit of the extra features provided such as chatting, instant messaging, and searching; therefore, the goal of outcome is met successfully. • Joost contains various television channels related to certain types of media, so it meets

	construction.	• Diggs provide job opportunities for those who are seeking a job in this field, and an overview of the different job positions is given. • Diggs does not only stop at providing information, but it allows users to enter contests and the top three winners receive prizes. • The goal of construction is followed because it allows the users to search for what they need in a simple manner. • The digg lab filters out the contents of the articles daily, and the top stories get placed above the stack. • In addition, the top ten stories from all different search topics are also included. • The recall for diggs is moderately high because most of the information found is based on news articles.	the goal of content fully. • Moreover, the features of sharing information with other viewers, looking through the subcategories of channels, and being able to browse around the different hyperlinks, makes • Joost is very content rich. The overall recall percentage is difficult to calculate without an account because the search engine is not applicable to nonmembers. However, given the circumstances, Joost manages to fulfill the goal of measure because most of the channels and shows provided maintain their relevancy to the searched topic.

PART 2

ICT for Knowledge Society

Session Chair – Mr. L. A. Jayatissa

Librarian, University of Kelaniya, Sri Lanka

Lead Paper - Prof. Jagtar Singh

Department of Library and Information Science,

Punjabi University, India

*Information and Communication Technology: Not an End Itself but a Tool for Library and Information Professionals to Sustain the Knowledge Society**

Singh, Jagtar[1]

This presentation is based on the assumption that in the Internet era, information and communication technology and the Internet-based resources and services have huge potential to ensure massive real-time access to knowledge and information in a cost-effective manner, and to sustain the knowledge society across frontiers. But getting carried away by the technological innovations at the cost of historical mandate of libraries to preserve the past, serve the present, and help build sustainable future of nations has the potential peril of promoting 'digital determinism' by neglecting the 'social determinism. There must be a fair balance between the push and pull technology, and concerted efforts must be made to develop the capacity and competency of the library and information professionals (LIPs) to enable them to sustain the knowledge society by bridging the widening gaps and divides between and within the institutions and nations. India has taken a lead in this direction by establishing a 'National Knowledge Commission' to ensure expansion, excellence and inclusion in higher education. UNESCO and IFLA are also making concerted efforts to promote the use of ICT to facilitate real-time access too information and support knowledge networking for socio-economic development of nations. Effort has been made in this paper to elaborate and underline these issues in detail with a view to promote awareness among library and information professionals of their role in providing access to knowledge and information.

Keywords: *Technological Determinism, Social Determinism, Change management, Use and User Studies, Knowledge Networking, Capacity Building, Collaboration and Partnership*

[1] Prof. Singh, Jagtar, Professor and Head, Department of Library and Information Science, Punjabi University, India
jagtar.kindu@gmail.com

*This paper is largely based on 'Technological Innovations: A Boon or Bane for our Professional Moorings' In: Kataria, Sanjay et al (Ed.), Emerging Technologies and Changing Dimensions of Libraries and Information Services: Proceeding of the ETTLIS 2010 Conference, JUIT Waknaghat (HP), India, June 3-5, 2010, pp 17-20.

The Changing Context

- Where is the life we have lost in living?
- Where is the wisdom we have lost in knowledge?
- Where is the knowledge we have lost in information?

These beautiful lines by T. S. Eliot from 'The Rock (1934)' serve as an excellent starting point for this paper. Educational, economic, technological, cultural, and social changes have made a profound impact on the life and work of people. In the context of libraries and information centres, there is a paradigm shift from printed publications to digital documents; from traditional libraries to virtual libraries; from stand alone libraries to library and information networks; from ownership to access; from library networking to social networking; and from copyright to copy left.

These changes have not taken place suddenly. These have been planned and a lot of effort has been put in to bring these changes to make our resources and services more efficient and effective.

Info-Stress and Techno-Stress

With the emergence of the Internet, many new resources and services have come into existence. On the Internet, it is a 'free for all' syndrome. Everybody is free to upload in the public domain. Blogs and Wikipedia are just the basic examples. The information seeker is completely bewildered and thinks that Google is the Godfather for all his information related problems. In this context, library and information professionals are required to empower the information-seeking skills. In fact, the role of LIPs has not diminished, rather it has increased manifold in the Internet era. The main challenge before them is how to bring the user back to the library to empower him with credible information to facilitate him in obtaining his personal, professional, educational and social goals. We know it very well said that change is the only constant. Whether we like it or not, it will continue to take place. Therefore, if we cannot create change, at least we must learn to adapt to the changing environment. But this adaptation should not be uncritical consumption of what is being made available to us by the commercial players in the market. We must work to strike a balance between the push and the pull technologies. In the context of libraries, firstly we must ascertain the information needs and information seeking behaviours of the information seekers, and then design our services. Technological innovations should follow the information needs of the library patrons. This way, we can help the information-seekers in over-coming their info-stress and techno-stress.

The whole process of written communication has been radically transformed by the ICT. The printing press had played a pivotal role in overcoming the traditional constraints of space and time, but the convergence of ICTs and the emergence of the Internet have given a death blow to both these constraints, and made a profound impact on the resources and services of different types of libraries. But the mission of all types of libraries, i.e. the preservation of, and access to the

documentary heritage of nations has not been affected radically. Only the format of libraries and our response to technological developments has transformed. If we look around carefully, we find that there is a paradigm shift from just-in-case to just-in-time; from 9x5 to 24x7; from intermediation to disintermediation; and from library as a place to library as a concept. With digitization, information has become fluid and transcendental. On the one hand it is now possible to develop personal libraries by downloading data and documents from the public domain on the Internet, but on the other hand degradation of data can take place innocently or intentionally. However, the web and the Internet have not been able to replace the book and the library. Whether it is an e-book or a digital library, the word book and library are there in both the cases. Nevertheless, we cannot deny the fact that information-seekers and information-providers are getting carried away with technological innovations. We must question ourselves that is it a development or a death bell for our professional moorings, i.e. our professional philosophy, values, ethics and best practices? It is high time to address this primary question. The largely conspicuous impact on libraries has been that of the technological and fiscal changes. LIPs are faced with a diametrically opposite situation with growing electronic resources on the one hand and declining budgets on the other. The end-user needs are growing and the prices of publications are increasing. Even then, we cannot close our libraries as social institutions whose historical mandate is to serve as a critical link to connect our past heritage with future progress via the present. The ascent of intangibles and the ICT must lead to the ascent of nations by taking them to the next level of consciousness. That is only possible by developing independent learning and critical thinking skills among the LIPs, the library users, and other stakeholders across frontiers. In fact, it is a crucial moment in the history of library as a social institution. If libraries and librarians want to be a face in the crowd of information providers, they will have to develop a sustainable vision of the library of the future. It does not make any difference, whether it is a digital library, virtual library, or hybrid library. The word library as a metaphor of memory of mankind refuses to recline into oblivion. The clear message to the library fraternity is that, in the post-industrial society, library is supposed to become a local gateway to world's knowledge and information, and LIPs are required to open their closed mind-sets if they really want to facilitate globalization of the indigenous knowledge and information. They are also required to develop leadership competencies to lead and manage change in libraries. LIPs will have to understand that the technological innovations can facilitate resource sharing, library outreach, instant searching and browsing, but they cannot make decisions and define the path to progress. Decisions will have to be based on our professional ethics and values, sound theoretical foundations, sustainable policies, and workable strategies. If information is available and affordable, then LIPs will have to make it accessible to the information-seekers by organizing it with the leading-edge tools and best practices.

Professionals' Response to the Changes

As already stated, LIPs are faced with a diametrically opposite situation with declining budgets on the one side and growing information needs on the other. But because of fiscal constraints, we cannot close down our libraries. To meet the challenge of growing information needs, we are buying access for the information seekers. Library consortia, institutional and knowledge repositories, open access archives, various library networks, such as *Delnet, Infliblent, and the Internet* are strategic responses of library and information professionals across the globe. In India, we have the National Knowledge Commission but no National Policy on Library and Information System. That is why the 'information divide and digital divide' is growing day by day. The Infliblnet was conceived to bridge this information divide horizontally and vertically, but unfortunately it has restricted its resources and services to academic library sector that too up to a limited level. Delnet is doing a good job, but even these networks have failed to narrow down the widening digital divide, as well as the growing gap between the tacit and explicit knowledge. Hence critical analysis of the state-of-the-art and development of sustainable policies and strategies is necessary to develop the level playing field for the information-seekers and decision-makers. Social networking sites, open source sources, and professional mailing lists and discussion groups are facilitating real-time access to pertinent information, but the competencies to evaluate information sources and websites for credible information are still lacking at the grass root level.

Need for Change Management

Change is the only constant. Whether we like it or not, we will have to learn to lead and follow change. Library and information professionals are under tremendous pressure to manage change in libraries and information centres. There are both external and internal pressures. Externally, the ICT, the Internet, the Google, and the commercial information providers are giving fierce competition to libraries and library personnel. Internally, organizational culture, declining library budgets, and lethargic and apathetic attitude of majority of LIPs to change are the critical factors for the present state of the art. The end result is that the end-user is moving away from the library and is getting carried away by the commercial publishers and search engine like Google. It is high time that LIPs adopt a pro-active attitude, internalize team spirit, develop professional and personal competencies, and learn to be a face in the crowd of information providers. Librarians are the best professionals to organize knowledge and information to save the time of the information seekers. There is a lot of chaos in the public domain on the web. Librarians are required to retrieve pertinent information from the web, consolidate and repackage it for the benefit of the end-users. In the digital age, customization and personalization of information will the heart of the matter. That can be done in a professional way by LIPs by using the best professional practices, such as library classification, library cataloguing, concept indexing, bibliographical control, and vocabulary

control. But for doing that LIPs must be on firm footing with regard to the philosophy of library and information science, its theoretical foundations, and best practices of our professional moorings. Transformation of our library resources and services must lead to saving of the precious time of the end-users. LIPs must facilitate the timely access to the pertinent information which is continuously moving in the web-based chaos in the public domain on the Internet. In fact, finding pertinent information from the ocean of the Internet is just like finding needle in the haystack. The problem is that the haystack is growing and the needle is moving. Information literacy (IL) can empower the information-seekers with information skills for learning. The IL programmes must be developed and implemented at grass root level across the frontiers.

Technological Tools for the Turf

Information, knowledge and wisdom have its areas clearly defined. Information facilitates decision-making, knowledge helps in problem-solving, and wisdom governs our behaviour and decisions. Technology can help us only in functional areas, but the fundamental problems related to decision-making can be taken care of by human beings only. We know it very well that the work of libraries has always been organized around the flow of information. Generation, acquisition, processing, storage, dissemination, and use are the six stages of information life-cycle. Except the first and the last stages, libraries and librarians are directly concerned with the other four stages of information life cycle. Classification, cataloguing, and indexing are our best practices to bring order. In this context, technological innovations can add value in the following eight functional areas in libraries and information centres:

Library outreach; Reader services; Collection development and management; Library automation and networking; Technical services; Library building; Library finance, and Library personnel But in any case, technological innovations must follow the needs analysis of the library community and should not lead and dominate our professional turf. End-user should be treated as a king and a library must become his second home ‘to be a face in the crowd’. End-user delight should be the ultimate aim of the Library and information workers.

Leadership and Library Advocacy

With the ascent of the Internet, many stakeholders have joined the knowledge management field. The main impact of the Internet is visible in the form of library automation and networking, information storage and retrieval, information consolidation and repackaging, and knowledge networking. Google has mesmerized the net generation, and libraries are becoming spaces for the use of Internet-based resources and services. Libraries and information centres must become critical links in the chain of knowledge and information. Library leadership and library advocacy can go a long way to establish the value of library resources and services. LIPs must understand the

difference between a leader and a manager, as well as competence and competencies. The job of a leader is to facilitate change, whereas a manager maintains the status quo. Similarly, competence means total mastery and competencies means a set of skills pertaining to the related field. Competence comes with experience, but before that we must have a commonsense and formal education. Then strategic professional learning must be internalized by the LIPs as a lifelong learning process. LIPs must be equipped with cultural literacy and information skills for learning. A sense of responsibility and accountability along with team spirit, motivation, and interpersonal skills should also become a part of the mind-set of the professionals. Only that way, the LIPs can make sense of the web-based chaos. Professional values and ethics have the power to differentiate a man from machine. Too much focus on technical services and technological innovations without ascertaining their need has given rise to the concept of 'digital determinism (DD). DD must not be at the cost of social determinism (SD). There must be a relative balance of DD and SD. More emphasis must be laid on use and user studies for putting knowledge to work. Ours is a service profession. Hence instead of techno-mania, we must promote service-mania across frontiers.

LIPs must leave the job of searching the web-based information to the search engines like Google, and focus on their professional moorings, such as philosophy, theory, values, ethics, collection development, preservation, access, knowledge organization and their fight against censorship and commercial hegemony. The Five Laws of Library Science by Dr. Ranganathan are more relevant in the digital age where there is a lot of information deluge around the end-users. Information seekers are having more and more of everything but less and less of time. Ranganathan advises LIPs to save the time of the readers. Personalization, knowledge organization, information analysis and repackaging are our time tested best practices to preserve and serve knowledge and information to the stakeholders. For example, a reader requesting a dictionary is not interested in the whole dictionary; rather he is interested in the meaning of a single word. Do we have that attitude to serve the library user with that meaning of the word he is looking for? We must ask this question to ourselves. Perhaps we will get the answer and change our attitude. The information seeker is overwhelmed by the web-based chaos and feels helpless like the ancient mariner in Coleridge's poem when he says: *"Water everywhere, but not a drop to drink"*

Automation of our mind-set is another big problem. We must adapt to the changing environment, and create change by introducing new resources and services in our libraries and information centres. Let us take stock to find out if we are competent to provide the end- user with a pertinent bit of information from the web-based chaos in the public domain on the Internet. If LIPs are not in a position to bring the user back to the library then Google and similar mechanisms will take the information seekers further far away to the point of know return. Hence this is a wake up call for the dedicated LIPs to work beyond the normal call of duty to bring smile on the faces of bewildered

information seekers. We must assure quality in our collection development, knowledge organization, information storage and retrieval, information consolidation and repackaging, and promotion of the library resources and services turf. For this capacity building training programmes must be in place.

Concerns and Consequences

The major concern today is to redefine our professional role and status, and to add value to our resources and services. Value of anything lies in its use. Hence, no stone shall be left unturned to come up to the end-user expectations. Though technological innovations, such as the Internet, have given a death blow to the traditional constraints of space and time, yet these innovations do not have the capacity and power to replace libraries which are basically temples of learning and silent places to fire imagination of one and all. New technologies can facilitate value addition to existing library and information services, but can never be a death bell to our professional moorings. Therefore, we must take a balanced view of the push and pull technologies. Growing electronic resources, declining library budgets, leadership and assimilation deficit, widening digital divide, growing gap between the tacit and the explicit knowledge, poor interpersonal skills, declining reading culture, lack of team spirit, and ascent of the commercial information providers like Google are the challenges to be faced by the LIPs and other stakeholders. On the positive side, the Internet is a massive storehouse of knowledge and information, and an empowering communication mechanism for the stakeholders. Knowledge networking, particularly the tacit knowledge networking via social networking, is an excellent opportunity available to us via the Internet. But still a lot needs to be done to use the ascent of information and the ICT for facilitating the ascent of the nations to manage competitive advantage and stay ahead of change and time. Library leaders and LIPs can do a lot to take the end-users to the next level of consciousness. Instead of depending too much upon technological gadgets, LIPs must learn to identify with the information seekers by ascertaining their information needs, expectations, and aspirations. Is that asking too much from LIPs? Put this question to yourself and you will get the answer. Success of knowledge society is dependent upon three pillars of the 'Intellectual Capital.' These are: Human Capital, Structural Capital, and Client capital. LIPs must always be on the leading-edge of their professional turf to satisfy their community members.

Concluding Remarks

In a Ph.D study conduct at Punjabi University, Patiala, it has been found that 30% of the books in the research sample universities have never been used. This is huge wastage of public money. It indicates that something is seriously wrong with our collection development and management policies. Similarly, the end-user is besieged with information deluge being made available via

public domain on the Internet. This information overload is leading to concomitant info-stress and techno-stress. The bewildered information seeker thinks that Google is the answer to all his problems. But that is not true. Google can search that information only which is being made available via the web. Neither all libraries of the world are digitized so far nor there any such need and possibility in the near future. Hence, it is high time to get out of the techno-mania and take a turn towards our professional moorings. Ranganathan's five laws have not become irrelevant in the digital age. Rather concerted efforts must be made analyze, consolidate and repackage information at local level to come up to the expectations of end-users. National Knowledge Commission (NKC) in India is also focusing on expansion, excellence, and inclusion to bridge the education divide at the higher education level. Library leaders and LIPs can support the mission and vision of the NKC by providing massive real-time affordable access to pertinent information to the end-users to enable them to obtain their personal, professional, educational and social goals. But for that LIPs will have to stop for a moment to make a critical analysis of the future of our professional moorings. It is essential because the history and future of libraries will depend upon the relative balance of push and pull technologies for developing hybrid libraries. It is the hard fact that library is a social agency for preserving and serving the documentary heritage of nations, and technological innovations can support its mission and vision but can't replace it. The early we understand this truth, the better it would be both for the LIPs and the information seekers. Technology in itself has no power. Its power and value lies in its use. Hence, to make fruitful use of technological innovations, use and user studies must be undertaken at all levels and in all types of libraries. Collaboration and partnership with NGOs, such as IFLA and UNESCO can go a long way to serve the information-seekers. Let charity begin from the home to promote the service culture to facilitate sustainable progress.

Further Readings

Bobinski, George S. (2007). Libraries and Librarianship: Sixty Year Challenge and Change, 1945-1005. Lanham: Scarecrow Press.

Brophy, Peter and Coulling, Kate (1996). Quality Management for Information and Library Managers. Hampshire: Aslib Gower.

Christensen, Clayton M. and Overdorf, Michael (2001). Meeting the Challenge of Disruptive Change. In Harvard Business Review on Innovation. Boston: Harvard Business School Press, 103-130.

Davenport, T. and Prusak, L. (1998). Working Knowledge: how organizations manage what they know. Boston: HBS Press.

Drucker, Peter F. (1999). The Discipline of Innovation. In Harvard Business Review on Breakthrough Thinking. Boston: Harvard Business School Press, 143-160.

Forsyth, Patrick (2007). Successful Time Management. New Delhi: Kogan.

Garvin, David A. (1998). Building a Leaning Organization. In Harvard Business Review on Knowledge Management. Boston: Harvard Business School Press. 47-80.

Hernon, Peter and Rossiter, Nancy, eds. (2007). Making a Difference: Leadership and Academic Libraries. Westport: Libraries Unlimited.

Hernon, Peter, Powell, Ronald R. and Young, Arthur P. (2003). The Next Library Leadership: Attributes of Academic and Public Library Directors. London: Libraries Unlimited.

Hornby, Susan and Clarke, Zoe, eds. (2003). Challenge and Change in the Information Society. London: Facet Publishing.

Machlup, Fritz. (1980). Knowledge: Its Creation, Distribution, and Economic Significance, Vol. I (Knowledge and Knowledge Production). NewJersey: Princeton University Press.

Machlup, Fritz (1980). Knowledge: Its Creation, Distribution, and Economic Significance, Vol. II: (The Branches of Learning). New Jersey: Princeton University Press.

Machlup, Fritz (1980). Knowledge: Its Creation, Distribution, and Economic Significance, Vol. III (The Economics of Information and Human Capital). New Jersey: Princeton University Press.

Maxwell, Nancy Kalikow (2006). Sacred Stacks: The Higher Purpose of Libraries and Librarianship. Chicago: American Library Association.

Miska, Francis (2007). The Cultural Legacy of the 'Modern Library' for the Future. In an Address at the annual meeting of the Association for Library and Information Science Education (ALISE).[corrected version]

Nonaka, I. and Takeuchi, H. (1995). The Knowledge-Creating Company. New York: Oxford Press.
Palmer, Stephen and Cooper, Carry, 2007. How to Deal with Stress. London: Kogan Page.

Pugh, Lyndon (2000). Change Management in Information Services. Hampshire: Gower.

Ritchie, Ann and Walker, Clare, eds.(2007). Continuing Professional Development: Pathways to Leadership in the Library and Information world. IFLA publication, 126.

Rowley, Jennifer (2006). Where is the Wisdom that we have lost in Knowledge? *Journal of Documentation*, 62 (2), 251-270.

Senge, P. (1998). The fifth discipline. *HSM Management*, 9, 35-47.

Winston, Mark D. ed. (2001). Leadership in the Library and Information Science Professions. New York: Haworth Press

Puwath Patuna: A Collection of Headings of Feature Articles in Daily Newspapers

Ramanayaka, K.H.[1]

This article explains compilation of headings of feature articles in Sri Lankan newspapers. Intention of this project is to facilitate easy access to feature articles both Sinhala and English published by the Sri Lankan newspapers. And also users can search their needed information from the past published newspapers. Registered users can download the article and new users can request their registration or can request article through email forum. Currently there is no provision to access all newspaper feature articles through the one interface and there is no way to download feature articles published in newspapers. It was developed using PHP, JavaScript and searchable in all key bibliographical access points such as title, author, data, newspaper name and contents. Currently feature articles in Sri Lankan newspapers such as Island, Daily News, Sunday Observer, Divaina, Lankadeepa, Dinamina are available in "Puwath Patuna".

Keywords: *Puwath Patuna, Newspaper Articles, Island, Daily News, Sunday Observer, Divaina, Lankadeepa, Dinamina*

Introduction

A **newspaper** is a regularly scheduled publication containing news of current events, informative articles, diverse features and advertising. It usually is printed on relatively inexpensive, low-grade paper such as newsprint. By 2007, there were 6580 daily newspapers in the world selling 395 million copies a day (Wikipedia, Internet). The worldwide recession of 2008, combined with the rapid growth of web-based alternatives, caused a serious decline in advertising and circulation, as many papers closed or sharply retrenched operations (Wikipedia, Internet).

General-interest newspapers typically publish stories on local and national political events and personalities, crime, business, entertainment, society and sports. Most traditional papers also feature an editorial page containing editorials written by an editor and columns that express the personal opinions of writers. The newspaper is typically funded by paid subscriptions and advertising.

A wide variety of material has been published in newspapers, including editorial opinions, criticism, persuasion and op-eds; obituaries; entertainment features such as crosswords, sudoku and

[1] Ramanayaka, K.H., Assistant Librarian, The Library, University of Ruhuna, Sri Lanka
kokila@cc.ruh.ac.lk

horoscopes; weather news and forecasts; advice, food and other columns; reviews of movies, plays and restaurants; classified ads; display ads, television listings, inserts from local merchants, editorial cartoons and comic strips.

A special feature article may be defined as a detailed presentation of facts in an interesting form adapted to rapid reading, for the purpose of entertaining or informing the average person. It usually deals with (1) recent news that is of sufficient importance to warrant elaboration; (2) timely or seasonal topics not directly connected with news; or (3) subjects of general interest that has no immediate connection with current events.

Although frequently concerned with news, the special feature article is more than a mere news story. It aims to supplement the bare facts of the news report by giving more detailed information regarding the persons, places, and circumstances that appear in the news columns. News must be published as fast as it develops, with only enough explanatory material to make it intelligible. The special article, written with the perspective afforded by an interval of a few days or weeks, fills in the bare outlines of the hurried news sketch with the life and colour that make the picture complete. Because of their number and their local character, daily newspapers afford a ready medium for the publication of special articles, or "special feature stories," as they are generally called in newspaper offices. Some newspapers publish these articles from day to day on the editorial page or in other parts of the paper. Many more papers have magazine sections made up largely of such "stories." Some of these special sections closely resemble regular magazines in form, cover, and general make-up.

The articles published in newspapers come from three sources: (1) syndicates that furnish a number of newspapers in different cities with special articles, illustrations, and other matter, for simultaneous publication; (2) members of the newspaper's staff; that is, reporters, correspondents, editors, or special writers employed for the purpose; (3) so-called "free-lance" writers, professional or amateur, who submit their "stories" to the editor of the magazine section.

History

The Origins of Newspapers

The history of newspapers is an often-dramatic chapter of the human experience going back some five centuries. In Renaissance Europe handwritten newsletters circulated privately among merchants, passing along information about everything from wars and economic conditions to social customs and "human interest" features. The first printed forerunners of the newspaper appeared in

Germany in the late 1400's in the form of news pamphlets or broadsides, often highly sensationalized in content. Some of the most famous of these report the atrocities against Germans in Transylvania perpetrated by a sadistic veovod named Vlad Tsepes Drakul, who became the Count Dracula of later folklore.

In the English-speaking world, the earliest predecessors of the newspaper were corantos, small news pamphlets produced only when some event worthy of notice occurred. The first successively published title was The Weekly News of 1622. It was followed in the 1640's and 1650's by a plethora of different titles in the similar newsbook format. The first true newspaper in English was the London Gazette of 1666. For a generation it was the only officially sanctioned newspaper, though many periodical titles were in print by the century's end (Barber, Internet).

Newspapers in Sri Lanka

The accrual of newspapers published in the Sri Lanka to the National Archives was a result of a historical evolution when William Colebrooke who was appointed by the British Government to look into the affairs of administration of Sri Lanka on 11th April 1829 recommended the necessity of commencing newspapers to curtail the powers enjoyed by the British Governor. He also stressed that the non-existence of independent newspapers was the main cause for the excessive powers of the Governor. As a consequence of the recommendation made by the Colebrooke Commission, Governor Wilmot Horton who arrived in the Sri Lanka on 23rd October 1831, was notified to commence a newspaper. When the Ordinance No.5 of 1839 was introduced and came into operation, the printer or a Publisher of every newspaper had to deliver everyday or which such paper published on the day next following which is not a holiday, a copy to the Colonial Secretary, Colombo. It was further amended by the Act No. 18 of 1951 and according to sec. 7 of 1951, all the newspapers which were sent by the printer or publisher to the office of the Register General was changed to be delivered to the Registrar of Books and Newspapers. When the Act No. 7 of 1976 was introduced, the printer or publisher of every newspaper was obliged to deliver a copy of an unsigned newspaper in addition to a copy of signed newspaper to the Registrar of Books and Newspapers. Accordingly, the additional unsigned copy of every such newspaper is transmitted to the Sri Lanka National Library services Board (rootsweb, Internet).

As such, the newspaper collection in the National Archives is governed by laws of legal deposit and is a rich source material for the study of various aspects of the History of Sri Lanka. This source although a printed material is a contemporary source material for the study of Political, Economic, Social and Cultural aspects of Sri Lanka (rootsweb, Internet).

Under the auspices and with the encouragement of the British Government the "Colombo Journal" was published on 1st January 1832. It was printed at the Government Press edited by George Lee its superintendent. The Governor's private secretary and son-in-law. Henry Tufnell was appointed as the Assistant Editor. Although it was patronized by the government, the editor always emphasized that the Colombo Journal was an independent newspaper. Sir Robert himself was a frequent contributor under various pseudonyms and Capt. Anderson with George Turnor, the gifted translator of the Mahawansa wrote articles. Under orders from the British Government, Colombo Journal was discontinued on 31st December 1833. The reason given for its closure was that the newspaper field should be left to private enterprise. However, it could be stated that the Colombo journal's severe criticism of the British Government led to its closure (rootsweb, Internet).

At a time when the only newspaper which criticized to Government was closed Down there was a clear demand for a free newspaper. The merchants of Colombo, G. Ackland and E.J.Darley joined to commence a newspaper entitled, "The Observer and Commercial Advertiser", which was first published on 4th February 1834. This is the commencement of the Observer newspaper which is still published in Sri Lanka. The first editor of this newspaper was George Winter and he was charged in the courts for criticizing a police officer (rootsweb, Internet).
When the Observer attacked Sir Robert Horton relentlessly, in order to challenge this newspaper, the governor aided to commence another newspaper. As a result, on 3rd May 1837 the first issue of the New English newspaper "Ceylon Chronicle" appeared. The first editor of this paper was Rev. Samuel Owen Glenie, the Colonial Chaplain and later archdeacon of Colombo (rootsweb, Internet).
In the year 1964, a bi-weekly newspaper called "Kandy Herald" was published. This was started by some planters. It was printed in the office of the Times of Ceylon. Richard Morgan was regular contributor to this paper. A Local newspaper entitled "Jaffna Freeman" commenced publication in 1862 and was closedown in 1879. The "Catholic Messenger" which commenced publication in 1869 voiced the opinion of the Catholics (rootsweb, Internet).

The "Ceylon Independent" news paper saw the light of the day on 4th July 1888. The first editor of this paper was George Wall who agitated for a more responsible form of government to Sri Lanka. At the end of the nineteen century few other English paper such as "Jaffna Catholic Guardian", " Hindu Organ" and "Ceylon Native Opinion" were published but never gathered momentum (rootsweb, Internet).

Twentieth Century English Newspapers

At the beginning of the twentieth century, there were 13 English newspaper in the Sri Lanka. The first newspaper to be published at the turn of the twentieth century was "Ceylon Mohamdam" (1900-1917). The "Ceylon Standard" newspaper was published in 1908 by a group of wealthy Sinhalese. During the first decade of the nineteenth century D.R. Wijewardena, the newspaper magnate of Sri Lanka, commenced the publication of "Ceylon Daily News" on 3rd January 1918. D.R. Wijewardene purchased the rights for independence from the British rule. Ceylon Observer (Sunday) edition commenced on 4th February 1923. During the second half of the twentieth century, the following English newspapers gave birth. Viz, Samasamajist, (1937), Sun (1964.10.16-1990.12.26), Siyarata (1963.01.04), Weekend, (1965.10.17-1984.08.31), Ceylon Daily Mirror (1961.02.01-1984.08.31), Island (Sunday) (1991.10.04), Island (Daily), (1981.11.16) (rootsweb, Internet).

English Newspapers (Cumulative index)

Colombo Journal (1832-1833), Observer and Commercial Advertiser (1834), Ceylon Chronicle (1837 - 1946), Ceylon Times (1846-1870), Galle Telegraphy (1870-1871), Kandy Herold & Planter weekly chronicle (1868-1869), Ceylon Morning Leader (1907-1932), Ceylon Daily News (1918 to date), Ceylon Observer (1923 to date), Jaffna Catholic Guardian (1894-1949), Sun (1964-1990), Hindu Organ (1900-1949) Weekend (1965-1984), Ceylon Daily Mirror (1961-1979), Weekend Express (1966-todate), Sunday Leader (1993-todate), Island (1981 to date), Sunday Island (1991 to date), Sunday Times (1993-todate.) (rootsweb, Internet).

Sinhala Newspapers in the nineteenth contrary

The birth of Sinhala newspapers in Sri Lanka was witnessed in the second decade of the second half of the nineteenth century. The first Sinhala Newspaper to be published in the county was "Lanka Loka" at Galle in June 1860. It was published twice a month by W.E. Eaton. The first Sinhala newspaper registered under the ordinance was "Lakmini Pahana". This newspaper commenced publication on 17th September 1862. "Lakrivikirana" commenced publication in 1863. This was a Sinhala Buddhist paper which fought for the rights of the Buddhists. In the year 1891 Lakrivikirana became a daily newspaper. The first daily Sinhalal newspaper was "Dinapatha Pravurthi" edited by Don Cornellis Weerakody. This paper was an unbiased one which aimed at serving the general public and supporting the British Government. The companion paper of Catholic Messenger was commenced by the Catholics on 7th July 1866 entitled "Gnanaratha Pradeepaya. At the end of the nineteenth century., the Sinhala newspaper reached popularity and circulation as the English Newspapers. Some of the leading Sinhala Newspapers were "Lanka Pradeepaya" (1895-1913) "Kavata Kathikaya", the cartoon newspaper, (1872-1913) "Sarasavi Sanderesa, the organ of the

Buddhist Theorophical Society, "Swarajjaya" (1872-1928) and "Satbasa" (1894-1901). During this period Sarasavi Sandarasa edited by Pundit Weragama Punchi Bandara brought in a new spirit into Sinhala Writing. He introduced a free style, elegant and popular, which created a new era in composition of Sinhala prose. H.S. Perera who founded the "Dinamina" newspaper was on the staff of Sarasavi Sanderesa (rootsweb, Internet).

Sinhala Newspapers in the twentieth Century

At the turn of the twentieth century witnessed the birth of many important and popular newspapers of the Sri Lanka, some still with the general public even in the 1990'2. "Lakmina" (1913-1956)" Dinakara Prakasha" (1915-1916), "Sinhala Samaya" (1903-1916), Sinhala Jatiya (1901.02.25) edited by Piyadasa Sirisena "Sinhala Bauddhaya' commenced by Anagarika Dharmapala as the Sinhala Organ of the Maha Bodhi Society on 5th May, 1906, "Dinamina "Commenced by H.S. Perera on 7th February, 1909, "Swadesha Mithraya" (1924-1940) edited by D.W. Wickramarachchi, Silumina (1930-03.1930) under the propietorship of D.R. Wijewardena produced brilliant Sinhala Journalists at the Lake House group of newspapers, such as Martin Wickramasinghe (Dinamina & Silumina), D.B. Dahanapala, Piyasena Nissanka (Dinamina & Silumina) "Nidahasa" (1934-1960), "Samasamajaya" (1936.07.10) the Sinhala organ of the Lanka Samasamaja Party, Lankadeepa of the Times group, (1947.10.27) which was taken over by the government in 1977 and purchased by Ranjith Wijewardena under Wijaya Newspapers and published from 10th September, 1991, "Siyarata" the Sinhala Organ of the United National Pacary, (1947.04.18) were other newspapers to be reckoned with (rootsweb, Internet).

Since independence in 1948 and the second half of the 20th century the following Sinhala newspapers have seen the light of the day in the country. Sunday Lankadeepa" (1949.10.12)" Janatha "(1953.05.11) a daily evening newspaper. "Davasa" (1961.08.14-1990.26), "Vanitha Vitti", (1957.04.12), "Rividina"(1961.08.20-1966.07.20) "Sarasaviya", (1963.04.10) Sinhala cinema tabloid of the Lake House Group, Iranama Attha, (1965.08.22) "Rivi Resa" (1966.07.20-1990.12.26). In the 1990's there witnessed a spate of tabloid Sinhala newspapers, bringing in startling news, regarding the ruling party and other matters concerning public interest, such as bribery and corruption in the Public Service. These papers could be listed as follows with their dates of commencement. Viz. "Ravaya". (1990.11.04), "Lakdiva" (1992.01.26) "Kaputa", (1993.06.01) "Mura Atuwa" (1993.07.11), "Hiru" (1993.06.13), "Toppiya" (1993.01.01), "Rajaliya", (1992.04.30)", "Derana" (1993.08.08), "Dupatha", (1993.09.01), "Sathyayae Handa", (1993.07.09) (rootsweb, Internet).

Sinhala News Papers (Cumulative Index)

Lankaloka (1860), Lakmini Pahana (1862-1919), Lakrivikirana (1864-1902), Dinapatha Pravurthi (1863-1854), Gnanarthapradeepaya (1866 do date), Kavata Kathikaya (1872-1913), Sarasavi Sanderassa (1880-1951), Lakmina (1913-1956), Dinakara Prakasa (1915-1916), Sinhala Samaya (1903-1916), Sinhala Jatiya (1905-1951), Sinhala Bauddhaya (1906-1979), Dinamina (1909 to date), Swadesha Mitraya (1924-1940), Silumina (1931 to date), Lakadipa (1947-1979) & 1991 - todae), Sama Samajaya 1936, Siyarata (1947 todate), Janata (1953-todate), Davasa (1961-1990), rividina (1961-1990), Sarasaviya (1963-todate), Aththa (1965-1995), Riviressa (1966), Divaina (1982 todate), Yukthiya (1985), ravaya (1990-todate), Lakdiva (1992-1994), Hiru (1993-1996), Trishule (1993-1994) (rootsweb, Internet).

Tamil and Malayali Newspapers (nineteenth and twentieth century)

As far back as in 1841 "Idea Atari", or Morning Star the Tamil newspaper joined the other Sinhala and English newspapers to serve the Tamil reading public fo the Country. It was followd by "palliyar Nesan" in 1865 and "Illankai" Paddukkavali in 1868. With the beginning of the Tamil Newspapers during the second half of the nineteenth century, the Malayali Community in Sri Lanka, published their first newspaper entitled " alamat Lankapuri in the country. Viz, "Pudiyananthpati (1870), "PUDINALAN KOVE (1873), "Catholica Padukavalan" (1876) "Udaya Banu" (18880), "Muslim Reisan" (1882), "Vinatha Vattini (1882), "Sivabhasingnam" (1884), "Satmaraga Patthini: (1885). During the 20th Century the following Tamil Newspapers were incirculation, viz, "Thinakaran" (1932-05-15), Thinakaran Vara Manjari", (1948.09.23), "Veerakesari", (1930.08.06). The history of the birth and development of the newspaper in Sri Lanka clearly shows that, Sri Lanka has been a pioneering country in Asia publishing newspapers in the early nineteenth century and maintaining some newspapers even to this day. It has encouraged the publication of varied type of newspapers in three languages which was helpful in molding the public opinion of the country and establishing the democratic principles of a free press in a developing country (rootsweb, Internet).

Tamil Newspapers: (Cumulative Index)

Udaya Tarakai (1864-1943), Paliyar Naisam (1865), Elangai pathukavalam (1868), Alamat Lankapuri (1869), Muslim Naisan (1882) Sivapimany (1882) Sivapimany (1884), Sathiyavenda Patukavalan (1900), Islam Mithiran (1905-1940), Elakwsari (1930-1950),Thinakaran (1932 to date), Virkesari (1930-todate), Thinakaran Varaminjari (1940 to date), Dinapathi (1966-1900), Eelanadu (1959), Chintamani (1966-1974 restarted 1977) (rootsweb, Internet).

Problem Statement

Ruhuna University Library has a large collection of past Sri Lankan newspapers in printed format. The Library has maintained a file based index of a collection of headings of feature articles which published in daily newspapers.

Yet there is no computer based index of headings of feature articles in Sri Lankan newspapers. The users have no way to find desired article otherwise searching all one by one. Currently all daily newspapers published in Sri Lanka both Sinhala and English medium have published online versions also. But there is no provision to access all past and present newspaper feature articles through the one interface and also there is no way to download feature articles published in newspapers.

Objectives of the study

- Efficiently and effectively searching user needed information from the past published newspapers
- Central access point for all online published newspapers in Sri Lanka.
- Platform for download the feature articles in past newspapers
- Platform for request articles through email
- Efficient management

Methodology

The team has adopted the latest tools for the development of a new retrieval interface and system to retrieve data from the database. The expert team has decided to use Joomla, HTML and PHP as a basic programming language and MyQL as the database server.

Joomla! is a free and open source content management system (CMS) for publishing content on the World Wide Web and intranets. It comprises a model–view–controller (MVC) Web application framework that can also be used independently (Wikipedia, Internet).

Joomla! is written in PHP, uses object-oriented programming (OOP) techniques and software design patterns, stores data in a MySQL database, and includes features such as page caching, RSS feeds, printable versions of pages, news flashes, blogs, polls, search, and support for language internationalization (Wikipedia, Internet).

Within its first year of release, Joomla had been downloaded 2.5 million times. Between March 2007 and February 2011 there had been more than 21 million downloads. There are over 7,400 free

and commercial extensions available from the official Joomla! Extension Directory and more available from other sources (Wikipedia, Internet).

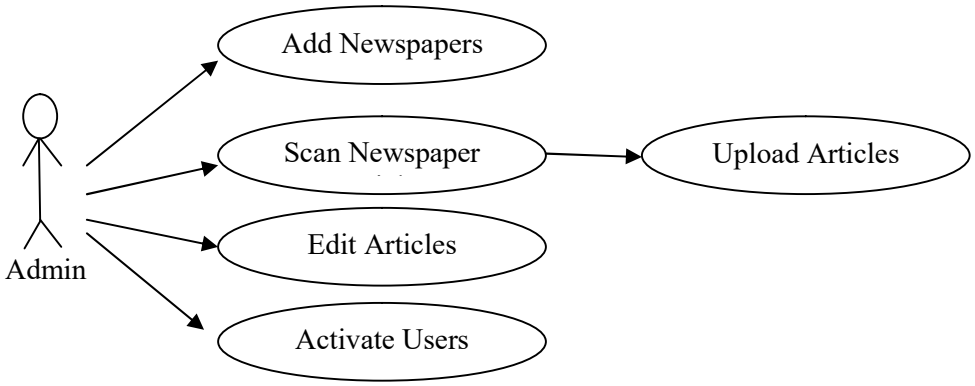
Joomla is used all over the world to power Web sites of all shapes and sizes. For example:

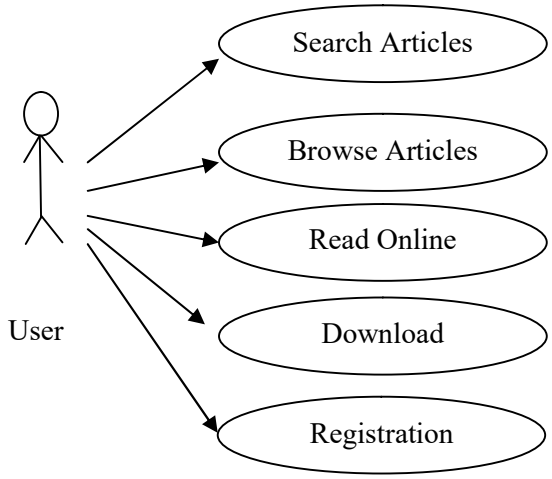
- Corporate Web sites or portals
- Corporate intranets and extranets
- Online magazines, newspapers, and publications
- E-commerce and online reservations
- Government applications
- Small business Web sites
- Non-profit and organizational Web sites
- Community-based portals
- School and church Web sites
- Personal or family homepages

HTML or “Hyper Text Markup Language” refers to a system for communicating to a Web browser how the contents of a page will be displayed. HyperText is a concept that goes back to the mid-1940s when Vannevar Bush1 envisioned a system for linking together concepts within and among documents. A markup language includes text and information about how the text should be displayed (VanSlyke, Internet).

PHP is one of the projects of the Apache Software Foundation (The Apache Software Foundation, Internet). PHP (recursive acronym for "Hypertext Preprocessor") is free and offered under an open source license. This means that you can use it as you wish. PHP is use for creating dynamic web pages. Its presence is completely transparent to the end user. A web page containing PHP code is "preprocessed" by the PHP engine, called an interpreter, and the results of this processing are passed back to the web server and on to the visitor's web browser. As only the results of the PHP processing are sent to the browser, the code that generated them remains hidden, and is therefore much more secure. This kind of pre-processing is called server-side scripting (Green, Internet).

MySQL is a powerful database management system. Many of the applications that a Web developer wants to use can be made easier by the use of a standardized database to store, organize, and access information. MySQL is an Open Source (GPL) Standard Query Language (SQL) database that is fast, reliable, secure, easy to use, can run on many operating systems, technical support is widely available, and suitable for applications of any size (mysql, Internet).





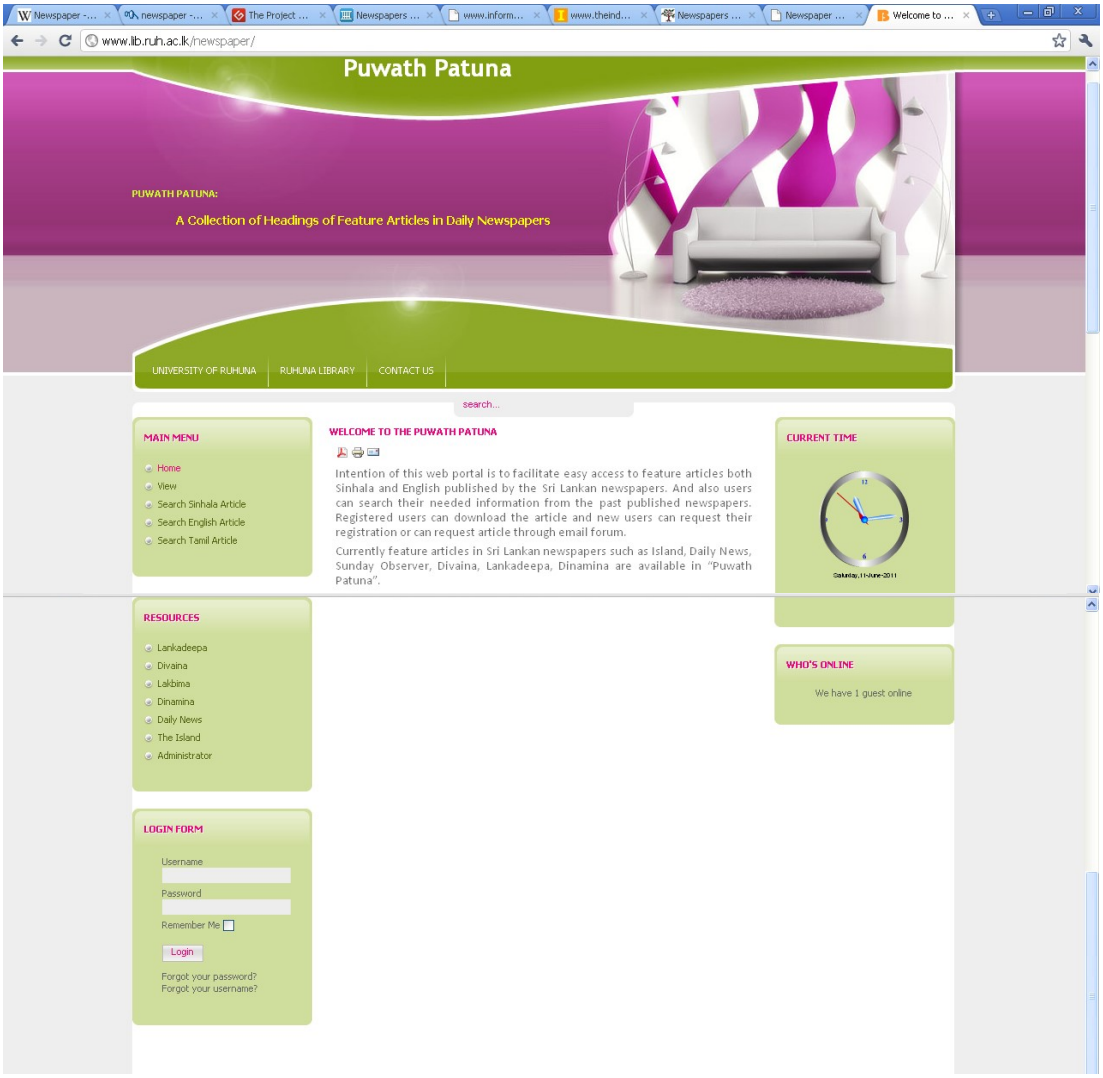
Observations

The PUWATH PATUNA system has many features. Some of them are listed below:

- Join as member
- Searching past collection of headings of feature articles in daily newspapers
- Browsing articles
- Reading current online newspapers
- Downloading of searched articles
- Efficiency in the search term with user friendly help messages
- Provision for individual newspaper article search
- Help messages
- Uploading articles who has administrative permission
- Edit uploaded articles who has administrative permission
- Add new newspapers who has administrative permission
- Activate users who request the registration

Screen shots of web version of PUWATH PATUNA

Hoem Page (URL: http://www.lib.ruh.ac.lk/newspaper/)

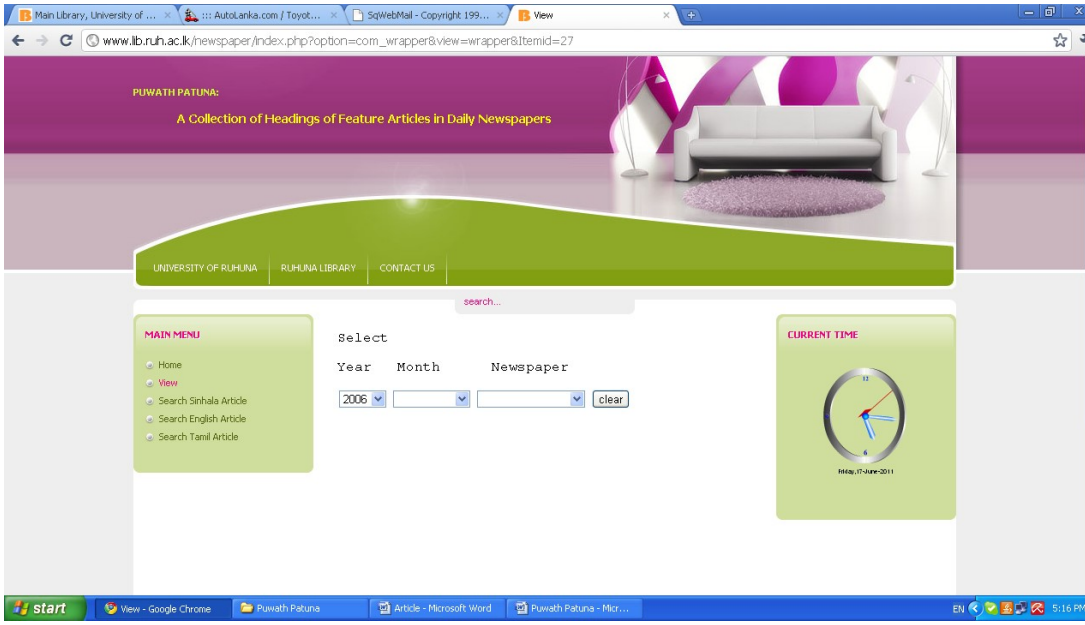


Display records

The system will display a list of records statistics of each newspaper and the results with default display fields and link the title to download information. By selecting the title, the system will display the detailed information about the title and its availability of downloadable.

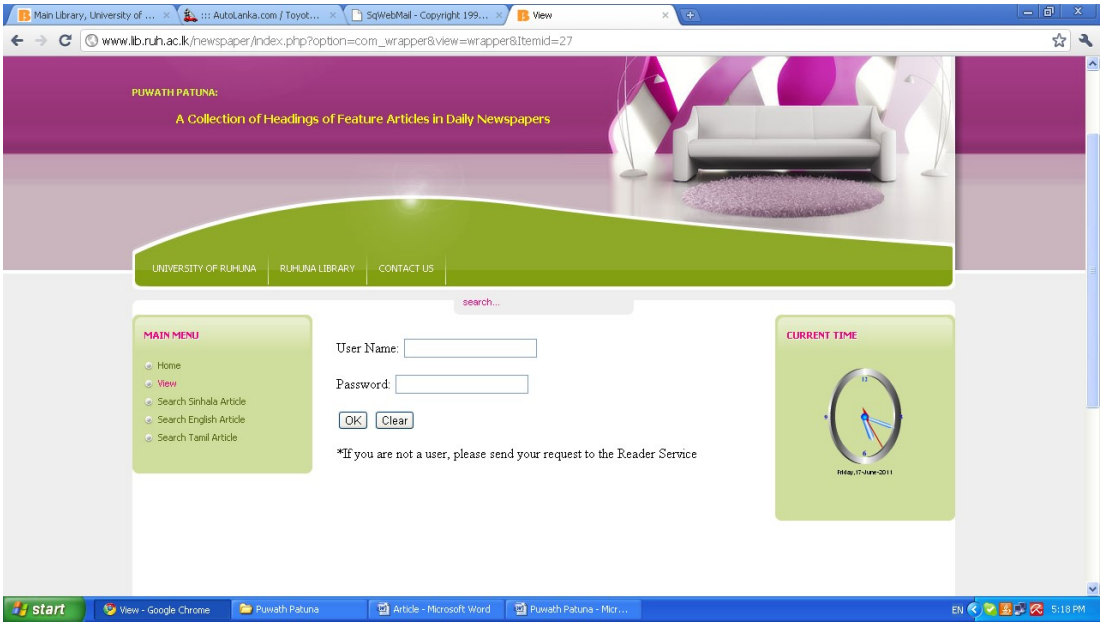
Browse for records

Browsing is the process of retrieving bibliographic records from databases. As shown in the following figure, databases can be searched from the chosen site. The system matches this information in the relevant catalogue and displays the search results.



Download file

The system has a provision to download files. These saved records can be loaded onto a local system, which is known as copy cataloguing. Before downloading, user must have a username and password.



Limitations

Currently Ruhuna Library received only two daily English newspapers (Daily News and The Island), three daily Sinhala newspapers(Dinamina, Lankadeepa and Divaina), 2 weekend English newspapers(Sunday Observer and Sunday Times) and three weekend Sinhala newspapers(Silumina, Lankadeepa and Divaina). Therefore currently the system includes the headings of feature articles of those newspapers.

Before uploading the articles to the system, we have to scan them to get digital format output. For that we need equipments such as scanners and the human resources who have a computer literacy. But lack of these resources, the uploading speed is not very high. Sometimes it takes a week for this process.

Conclusion

The immediate goal of this project is to provide library users with access to online versions of cancelled print newspapers, and eventually to enhance the collection even further with additional electronic newspapers. This article examines the trends in online newspaper publishing, researches the availability of Web sites in relation to the Sri Lankan newspaper collection.

Results of this project is useful to users to access feature articles both Sinhala and English published by the Sri Lankan newspapers, by searching through the tile of the article or by browsing the tile of the newspaper through the one interface. The PUWATH PATUNA is acting as a gateway to the online version s in currently publishing newspapers in Sri Lanka. It allows requesting for the articles, if users are not registered members and registered users can download the available articles.

The Future Development

In future I hope to add other newspapers articles published in Sri Lanka and other country. And also hopes to join other university libraries and other libraries in Sri Lanka to the system. Then they also can upload feature articles to this system easily.

References

Grundy, P. (1993). Newspapers. London: Oxford University Press.
Keeble, R. (1999). The newspaper handbook. London: Routledge.
Evans, H. (1973). Handling newspaper text. New York: Holt, Rinehart and Winston.

Wikipedia, Newspaper. [Online] Available at: http://en.wikipedia.org/wiki/Newspaper [Accessed 25 May 2011].

Wikipedia, Joomla. [Online] Available at: http://en.wikipedia.org/wiki/Joomla [Accessed 25 May 2011].

Joomla. [Online] Available at: http://www.joomla.org/about-joomla.html Accessed 26 May 2011].
newspaper. [Online] Available at: http://www.thefreedictionary.com/newspaper Accessed 26 May 2011].

Bleyer, W.G., How To Write Special Feature Articles. [Online] Available at: http://www.gutenberg.org/files/15718/15718-h/15718-h.htm [Accessed 27 May 2011].

National Library of Australia. [Online] Available at: http://www.nla.gov.au/what-we-collect/newspapers [Accessed 26 May 2011].

Hutchinson, J., Revolutionising digital content ingest: building a newspaper clippings collection using practical automation to assist with selection and classification. [Online] Available at: http://www.information-online.com.au/sb_clients/iog/data/content _item_files/ 000001 /paper _ 2011_ C9.pdf [Accessed 27 May 2011].

Lesley, M.S., Indexing of smaller-circulation daily newspapers. [Online] Available at: http://www.theindexer.org/files/14-3/14-3_184.pdf [Accessed 27 May 2011].

Newspapers in Ceylon. [Online] Available at: http://www.rootsweb.ancestry.com/~lkawgw /newsceylon. htm Accessed 26 May 2011].

Barber, P., A Brief History of Newspapers. [Online] Available at: http://www.historicpages.com/nprhist.htm [Accessed 01 June 2011].

The News: The Process Behind the Presentation. [Online] Available at: http://library.thinkquest.org/18764/print/history.html Accessed 01 June 2011].

Information Access and Knowledge Management in ICTs Environment: a study.

Kasirao, V.[1]

Information is all pervasive elements in the contemporary society. Every social trend cause some influence on the future shape of information services in any information centre whether it is public or academic or special or similar service oriented institutions. On one hand, the information services are reacting to the changing trends and new dimensions in the knowledge society and on the other, the information products and services are enhanced through the application of Information Technology ***(IT****). The ICTs play a vital role in library and documentation knowledge resource centres to create innovative ideas and identify the information officers' vital role in planning strategies for knowledge organization management for effective and efficient total quality management services in the present organization culture and climate. The ICTs serve as a communication tool for planning strategies in information management for e-knowledge information resource access facilities in library and documentation knowledge resource centres for societal development. This present paper presents the theme related concepts and its importance for Knowledge Organisation Management Skills* ***(KOMS)*** *in library and documentation centres. Emprises the need for Knowledge Access and Sharing Initiatives for Readers Approach Objectives* ***(KASIRAO****) for sustainable development in the academic and R&D perspectives in the present digital age. Discusses the impact of IT application in information product and services in Information and Documentation Knowledge Resource Centres* ***(IDKRCs)*** *towards organizational development in ICTs environment.*

Key words: *Information Communication Technologies (****ICTs****), e-knowledge resources, knowledge management, information product, information services, Knowledge Access,* ***KASIRAO***

[1] Dr. Kasirao, V., Documentation Officer/ Scientist EII/ Associate Professor and Head, Documentation Department, Central Leather Research Institute, Council Scientific and Industrial Research (CSIR), India. v_ kasirao@yahoo.com

Introduction

The electronic environment allows for locating the documents, assimilating and using retrospective and current information from variety of source to create new knowledge for information product and services towards organizational development. The e-knowledge information resources are essential for cost benefit information product and services in the knowledge resource centres. The Information Communication technologies serve as a communication tools for e-knowledge information management services towards organizational development in the present digital environment. The ICTs play a vital role in knowledge resource centres to create innovative ideas and identify the information officers' vital role in planning strategies for knowledge organization management skills for effective and efficient total quality management services in the present organization culture and climate.

Review of literature

The review of web- technology literature reveals a number of information resources such as case studies/research work papers, reports, databases, conference proceedings etc. in relation to "information access and knowledge management in ICT environment" aspects in the recent years. The present paper presents one such study, which has been carried out by searching the web knowledge resources on the paper theme aspects.

Definitional analysis

The paper theme related definitional analysis as indicated in table 1.

Table 1: Definition Analysis

SL. No.	**Definition analysis parts/ concepts**
1.	**Open source access**: The concept "open source" may be defined by KasiRao as the Scholarly communication that is made available to the information user community at free of cost and without any copy right issues for the purpose of academic and research studies.
2.	**E-Knowledge Management skills**: E-Knowledge management skills may be defined as the information handling techniques such as acquisition, storage and control involved for knowledge dissemination and utilization of e-information product and services in knowledge resource centres towards organizational development.
3.	**e-learning**: the concept **e-learning** may be defined as a source of knowledge indicators towards decision making support for e-learning and education to prepare curriculum for manpower development towards socio economic development the present network/digital knowledge society .

4	**Information and Documentation Management :** The term Information and Documentation Management may be defined as the information handling techniques such as acquisition, storage and control involved for knowledge dissemination and utilisation of e-knowledge information resources in library and information centres for the purpose of organisational development
5	**Planning Strategies:** The term Planning Strategies may be defined as the process of planning for strategies in information management products and services towards organizational development in digital environment.

Scope and objectives:

The scope of the present paper is significant in the following respects:

- To identify the vital role of information officers in information management for Open Source Access (OSA) facilities in the information knowledge resource centres.
- To provide knowledge awareness for decision making support on e-learning education policy for e-information products and services for Total Quality Management(TQM) in information and documentation centres in the present digital knowledge society
- To emphasize the need for Knowledge Access and Sharing Initiatives for Readers Approach Objectives **(KASIRAO**) towards sustainable development in academic and R&D Environment.
- To emphasize the need for IT application tools for information handling services towards organizational development.
- To identify the **Knowledge Organization Management Skills (**KOMs) for e-information products and services towards organisational development.

Methodology adoptions

Web knowledge resources served as a tool for data collections, analysis and interpretation for this present paper theme study.

Limitations

The limitation of the study is confined in relation to the present paper theme /study on **"**Information Access and Knowledge Management in ICTs Environment".

Information officers/ scientists role in information management products and services:

The information scientists play a vital role in Information and Documentation Centres IDCs and as an information facilitator for access to the value added e-knowledge information products and

services towards organizational development. The Knowledge Organization Management Skills (KOMs) and the information officer's role in information products and services as identified in Fig. 1 (Value) for knowledge management in information products and services

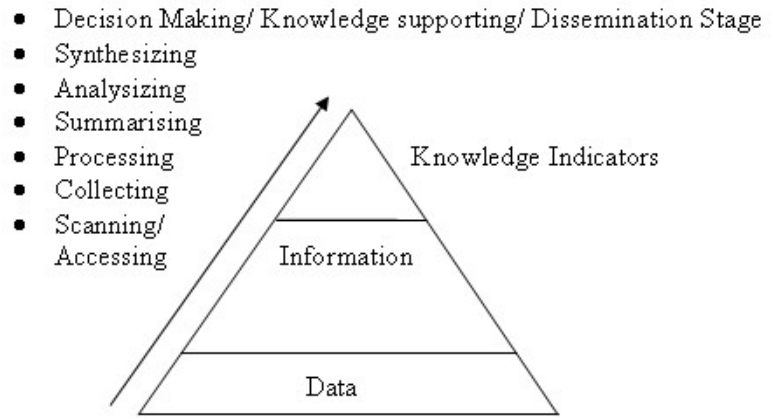


Figure 1: Information scientists role in Information Processing stages on Information Products and Services

Need for knowledge access and sharing initiatives for readers approach objectives (KASIRAO) in ICTs environment

Based on the Author's (KASIRAO) innovative concept knowledge identity theory titled on "Knowledge Access and Sharing Initiatives for Readers Approach Objectives (KASIRAO)", the author has also identified and developed the new innovative formula concept known as K= 6A to support its theory on KASIRAO for societal development in the present digital age. The theory and its formula as highlighted below in Fig 2:

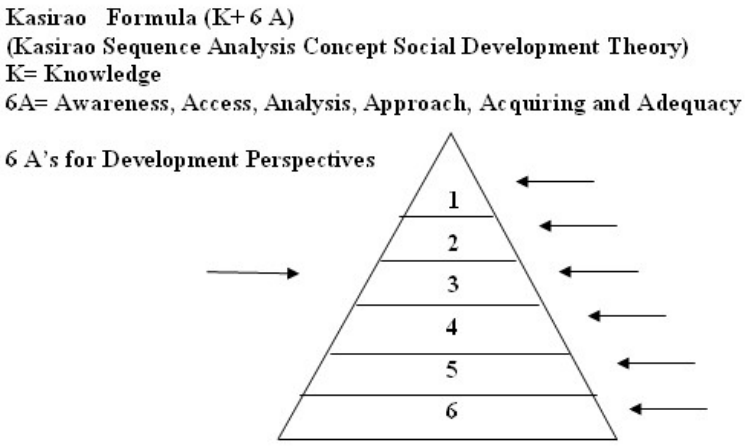


Figure 2: Knowledge Access and Sharing Initiatives for Readers Approach Objectives (KASIRAO)

1. Knowledge Awareness for
2. Knowledge Access for
3. Knowledge Analysis for
4. Knowledge Approach for
5. Knowledge Acquiring for
6. Knowledge Adequacy for

} Human Life Progress

Need for information access on e- learning education:

The open learning education is essential in the following respects. The purpose is indicated in Table2.

Table 2: Types of Benefits occurred in open learning education

SL. No.	Types of Benefits
1	Socio equity and access
2	Better education
3	Cost benefit services
4	Life long learning
5	Economic competitiveness – with out the high cost of travel and time away from the growth of learning culture

Issues involved in e- learning environment:

The issues are indicated in Table 3.

Table 3: Types of Issues

S. No.	Types of Issues
1	Web learning access and teaching issues
2	Organization of distance education
3	Web based learning cost and organizational issues
4	Audio, video and web conferencing access and cost issues
5	Audio, video and web conferencing cost and organization issues

Probable solution / planning strategies

The following planning strategies are essential to provide cost benefit information management product and services to the customers/information user community in the information and documentation centres in the present Web – Age Society (WAS). The probable solutions are provided in the following respects in Table 4.

Table 4: Solutions/Planning strategies

SL. No.	Types of Solutions
1	Education and training: Web learning **education** and **training** is essential to over come the teaching issues
2	Man power planning: Man power planning is essential towards Human Resource Development (HRD) to organize the distance learning education in academic, R&D and in other similar service oriented institutions
3	Adequate funding facilities: Adequate funding facilities both from central and state governments and the funding facilities from other agencies for e-learning projects etc are essential to manage web based learning cost and organizational issues. The adequate funding facilities are also supporting source to establish IT laboratories in information and documentation centres to enable the information and documentation officers to manage the audio, video and web conferencing cost and organizational issues and provide efficient and effective services to the library user community

Conclusion

The Information and Communication Technologies (ICTs) play a vital role for information management knowledge indicators for effective information access in knowledge resource centres/library and documentation centres. The ICTs serve as a tool for decision-making policy support in relation to information management issues towards the provision of information product and services in digital environment. The changing scenario of Information and communication technologies, the information officers shall strive for digital knowledge organization management skills in information and documentation centres to provide effective information management services to the information user community in the present e- digital knowledge society.

Acknowledgement

The author is grateful to **Prof. Dr.A.B.Mandal, Director**, Central Leather Research Institute, Adyar, Chennai for his permission and encouragement for submitting this paper to the 07th International Conference, Contribution of the Academic Librarians towards a Knowledge Society, 16th & 17th August 2011 in Colombo.

References

Kasirao, V. and Sheela Devi, K. (2006). OSA: A tool for organizational development. *IASLIC Conference proceedings*, Roorkee IIT, December, 13-16:77-82.

Kasirao, V. Sheela Devi, K. (2002). Role of IT industry in Indian leather sector – A panoramic view to Documentation and Marketing Systems, *LERIG Conference Proceedings*, CLRI, Madras, January 27- 30 :107-110

Kasirao, V. and Ramesh Babu, B. (2000). Application of IT in Self- Financing Professional College Libraries and Information centers in Chennai : A study of its impact on Library and Information Services (LIS). *NACLIN 2000 Conference Proceedings*, IIT, Madras, December 22-25:354-362.

Kasirao, V. (2007). Bibliometric studies in LESA database: a tool for knowledge indicators in leather and allied fields for leather industrial development. *IASLIC-2007 Conference Proceedings,* New Delhi, 26-29, December, 497- 511.

Kasirao, V. (2007). Web Technology Knowledge indicators in Environment Impact Assessment (EIA): A tool for Water Resources Management (WARM) Industry for sustainable development. IN: *International conference Proceedings* on Environment Management Scenario and Strategies EMASS –2020 held at Ujjain Engineering College, Ujjain, Madhya Pradesh from 26-27 December, 26-31.

Kasirao, V. (2007). Information and Communication Technologies (ICTs): A Tool for Water Resources Management (WARM) in Industry for sustainable development. *IN World Water Week (WWW) Conference proceedings* held at Stockholm International Water Institute (*SIWI),* Sweden 12-18th August :182

Kasirao, V. (2009). ICTs: a tool for conceptual analysis view knowledge indicators towards rural sustainable development. XXIII ESRS – the European Society for Rural Sociology, Vaasa, Finland, August 17-21, 108-109.

Kumar, O .B, and Sreenivasa Reddy, V. (2003). Digital Library Use: A case study of NIT Library, Wrangle. ILA Bulletin, 39 (2), 40- 45.

http://www.siwi.org.

http://www.ilo.org.

http://www.google.co.in

http://www.world water week.org.

http://.books.google.com.

http://www.sustainis.org

http://www.uni.edu.

http://www.it.environment.org.

http://www.erg.berkeley.edu.

http://www.portal.unesco.org.

http://www.clri.org.

Design and Development of Learning Object Repository in Library and Information Science: A Proposed Model

Hirwade, Mangala, Anil[1]

The new trend of Open Courseware (OCW) has been increasingly documented in the research literature. A number of academic institutions have already created OCW and Learning Object Repositories pertaining to other disciplines for e.g. NPTEL (National Programme On Technology Enhancement Learning), NCERT (National Council of Education Research & Training), e-Gyankosh, Rai Opencourseware, and Consortium for Educational Communication (CEC). The present repository will be an unique effort for Library and Information Science. The present paper takes an overview of these learning object repositories in India and proposes a model for design and development of Learning Object Repository in Library and Information Science by using open source software 'Moodle'. The model includes the modules viz. Lecture Notes, Assignments, Quiz, Glossary and Video Lectures. The UGC Model Curriculum for two years integrated course of Master of Library and Information Science is taken as the base for content creation. This paper is an outcome of an ongoing Major Research Project financially assisted by University Grants Commission, India and the author is the Principal Investigator of this project.

Keywords: *Learning Object Repository Opencourseware, India, Open Access, Moodle, e-learning*

Introduction

The new trend of Open Courseware (OCW) has been increasingly documented in the research literature. It is an effort to share Knowledge and make the best educational use of learning materials. Educators from around the world may share the content and the design of their courses, improving them through collaboration. Open Courseware is nothing but the repository of the study and learning materials in digital form in the web, which is open for every user, i.e. Open Access. These repositories envisage to store, index, preserve, distribute and share the digital learning resources with any time access offering interoperability. On the other hand, e-learning covers a myriad set of applications, and processes such as computer based learning, web-based learning, virtual

[1] Dr Hirwade, Mangala Anil, Assistant Professor, Department of Library & Information Science, RTM Nagpur University, India
hmangala@rediffmail.com

classrooms, etc. What is most significant about the method is that it ensures faster learning at comparatively reduced cost and gives access to more learning resources. In India, a number of institutions are digitizing their course materials and a good number of Opencourseware have been established.

Definition

"A free and open digital publication of high quality educational materials organized as courses".
"An OCW is a university course that is provided to the public without charge via the Internet"
OpenCourseWare is class material such as syllabi, reading lists, lecture notes, and other documents that were once used in an actual classroom and are now available to the public for free.

Benefits of OCW

Benefits of OpenCourseWare are multidimensional which are given below:

- Institutional benefits: The qualitative learning objects can be shared by learners of different programmes within open and distance learning (ODL) institution and also can be shared by learners of different ODL institutions within or outside the country. Open Courseware improves recruitment by helping the right students find the right programs at the institution and build global awareness of the institution's unique educational approach and curriculum.
- Faculty benefits: Open Courseware builds awareness of the unique contributions to the field and duplication of efforts of preparing self-learning study materials can be minimized. And also builds global awareness of the institution's unique educational approach and curriculum.
- Just in time and any time access: The Open Courseware facilitates any time access to its collections whenever and wherever the learner needs.
- Eliminate travel costs: Travel has historically been the most costly aspect of corporate training. Open Courseware eliminates travel costs and the time away from the job that travel mandates.
- Low cost delivery: An enterprise workforce can have access to hundreds of courses for a fraction of the cost of classroom courses.
- Always up-to-date: With Web-based learning and performance support resources residing on a single Web server, updates are immediately available to all worldwide.

Learning Object Repositories (LOR)

A learning object is a resource, usually digital and web-based, that can be used and re-used to support learning. There are several online repositories or collections of learning objects that target

Higher Education faculty needs. A learning object can be as small as a paragraph or as large as a complete online course and come in the form of HTML/Text files, simulations, JAVA, Flash, QuickTime movies etc. Learning objects have arisen in response to the faculty need for high-quality, reusable instructional materials that are organized to be easily searchable.

Origin of the research problem

Information and Communication Technology has created immense methods for creating, storing, maintaining, accessing and preserving the traditional printed documents in digital form. It offers great opportunities to fast, effective and efficient electronic communication. Development in educational course technology created many opportunities for the educators to prepare and present course material efficiently and effectively over the net using affordable digital equipment and computers. OCW is the natural outcome of these efforts & is mainly based on concepts of 'Sharing' the online material locally and globally. A number of academic institutions have already created OCW and Learning Object Repositories. UGC, India has also started development of Learning Object Repository at Under Graduate Level. On this background, the author has proposed to design and develop a proposed model for a Learning Object Repository in Library and Information Science based on UGC Model Curriculum. This will be an e-learning aid for the LIS students as well as a teaching aid for LIS teachers. It will be useful to working Librarians also.

Interdisciplinary relevance

The Library and Information Science (LIS) has the attributes of being a discipline of disciplines. The subject commenced its advent with a clinical approach and gradually attained the status of a scientific field, emerged subsequently as one of the subjects of highly interdisciplinary approach, with a blend of theories, philosophies and practices incorporated from a host of other subjects. The subject area in its fold has thus imbibed applications from diverse subjects like; Psychology, Statistics, Linguistics, Management Science, Computer and Communication Technology and also from many others. The convergence of these fields with LIS has led to its transformation towards a new professional profile. This model will be definitely helpful and useful for LIS professionals as well as other professionals from different disciplines.

Review of research and development in the subject

There are a number of initiatives all over the world traced in the field of development of OCW and Learning Object Services.

International status

Unlocking Knowledge, Empowering Minds is the slogan of Massachusetts Institute of Technology (MIT) OCW. It is the first initiative of OCW. It provides free lecture notes, exams, and videos for more than 2000 courses. 30 major OCW initiative worldwide are reported in Table No. 1

Table 1: Profile of the Organizations having OCW

Sr.No.	OCW Initiatives	Web Address
1.	Massachusetts Institute of Technology	http://ocw.mit.edu/
2.	Legal Aspects of Property and Land Use OpenCourseWare	http://educhoices.org/index.html
3.	E-Learning	http://www.elearninglearning.com/boston/ courseware/
4.	The Johns Hopkins Bloomberg School of Public Health's Opencourseware	http://ocw.jhsph.edu/
5.	Capilano University	http://ocw.capcollege.bc.ca/
6.	Nagoya Opencourseware	http://ocw.nagoya-u.jp/index.php
7.	Notre Dame OCW	http://ocw.nd.edu/
8.	Open learning education	http://www.cmu.edu/oli/index.shtml
9.	Sharecourseware	http://www.sharecourseware.org
10.	Seoul National University	http://ocw.snu.ac.kr/index.php
11.	Sofia OCW	http://sofia.fhda.edu/index.htm
12.	UCIRVINE	http://unex.uci.edu/courses/ocw/
13.	Tufts opencourseware	http://ocw.tufts.edu/
14.	Softskillcourseware	http://www.softskillscourseware.com/index.asp
15.	IBM Opencourseware	http://www-304.ibm.com/jct01005c/university/scholars/courseware/index.html
16.	Utah state University	http://ocw.usu.edu/
17.	FETP Opencourseware	http://ocw.fetp.edu.vn/home.cfm
18.	UT OCW	http://ocw.u-tokyo.ac.jp/english/
19.	Waseda University	http://www.waseda.jp/ocw/index_e.html
20.	METU OCW	http://ocw.metu.edu.tr/
21.	KFUPM OCW	http://opencourseware.kfupm.edu.sa/
22.	Osaka OCW	http://ocw.osaka-u.ac.jp/index.php
23.	Kyushu university	http://ocw.kyushu-u.ac.jp/english/index.html
24.	USQ Australia	http://ocw.usq.edu.au/
25.	Universidad De Manizales	http://ocw.virtualum.edu.co/ocwum
26.	Doshisha University openCourseWare	http://opencourse.doshisha.ac.jp/english/index.html
27.	ArsDigita University Curriculum	http://aduni.org/courses/
28.	PhET	http://phet.colorado.edu/index.php
29.	UNSW School of physics	http://www.physclips.unsw.edu.au/
30.	HEAL national digital library	http://www.healcentral.org/

National Status

Institutions from India also have started developing the OCW and Learning Object Repositories. The list of major initiatives from India is reported below.

Table 2: Indian Opencourseware

S. N.	OCW Initiatives	Web Address
1.	National Programme on Technology Enhanced Learning	www.nptel.iitm.ac.in , http://youtube.com/nptelhrd/
2.	Consortium for Educational communication	www.cec-lor.edu.in www.cec-lor.edu.in/search.asp
3.	National Council of education Research and Training (NCERT)	http://www.ncert.nic.in/textbooks/testing/Index.html
4.	eGyankosh	www.egyankosh.ac.in
5.	Rai Opencourseware	http://www.raifoundation.org/index.html
6.	Academia Opencourseware	http://pec.edu.in/

NPTEL (National Programme On Technology Enhancement Learning)

This is an open courseware initiative by seven Indian Institution of Technology (IITs) and the Indian Institution of Science (IISc). The Ministry of Human Resource Development (MHRD), Govt. of India is the supporting agency. The main objective of this programme is to enhance the quality of engineering education in the country by developing more than 200 curricula based video and web courses. Premier institutions of India are participating in this innovative programme for the production and dissemination of quality courseware in the areas of engineering & technology. A discussion forum for each web course is available. The open courseware and discussion threads can be accessed through the user-friendly portal interface.

The programme is systematically structured through the Technology Enhanced Learning (TEL) Committee, Programme Implementation Committee (PIC), National Programme Committee (NPC) and subject level Expert Groups at the National level and institutional levels. This programme addresses harmonization of engineering curricula across the country as well as the shortage of quality teaching faculty at the second & third tier (i.e. government supported and self supported) institutions.

4.2.2. Consortium for Educational Communication Consortium for Educational Communication (CEC) is an inter-university centre on electronic media, established by the University Grants Commission (UGC). UGC, Educational Multimedia Research Centres (EM^2RC), Audio Visual Research Centre (AVRC), Vyas Channel on Gyan Darshan (24 hours Higher Education Channel) are the partner Institutions. Ministry of Human Resource Development, Govt. of India is a

supporting agency. The CEC in coordination with its 17 Educational Multimedia Research Centres has been producing television programmes in various subject categories in English, Hindi and regional languages. Some of the audio-visual programmes are based on syllabus-based topics at the school, polytechnic, college and university levels. Produced educational programmes are broadcasted on the national educational television channels such as Vyas Higher Education Channel, Gyan Darshan, Doordarshan. The television programmes produced in CEC and broadcasted in educational channels are reusable. Thus, CEC established the Learning Object Repository (LOR) and the Digital Video Repository (DVR) to provide worldwide access to these learning resources. The course in the E-contents & the LOR of the CEC one specially meant for the undergraduate students. The course material is in the form of learning objects, which are the notes, prepared by the eminent subject's experts. It covers a large no. of subjects for nearly all faculties such as Arts, Commerce, Science, Management Studies, Humanities, Maths and Medical Science & Pharmaceutical Science.

NCERT (National Council of Education Research & Training)

NCERT is an apex resource organization set up by the Government of India to assist and advice the Central and State Government on academic matters related to school level education. Ministry of Human Resource Development, Govt. of India is supporting agency. NCERT publishes school textbooks, mainly in English, Hindi and Urdu. It has initiated a step towards making school textbooks freely available on the Internet for students and teachers through its website(www.ncert.nic.in). Most of the textbooks available in this portal are in new edition, based on the National Curriculum Framework 2005.

e-Gyankosh

Indira Gandhi National Open University (IGNOU) is a mega open university that offers distance and open education to millions of learners in India and other countries. IGNOU produces self-instructional study materials for various programmes and also hosts a number of educational broadcasting channels. IGNOU has initiated the establishment of National Digital Repository of learning resources eGyankosh. This repository envisages to store, index, preserve, distribute and share the digital learning resources of open and distance learning (ODL) institutions in country.

Rai Opencourseware

The Rai University (RU), one of India's fledgling private varsities in the country has launched an Open Course Ware (OCW) — a concept inspired by globally recognised technology institutes like the Massachusetts Institute of Technology (MIT). ''The idea is to share our entire course ware and knowledge with the larger section of students as well as academia via free access provided on the

net. Vinay Rai is the President of Rai University. The mission is to promoting practical, job-oriented, skill-based and interactive education. Of the 350-odd courses it offers in fields as varied as engineering, media and communication, management, hospitality and hotel industry, the contents of 70 courses have already been posted on the net.

Academia Opencourseware

Academia PEC has been designed, developed and set up successfully at Punjab Engineering College, which is used for uploading the academic courseware by all the faculty members of the institute and extensively used by the students to get a 24 hour access to the courseware. The project was developed by students of the department under the able guidance of the faculty member of the department of Computer Science & Engineering.

There are Subject specific Learning Object Repositories. Major LORs devoted to the discipline of Library and information science and other subjects are reported below.

Table 3: Learning Object Repositories in LIS

S. N.	Learning Object Repositories	Web Address
1.	Library and Information Virtual Education (LIVE)	http://www.ignouonline.ac.in/live/
2.	Oaister	http://www.oaister.org/
3.	Caltech Library system	http://caltechlib.library.caltech.edu/
4.	Collegedegree	http://www.collegedegree.com/courses/library-programs

Table 4 - Learning Object Repositories (Other Disciplines)

S. N.	Learning Object Repositories	Web Address
1.	India Energy Portal	http://www.indiaenergyportal.org/resources_elearning.php
2.	National Institute of Oceanography	http://drs.nio.org/drs/index.jsp
3.	Shiksha	http://www.shikshaindia.org/about-us.html
4.	Social Science Research Network	http://www.ssrn.com/
5.	Telgu one Foundation	http://www.teluguonefoundation.org/teluguoneFoundation/supportASchool.jsp
6.	e-learning DOEACC	http://www.cedtic.com/html/elearning.html
7.	e-college of India	http://www.ecollegeofindia.com/bespoke_courses.php
8.	National center for catalysis research	http://www.nccr.iitm.ac.in/
9.	DEC-Repository	http://202.141.12.109/dspace
10.	Digital Repository Service	http://drs.nio.org/drs/index.jsp
11.	Open MED	http://openmed.nic.in/
12.	DU Eprint Archive	http://eprints.du.ac.in/

13.	Eklavya	http://www.eklavya.org/
14.	Brihaspati	http://www.ugc.ac.in/more/brihaspati.html
15	Vyas	http://www.ugc.ac.in/new_initiatives/vyas.html
16.	MERLOT	http://www.merlot.org/merlot/index.htm
17.	eduSource	http://www.edusource.ca/english/objects_eng.html
18.	Commonwealth of Learning	http://www.col.org/Pages/default.aspx
19.	Wisc-Online	http://www.wisc-online.com/
20.	VCILT	http://vcampus.uom.ac.mu/lor/index.php?menu=1
21.	SMETE Digital Library	http://www.smete.org/smete/
22.	Nmc learning object initiative	http://archive.nmc.org/projects/lo/repositories.shtml
23.	Amser	http://amser.org/
24.	CAREO	http://www.ucalgary.ca/commons/careo/
25.	GEM	http://www.thegateway.org/
26.	Intute	http://www.intute.ac.uk/sciences/
27.	Informing Science Institute LOR	http://www.maconstateit.net/lor/index.php
28.	SWITCH NLOR	http://www.switch.ch/els/collection/
29.	EdShare	http://www.edshare.soton.ac.uk/
30.	Researchchannel	http://www.researchchannel.org/prog/

Significance of the study

The provision of educational resources through LORs plays an important role in the development and adoption of ICT in the educational field. The active engagement of users in these systems would leverage their uptake. Furthermore, extending the role of LORs from a storage system to an open platform where users can participate and contribute would benefit innovation in teaching and learning with ICT.

Though there are a number of OCW and LOR initiatives located in India but except IGNOU, no other academic institution has created an OCW or LOR in Library and information science. This project will be an unique and helpful for LIS professionals.

Its potential contribution to knowledge in the field of social relevance or national importance

Students have diverse backgrounds and knowledge. Learning objects can enhance or remediate, and offer many different kinds of resources to meet learners' varied styles and paces. Learning objects add flexibility to the teaching and learning experience. Faculty use learning objects when teaching a basic concept, applying ideas in "real world" applications, checking mastery, presenting simulations, or giving remedial instruction. As stated earlier, Library and Information Science is a discipline of discipline and is a highly interdisciplinary; this LO based on UGC Model Curriculum will be of great importance at national and international level.

Objectives

- The primary objective of the project will be creation of Learning Objects in Library and Information Science based on UGC Model Curriculum by using the services of Local and National Subject Experts.
- To propose a model of Learning Object Repository in LIS by using Open Source software Moodle.

Methodology

- Experimental Research Methodology will be used to carry out the project. Eminent teachers in LIS, practicing Librarians throughout the country and Local Subject Experts will be requested to contribute the contents for creation of Learning Objects.
- UGC Model Curriculum recommended by Karisiddappa Committee on Curriculum Development in LIS will be taken as the base to design the modules for content creation. The proposed Learning Object Repository will be systematically designed in 8 modules

MODULE 1: Foundations of Library and Information Science

MODULE 2: Knowledge Organization, Information Processing and Retrieval

MODULE 3: Information Sources, Products and Services

MODULE 4: Management of Library and Information Centres / Institutions

MODULE 5: Information Technology Basics and Applications

MODULE 6: Research Methods and Statistical Techniques

MODULE 7: Information Systems

MODULE 8: Directory of Web resources supporting the UGC Model Curriculum in LIS

For detailed content creation these modules are further subdivided into units as given below.

Sr. No.	Module	No. of Units	Details
1	MODULE 1: Foundations of Library and Information Science	8	Library as Social Institution Library Development Information & Communication Information Science Library, Information & Society Information and the State Library & Information Profession Public Relations & Extension activities
2	MODULE 2: Knowledge Organization, Information Processing and Retrieval	7	Universe of Knowledge Methods of Knowledge Organization Bibliographic Description Cataloguing & Subject Indexing Indexing Languages & Vocabulary Control Information Retrieval Repackaging & Consolidation

3	MODULE 3: Information Sources, Products and Services	6	Reference & Information Sources Reference Service Information Users & their Information Needs Information Services & Products Information Systems & their services User Education
4	MODULE 4: Management of Library and Information Centres / Institutions	9	Management Human Resource Management Financial Management Reporting System Analysis and design Total Quality Management Library Housekeeping Operations Planning Managing Change
5	MODULE 5: Information Technology Basics and Applications	8	Information Technology Operating Systems & Programming Networking Internet: Features & Tools Database Management Systems Library Automation Digital Libraries Current trends in Information Technology
6	MODULE 6: Research Methods and Statistical Techniques	7	Research Research Design Research Methods Research Techniques and Tools Data Analysis & Interpretation Bibliometrics, Scientometrics & Informatrics Research Reporting
7	MODULE 7: Information Systems	10	Business Information System Environmental Information System Biotechnology Information System Health Science Information System Archival, Museum & Archaeological Inf. System Legal Information System Agricultural Information System Social Sciences Information System Industrial Information System Rural & Community Information System
8	MODULE 8: Directory of Web resources supporting the UGC Model Curriculum in LIS	5	Directory of Journals Directory of Digital Libraries worldwide Directory of LIS Archives Directory of Library Portals Directory of Other Web Resources
Total Units		55	

- Each unit further includes a number of sub topics. It is proposed to take help of Subject Experts for content creation.
- Digitization of the contents will be the step, which will require Hardware and Software infrastructure.
- A Learning Object Repository may be created by using Moodle software and hosted on the web with the help and services of IT professionals.

MOODLE

Moodle (abbreviation for Modular Object-Oriented Dynamic Learning Environment) is a free source e-learning software platform, also known as a Course Management System, Learning Management System, or Virtual Learning Environment (VLE). As of October 2010 it had a user base of 49,952 registered and verified sites, serving 37 million users in 3.7 million courses. Moodle was originally developed by Martin Dougiamas to help educators create online courses with a focus on interaction and collaborative construction of content, and is in continual evolution.

It is a Free and Open Source Software (FOSS), which means one can freely use, modify, and redistribute. Under these conditions, thousands of developers have contributed features and functionality to Moodle. The result is the world's most popular, free, and feature-packed online learning system.

Learning object repository in library and information science: a proposed model

The author tried to develop a proposed model of Learning Object Repository in LIS by using Moodle software.

Creation of Course Categories

The proposed Model includes 8 Course Categories viz. Foundations of Library and Information Science; Knowledge Organization, Information Processing and Retrieval; Information Sources, Products and Services; Management of Library and Information Centres / Institutions; Information Technology Basics and Applications; Research Methods and Statistical Techniques; Information Systems; and Directory of Web resources supporting the UGC Model Curriculum in LIS.

Under each course category, the contents are arranged as Lecture Notes, Quiz, Assignment and Learning Objects which includes Video Lectures and links to web resources. As far as Video Lectures are concerned, these are first uploaded on YouTube and then a link is provided.

Adding a Quiz

A Quiz can be added to each course category. In Moodle, there is a provision to add various types of questions to the quiz viz. Multiple Choice, True/False, Short Answers, Numerical, Matching, Random short answer matching, Description, Calculated, Essay and Embedded answers. This is a very good utility for the learners to assess their own performance.

Adding Lecture Notes

Lecture Notes can be added course-wise in Ms-Word or PDF format. This may be uploaded as a file or a folder. Figure 5 shows accessing of a MS-Word document of ‘Digital Libraries’.

Adding Video Lectures

The video lectures in the form of learning objects can be prepared by using digital camera and uploaded on Youtube. The respective hyperlink to be added to the repository. The Learning Object which is less than 16 MB in size can be inserted directly. Figure 7 shows a screenshot of a teacher delivering a lecture.

References

Moodle. Wikipedia, http://en.wikipedia.org/wiki/Moodle

Moodle. http://moodle.org/

PART 3

Information Literacy: the Essential Tool for Knowledge Society

Session Chair – Prof. Jagtar Singh

Head, Dept. of Library and Information Science,

Punjabi University, India

Lead Paper – Dr. C. R. Karisiddappa and Dr. A. Y. Asundi

Dr. C. R. Karisiddappa, Professor and Chairman (Ret.) and Former UGC Emeritus Fellow, Dept. Library & Information Science, Karnataka University, Dharwad

Dr. A.Y.Asundi, Professor and Chairman (Ret.) Dept. Library & Information Science, Bangalore University, Bangalore

Information Literacy skills for user empowerment in the Knowledge Society

Karisiddappa, C.R.[1] and Asundi, A.Y.[2]

Information and Knowledge Society are presently the often discussed terms. The inherent capabilities of processing, storage and access to information are the key factors of developments of information and communication technologies and World Wide Web. The users should acquire skills and knowledge to use information which is becoming vast and explosive. So the information literacy was augured to the beneficial use of information. Hence a detailed description is presented here bringing in relation between knowledge society and information literacy.

Keywords: *Information Literacy, Knowledge Society, User Empowerment, Lifelong Learning , Computer Literacy, Internet Literacy*

"The creation, development and application of knowledge in our societies today – is one of the major factors in economic development and is increasingly at the core of a country's competitive advantage in the global economy."

World Development Report 1998/99

"In today's organization you have to take responsibility for information because it is your main tool. But you must know how to use it. Few are information literate."

- Peter Drucker: Harvard Business Review, May-June 1993

Introduction

It is desirably appropriate that two related concepts information and knowledge society and information literacy are succinctly described. The collocation "information society" as it is now used first emerged in Japanese social science(s) in the early 1960's (Karvalics, 2007). The metaphor 'Information society' was first coined in Japan by Masuda and Kohyma (Masuda, 1980, 1968) and it was in that country that this metaphor was first used for national policy. The term information society though introduced by Daniel Bell (Bell, 1976), in 1973 but was strongly conceptualised in

[1] Dr. C.R.Karisiddappa, Professor and Chairman (Ret.) and Former UGC Emeritus Fellow, Dept. Library & Information Science, Karnataka University, Dharwad
karisiddappa@gmail.com

[2] Dr. A.Y.Asundi, Professor and Chairman (Ret.) Dept. Library & Information Science, Bangalore University, Bangalore.
ashokasundi@rediffmail.com

association with ideological, political, economic, educational and informational changes in the 90s, with the development of the World Wide Web and ICTs. The advances in computer and communication technologies saw the enhanced processing, storage and delivery of information at a lightening speed and the access to information was at ease. This is comparatively similar to the growth of print media since and after the Gutenberg era which created a situation of information overload akin to the expression information explosion discussed and deliberated in the late 1970s. In the past century print media dominated the society in various sectors – education, research and development, industry and business and the government. It experienced as stated earlier an era of information explosion, the content of which was mainly the printed documents. Another term 'Data Smog' or "Information Glut" similar to expression 'information pollution" quite often used in 1970s, was coined by author David Shenk (Shenk, 1997) which refers to the barriers that too much information can create and like user training to search online information systems, Information literacy is the solution for present data smog.. It obviously necessitated the users of information to search and retrieve information from different types of information systems and services – Libraries, Information Centres, Data Centres, abstracting and indexing services and so on.

In the new millennium it is perceived that information and knowledge matter more than ever, and ability to use them effectively rests on a set of abilities that extend beyond traditional base of reading, writing and mathematics conceived as three 'Rs'. The millennium characterized as information and knowledge society demands relevant skills of information search and access that mostly held in the electronic and digital media. Before going through how the users should be facilitated to use the new media the discussions and deliberations made on the emergence of information and knowledge society would be quite enviable to know their potential impact on the social, cultural, economic and educational sectors, the most common areas of human activity where information and knowledge is a vital input.

Basically the characteristic of information society has been a information rich society, where the need and demand for information more prolific because its easy access and in the form desirable ably supported by the ongoing developments in the area of information technology. In the 21st century, information and knowledge matter more than ever, and ability to use them effectively rests on a set of skills that extend beyond traditional modes of its accessibility. All of us in the society now incorporate the key competencies to enhance our knowledge and critical thinking. Information literacy is one of such key competency essential in the present century. Information Literacy is the ability to gather, organize, filter and evaluate information and to form valid opinions based on the results.

Knowledge Society

Information and knowledge presently are used synonymously in everyday life. However, they have different meanings which are made clear by the following statement made by A.C. Foskett: ***"Knowledge is what I know, whereas information is what we know".*** This implies that knowledge is personalized, limited to oneself. It becomes information only when conveyed to other. Information, when consumed by the receiver, adds on to his store of knowledge (Fosket, 1982).

An information society harbinger to knowledge society is a society in which the creation, distribution, diffusion, uses, integration and manipulation of information is a significant economic, political, and cultural activity. The concept 'Information Society' emerged in the 1970s and throughout the 1980s, and rapidly gained widespread currency.

Before the term "knowledge society" gained currency, the term "information society" was in popular usage. However the distinction between the two is not apparent at the surface. It implies that the distinction can be gauged by the meaning and contents represented by the respective terms "information" and "knowledge". The knowledge economy is its economic counterpart whereby wealth is created through the economic exploitation of understanding. People that have the means to partake in this form of society are sometimes called digital citizens. Specific to this society is the central position 'information technology' has for production, economy, and society at large. The 21st century paved the way for knowledge society in which knowledge is the prime productive source than the capital or the labour. Knowledge societies have the characteristic that knowledge forms a major component of any human activity. A knowledge society is one in which knowledge becomes a major creative force.

Knowledge has a dynamic structure, which is constantly undergoing change by the thinking and learning processes. Knowledge Society is defined as the society where knowledge is created, acquired, shared, transmitted and used more effectively by enterprises, communities and individuals for greater economic and social development. It is a 'work-in-progress' society that invests significantly in harnessing the available skills, technology and learning towards development.

The resulting factors that knowledge is considered important have made thinkers like Fritz Machlup to introduce the concept of the knowledge industry. He distinguished five sectors: education, research and development, mass media, information technologies, information services where knowledge is the core content. Based on this categorization he calculated that in 1959 29% of the GNP in the USA had been from knowledge industries (Machlup, 1980, 1984).

Dr. C. Subramaniam, former Central Minister, as far back as in 1993,while releasing the Hindu Index 1992, said that "In the post-industrial era, not capital or labour, but knowledge would be the driving force". He stressed 'It was essential that the country with large reservoir of scientific and technical manpower became the benefactors of knowledge created everywhere instead of the beneficiaries of knowledge created elsewhere" (Hindu, 1993). The attribution is that the knowledge is becoming the capital of a nation now, and the users must be empowered to use this knowledge for their benefit. Since the Information Technology Enabled Services (ITES) would be key channels to use the knowledge held in the 'Web world" the user should acquire the ICT skills in this context. It is also clearly demonstrated by the things that are shaping, that information use skills are as vital as the farming skills in agricultural society or basic industrial production skills in the industrial society. The knowledge society per say has now opened up new challenges in this context to the individuals in the acquisition of formal 'ICT skills' without which the access to knowledge will be comparatively a difficult task. In the educational sector, in particular in higher education the Academic Libraries play a vital role in installing the 'information literary' skills among the students and faculty to enable them to search, identify and access to information from the vast store of World Wide Web, using relevant tools and methods.

In the emerging knowledge society, learning to know, learning to do and learning to be are considered as solid pillars of education. Thus education has a fundamental role to play in personal and social development. A knowledge society needs infrastructure like

1. Physical: meeting places, notice boards ...
2. Technological: local language content sharing, mailing lists, web portals, wikis, chat rooms, video conferencing, virtual meetings, collaborative development environments, distance education ...

All these skills have to be empowered within the users of knowledge, which is the core component of today's knowledge society, and the concepts like Information Literacy, Computer Literacy, Internet Literacy and Media Literacy and so on are all embraced in the umbrella concept "Information Literacy" . A brief presentation on what of and how of Information Literacy to instil the required ICT skills for the beneficial use of knowledge and information would be a prerequisite (Chakravarty,).

Information Literacy

All of us in the society now incorporate the key competencies to enhance our knowledge and critical thinking. Information Literacy deals with the ability to access, evaluate, organize and use information in order to learn, problem-solve, make decisions in formal and informal learning

contexts, at work, at home and in educational settings. Hence Information Literacy is becoming a strong pillar of knowledge society.

> The term Information Literacy was first used in 1974 by Paul Zurkowski, President, Information Industry Association. (Zurkowski, 1974) According to him, information literate people are those who are trained in the application of information resources to their work. They have learned techniques and skills for utilizing the wide range to tools and other sources of information.

Information Literacy is the adoption of appropriate information behaviour to obtain, through whatever channel or medium, to fit into the information needs, together with critical awareness of the importance of wise and ethical use of information in society. Information literacy is a means to express personal ideas, develop arguments, refute the opinions of others, learn new things or simply identify the truth or factual evidence about a topic. Information literacy has been one of the often deliberated subject in national and international forums and platforms since the advent of information society, and is considered as the individual's ability to access to the information needed, select and use appropriate tools to find the relevant information, evaluate information for accuracy, reliability and relevance and apply the information for the purpose it is sought.

These days most of the people likely to change careers at least five times throughout their lives. People must become versatile learners who can adapt to new careers through their own ability of learning how to learn. Those who are not information literate are unable to make informed decisions given an information related problem and must rely on others rather than thinking for themselves. Those who are information literate can analyze and interpret information and this ability enables them to respond critically and creatively to problems. Therefore, it can be said that Information Literacy contributes towards personal empowerment and freedom to learn. As the American Library Association Presidential Committee on Information Literacy (ALA, 1989), says "Ultimately, information literate people are those *who have learned how to learn*. When you know how to find and apply information you can teach yourself what you need to learn and essentially you have learned how to learn. Information literacy equips them with the critical skills necessary to become independent lifelong learners.

Information Literacy and the Expanding horizon of IT

It is becoming increasingly important in the contemporary environment of rapid technological change and proliferating new category of information sources to train the users to utilize them fructuously. The complexities day by day are increasing and individuals are faced with diverse, abundant information choices, in work place, and in their academic studies and in their personal life.

The new domain of information in the digital form is rapidly replacing the traditional printed counterparts, resulting in increased computer skills, processing tools and fast communication network connectivity. Digital information or e-information is more abstract, dynamic and malleable in comparison to printed form. Hence and understanding of how to enhance its value and its interaction becomes an important pre-requisite for the users in the (digital) information and knowledge society. This is clearly an indication that the ability to handle and manage information is not just easy and important, but very vital. It includes IT skills such as use of computers, software applications, information retrieval tools etc. These IT skills have to be developed on a large scale due to the ever-expanding Internet universe.

In this digital age, users need to be more information literate than ever before. While WWW can contain valid and accurate information, its very nature encourages quick and easy self publication, without editorial or academic review the content is often of low quality and there is a need for users to be able to recognize and access authentic and useful resources. Furthermore, users need to be able to identify and communicate their information needs to clarify/define a subject or area.

As information is increasingly codified in digital forms, new skills are needed to operate the technology to search for, organize, manage information and use it to solve problems and create new knowledge. Since the Internet is a common information communication tool, Information Literacy is often understood as Digital Literacy. Computer Literacy is an essential component of Information Literacy, media Education forms another important part of Information Literacy but there are differences between computer literacy, media education and information literacy. In western countries community technology centres, tele-centres and community learning centres provide training related to hardware, software and the Internet as well as other services.

The print media, rapidly growing electronic/digital media the dominance of INTERNET and WWW as universal channel of communication of information have made information seekers to learn about these developments due to the unpredictable problems surrounding the reliability and the accessibility of information. In this context most often discussed topic is how user can be expected to access the credible information that they find on INTERNET, because it has enabled an almost limitless amount of information to be stored and made available for access and viewing by any one equipped with suitable hardware and software.

Information literacy in higher education and life long learning

One of areas where information is a fundamental input is the education, and is considered as an essential component for the life long learning, as learning enhances the urge know more and thereby

need for information persists. The concept of life long learning is though difficult to define, but it is a deliberate progression and a process that marches throughout the life of an individual where the initial acquisition of knowledge is reviewed and upgraded to meet the challenges of the ever-changing society. Hence information is essential for life long learning and thereby Information Literacy forms the basis for life long learning.

The central mission of education is to make an objective effort to develop life long learners. The ever changing life style and fascinating changes that are taking place in all walks of life necessitate the incessant learning practice. Education in general and professional education in particular strives hard to ensure the enhancement of learners' intellectual abilities, reasoning and critical thinking power. It also endeavours to construct a framework for 'learning how to learn' and thus providing a foundation for continued growth indicating learner's role as informed citizens and members of the community.

Empowering Information User

The significant changes due to changing information environment in content and embodiment as described above in the digital era are affecting the information users in several dimensions. There is pedagogical gap between the rapidly developing technologies and information available to the user to use these resources. In this context the lack of computer literacy is one of the handicaps observed in the context of developing nations. It is assumed that few people intend to develop, expand and refine their information skills and competencies on their own, but a vast majority of the users of information has no skills to using information. Hence educating users to use information technologies and to take advantage of the wealth of resources currently available is becoming an important educational objective for learners of all ages. The main avenue for access to information are the Libraries, and they serve as significant public access centres or nodes to information, play a key role in preparing students and academicians to meet their expectations in the today's information society. In such situation the instruction on Information Literacy is recognized as a major service of the libraries along with development of digital materials and access facilities in order to acquire compatible skills with changing times- from handling printed media to electronic sources of information.

Apart from the traditional printed sources, photos, images audio and video are all valid resources of information. The use of multimedia is gaining popularity as a legitimate means of imparting information and constructing knowledge Technology has made it convenient to access the full text databases to get enormous amount of required information at the same time there are problems of copyright and IPR issues. Students normally are unaware of proper citation and the effects of

plagiarism. In order to withstand the daunting challenge of electronic and digital information environment the need to educate and make the students information literate, is more critical than ever.

Information and computer literacy in the conventional sense, are functionally valuable technical skills. But IL impact be conceived more broadly as a new liberal art that extends from knowing how to use computers and access the information to critical reflection on the nature of information itself, its technical infrastructure and its social cultural and even philosophical context and impact- as essential to the mental framework of the educated information age citizen as the trivium of basic liberal arts (grammar, logic and rhetoric) was to the educated person in medieval society. The sweeping glance at the literature shows that the Information Literacy is becoming a global priority in a fast moving society overtaken by the digital environment. In the developing countries especially in India where illiteracy and poverty is still largely prevailing there is an immediate need for reorienting programmes and policies towards intensive information literacy propagation activities. More particularly the partnership of library and information professionals, teachers, communication media experts and policy makers are forced work together in the educational environment to train the students who are the future hopes to become the information empowered citizens.

Organizational Structure for Information Literacy

The libraries all over the world are also changing veritably in this context and have been making efforts to educate its users to adapt to changing scenario of information world. With the advent of the virtual age, library without walls is coming true which enabled the library services and other information providers to use the networks to supply the information. As a result of this the users are facilitated with accessing the information at their workstation/location. Decreasing teachers' strength and increasing students number in the universities compel the library's role as user educator to make independent user of information. At universities the use of electronic information via the internet is increasing at the faster speed. There is a considerable variety of users in the academic community who are not that much familiar with the use of digital and network information. Of course there is a steady growth of technology literacy among the younger generation. Even then the library's user education and internet training should be directed towards information content rather than technology. This implies that the responsibility lies for teaching how to read electronic information content rather than expertise in the technology. Here the responsibility is for teaching how to develop interfaces to use electronic information how to move purposefully in the networks and how to sort out the useful information in practically left to the domain of library and information professionals. This task has tied up the routine traditional tasks such as bibliographic

instructions, initiation to fresh users, library orientation and user education, the tasks the libraries have been doing for decades. Hence the emergence of all in one concept information literacy which easily enhances the information searching access skills of the users needs an organizational structure that essentially is the library.

Ross Todd (Todd, 2001) notes that for librarians to be effective facilitators in the instructional process, they must understand new technologies and employ them as they work in a learner centred environment that develop users knowledge and skills to manage, process, and use enormous variety, quantity and quality of information. Further, he says the convergence of an intense information society, rapid changes in information technology and the embedding of such approaches as independent life long learning,. creating rich learning environment for students as well as unparalleled opportunities for educators.

Library and information professionals have always been involved in both providing information and facilitating access to information to the end users, but the style of mediation is changing contemporarily. For example, they began with training the user on Library use, then to bibliographic instruction, tutorials on the use of computerized information services and so on. Hence the Library and information field has been engaged in the task of educating the user to the changing information environment. In fact helping users to appraise and use information has been the sole aim of the professionals. The changing global environment forced professionals to take renewed role of providing information literacy programmes to the user and of assisting the community to develop information acquisition capability. Thus they have stemmed out of the traditional brand of gatekeepers of information to the gateways of information.

Librarians as Information Skill Developers

Widespread universal availability of information in all forms and formats has forced the information professionals to rethink seriously about the role as **information providers to information skill developers**. This is the underlying philosophy of the information literacy which can be planned to counter the following issues to empower the information mediators and then the users (Parkinson, 2004).

- To enlighten about the growth of digital media to bridge the gap of digital divide
- To encounter the complexities due to the proliferation of information
- To enable people as informed citizens through ability to access and use credible information

- To encourage independent learning by new and vast information resource in many forms and formats.
- To create an awareness about life-long learning in this fast changing society and competitive world economy
- To enhance employability of workforce that is increasingly information dependent.
- To manage ably the knowledge capital

International and Indian Scenario

In the US and Australia, government recognition of information competencies has been informed by high-profile information literacy led by the profession. Examples include the ALA presidential committee on Information Literacy (1987), US forum on Information Literacy (1989), Association of college and research libraries Institute for Information Literacy (1997) and Information Literacy Competency standards, Australian Library and Information Association Information Literacy Task force (1997) Australia and New Zealand Inst. For information Literacy and Australian Universities Librarians Information Literacy standards (2000). There is also a Nordic Information Literacy Institute and IFLA Sectional committee on Information Literacy is being established (IFLA, 2006).

In India UGC has taken bold step to facilitate electronic/digital information services in the universities. Enough funds have been provided under INFLIBNET - INFONET programmes not only to provide access but also to promote ICT skills among the university community. However it is observed that hardly few universities have programme at different levels of learning and research.

Blending Information Literacy with Curriculum

In the digital information environment learning objectives need to be recalibrated and it emphasizes the librarians to take note of their instructional goals in the context of wide variety of student exposure to computers. In fact the digital and electronic environment should be considered as the compliment to traditional information formats. One cannot replace the other as is seen in the case of printing culture which co-exists with the new electronic text. Librarians are now forced to weave the fabric of information literacy in to souls of the students. Nobel Prize winner Harbert Scaman once said that, 'in the past, *to know* is meant to have in once own memory. The phenomenon of information explosion has given the new meaning *to know* as to have access to multidimensional information process.

This notion enhances the responsibility of librarians as facilitators to students learning. They need to teach students information literacy skills which involve curriculum and information strategies that help them to formulate the write question. They also need to create awareness in students how to use information sources to get their required information and help them to understand how to manipulate and mould information in to knowledge. Incorporating information literacy across the curricula, in all course programme of the university required the collaborative efforts of faculty, librarians and other technical/media experts. Each one of them in their collective effort contributes in their own way. Faculty inspire the students to explore the unknown and establish the context for learning through the lectures/guidance. Librarians are co-ordinate the evaluation and selection of intellectual resources by providing access. Also offer instructions to students and faculty who seek information. Media experts help to integrate the thoughts for better and attractive presentation which in turn enables the students for self directed learning and getting engaged in wide variety of information sources.

Information literacy as a component in course programme is not introduced in any level of education in India. However, the LIS Curriculum is having this component under the varied names such as bibliographic instruction, library instructions, orientation to freshmen and user education. There is a need for short technical sessions or crash programmes like (Bundy, 2004);

1. Getting acquainted with web
2. Know your electronic information resources
3. Come closer to information networks
4. Know thy Knowledge databases
5. Surfing the Internet
6. Getting started with Internet Information services
7. Your National Information Networks.
8. Easy access to e-journals

These programmes can be conducted as per the requirement and students educational level. UGC may take the proper steps to induct the component of information literacy in the Higher Education so also the related bodies in engineering and other professional courses. In addition the societies, academies and associations like SIS, IASLIC, ILA and IATLIS can make efforts to bring together the professional expertise along with academic and media experts to design and develop the curriculum for various levels of education.

Hennrole Rader while enumerating the global perspective of the information literacy initiatives states that, "to prepare both librarians and teachers for educating students in the information age the following factors should be considered (IFLA, 2004):

- Information changes continuously
- Learning and Teaching must be interactive and recognize diversity in learning styles
- Teaching and training must be process of facilitating and sharing rather than dispensing
- Information work is becoming more and more competitive
- Librarians and teachers must market themselves aggressively as information experts.
- Information is a commodity and must be handled like a valuable product
- Teacher and trainer must be continuous learners
- Effective teaching utilizes learning outcomes and behavioural goals
- Good teaching is based on student need
- Information skills must be integrated into the curriculum and taught incrementally
- Teachers and librarians must work in accrediting and education agencies and curriculum planners to ensure that information skills become a required component of the curriculum.
- The Famous Prague Declaration "Towards a information Literate Society" highlights the immediate actions to be taken for the promotion of information literacy by all the countries in the world (US, 2003) .
- The creation of Information Science is key to social, cultural and economic development of nations and communities, institutions and individuals in the 21st century and beyond.
- Information Literacy encompasses knowledge of one's information concerns and needs, and ability to identify locate, evaluate, organize and effectively create, use and communicate information to address issues or problems at hand; it is a prerequisite for participating effectively in the information society, and is part of the basic human right of life long learning.
- Information Literacy, in conjunction with access to essential information and effective use of information and communicating technologies use of information and communicating technologies, plays a leading role in reducing the inequalities within and among countries and peoples and in promoting tolerance and natural understanding through information use in multicultural and multilingual contexts.
- Government should develop strong inter disciplinary programme to promote Information Literacy nationwide as a necessary step in closing the digital divide through creation of an information literate citizenry an effective civil society and a competitive workforce.

- Information Literacy is a concern to all sectors and should be tailored by each to its specific needs and context.
- Information Literacy should be an integral part of education for all, which can contribute critically to the achievement of the United Nations Millennium Development Goals, and respect for the Universal Declaration of Human Rights.

Strategies for promoting Information Literacy programs

The following are the few strategies which can be considered for induction of Information literacy programmes at various levels (Bundy, 2004);

1. The government should come out with the National Information Literacy Policy Statement and establish the National Task Force to monitor the information literacy programmes.

2. Higher educational institutions are initiated by the concerned controlling and funding bodies to design and develop the Information Literacy Curriculum at different levels of education.

3. As there are National Missions in different aspects, it is essential on the part of the government to launch the National Information Literacy Mission to campaign for the promotion of Information Literacy.

4. National and Regional level Seminar, Workshops, Conferences and Colloquia of experts be organized to redefine and restating the role of information literacy in the growing digital environment.

5. Periodical National reports highlighting what, why and how of information literacy including Guidelines and standards be published.

6. Launching of National Information Literacy website to facilitate the sharing of resources and also to know the state of the art in the country by one and all

7. All National, regional and local library associations, academies and societies should formulate a joint committee to evaluate the information literacy movement in the country.

The following are the few strategies which can be considered for induction of Information literacy programmes at various levels:

- Inducting a course on Information Literacy in formal education programmes
- Organizing group initiation and training courses
- Organizing Information Literacy sessions through face-to-face interaction
- Offering resource based learning to Internet Literacy through computer literacy
- Conducting need based, need specific information and computer literacy programmes.

The process of Information Literacy

The process of information literacy requires not only learning of skills, but also a new way of thinking, in order to derive meaning from learning. Technological storage and sharing of information has increased the availability of data tremendously. Much of this information is available only through telecommunications. Information Literacy in telecommunication is achieved when learners know when to use online resources, how to access information completely, how to evaluate as for the accuracy and pertinence for each need and use information to communicate effectively. If learners learn these Information Literacy skills then they have the lifelong learning skills.

Information literate citizens know, how to use information for their best advantage both at work and in everyday life. They identify the most useful information when making decisions, when voting or to participate in community life. They are able to evaluate newscasts, advertisements and political campaign speeches.

Increasing attention to information literacy in recent years is partly the result of information overload, especially related to the growth of digital information, which have caused a new ailment called " Information fatigue syndrome," (IFS), and partly because of new focus on student learning in a lifelong learning context. Although there has always been a need to find, evaluate and effectively use information, the abilities needed to do so have just grown larger, more complex and more important in the Information Communication Technology (ICT) environment.

Information Literacy: a critical Skill

Information Literacy is a critical life skill in today's information maze. Information is considered as power. Real information power lies in having the right information at the right time for the right work. Teaching others how to be wise information consumers is a unique skill that librarians bring to a society suffering with information overload. In a world that is information rich, Librarians are information leaders. They are the ultimate search engines. They know how to find the best information whether it is in a book, video a pamphlet or on a website. The Internet is a wonderful resource, but it is far from perfect According to a study, 70% of health and medical information on the web is wrong or misleading.

The great Management Guru Peter Drucker has foreseen the importance of Information Literacy long back. He stated that "In today's organisation you have to take responsibility for information because it is your main tool. But you must know how to use it. Few are information literate." Modern technology used in every field of activity is the result of cautious application of knowledge and information to produce the products and services required for the good of the human beings. Really speaking the ill conceived technology proves to be highly dangerous to the growth of mankind. This notion hints at the need for information literacy, which empowers the creative mind to make optimum use of the information for productivity and growth. This way the concept 'knowledge is wealth' indicates the capability of the Knowledge Society than a pride possession. Well conceived knowledge is the human ability to resolve the complexity of growth and give the mankind a mastery over time and enable to network with one another.

Information Literacy and Lifelong learning

In order to succeed in the new frontier, it is vital for people to develop the ability to locate effectively, evaluate critically and incorporate into their knowledge framework and these set of abilities are obviously designated as information literacy skills. Infact Information literacy is not a destination, it is an ongoing journey and it is the key to lifelong learning. Looking in a broader perspective lifelong learning is a comprehensive concept, which includes formal, non-formal and informal learning extended throughout the lifespan of an individual to attain the fullest possible development to personal, social and professional life. It seeks to view education in its totality and includes learning that occurs in the home, school, community and workplace and through mass media and enhancing enlightenment. In order to survive in the world and in the workplace, it is recommended that individuals gain a range of information literacy, critical thinking and lifelong learning skills. In a world dictated by information and communication technologies, information literacy is "a prerequisite for participative citizenship, social inclusion, creation of new knowledge, personal empowerment and learning for life". Therefore, every democratic country strives to prepare the informed citizens for its longer survival. Information literacy is the meta competency of the knowledge society. The information literate worker is a critical thinker and a problem solver. In the knowledge society, the prime objective of the educational setup in India, right from kindergarten to higher level of learning should be to produce informed citizenry.

In the contemporary electronic age, learning to learn, learning to transform information into new knowledge, and learning to translate new knowledge into applications become more imminent rather than memorizing specific information, crystallize issues, formulate testable hypotheses, marshal and evaluate evidence, and solve problems at hand. The new competencies that employers

value in the Knowledge Society have to do with oral and written communication, teamwork, peer teaching, creativity, envisioning skills, resourcefulness and the ability to adjust to change.

The value of the concept of lifelong learning is that it carries within it the message of what we each need to learn in all our lives and how we will go about it. Information Literacy forms the basis for lifelong learning. It enables the learners to master the contents and extend the investigations to become more self-directed and assume greater control over their own learning.

The societies with rich information content need confident, independent, self-regulated learner and that proposes the need for lifelong learning. Hence human resources for today's societies can be regarded as effective consumers of information, who has the ability to search, discover, evaluate, use, produce and share information and can also be able to make use of the technology in all these activities. The rapid socio-economic, educational, scientific and technological changes that are taking place demand for continuous updating of skills through self-regulated learning for the self and the organisation they serve.

Conclusion

Today all the professionals have come under a very strong influence of Information Technology and it has thrown number of challenges to the information seekers. CD-ROM databases replaced online information systems then the emergences of e-journals have made the faster access to information. However, these electronic resources acquired by the library or information centre can be best utilised only when one has the skills to use the information technology. Therefore, there is a need to make use of information to be aware of the flood of information being generated in different digital forms and formats. Teachers and students are to be taught in using these electronic gadgets by conducting information searching skills and accessing programmes at different educational levels.

Information Literacy has become a global issue calling for greater attention. As a result several countries have taken initiation in starting the national as well as international programmes. These programmes are addressing many issues relating to technology and information skills. In the 21st Century knowledge society, information literate citizens will be the building stone for a society that is equitable and possesses economic growth potential.

To conclude, in the past, the span of important change was considerably longer than that of a single human life. Today this time span is considerably shorter than that of human life. It is believed that a person's success in achieving self fulfilment and esteem, employability and active citizenship is based on a set of common essential capabilities. The ability to learn and to help others to learn, critical and reflective thinking, logical analysis and sound judgement, communication and other

interpersonal skills, risk management, time and change management are the building blocks for success of human beings in all walks of life. As individuals gain the ability to participate in society in an informed and reflective manner, society itself will improve. The ultimate goal of enhancing the knowledge of all citizens is to create more healthy information literate society. Information literacy is common for all disciplines to all learning environments and to all levels of education. It enables learners to master content and to be self directed learners, and assume greater control over their own learning.

References and Notes

Karvalics, László Z. (2007). Information Society – what is it exactly?
(The meaning, history and conceptual framework of an expression) NETiS, Network for Teaching Information Society, Budapest. Quotes: Johoka Shakai: Hado No Shakai Kara Sofuto no -Shakai e, The Information Society: From Hard to Soft Society) or the introductory and popularising books by Yoneji Masuda and Konichi Kohyma published in 1968 (Joho Shakai Nyumon - Introduction to an Information Society).

Masuda, Yoneji (1980). The Information Society as Post-Industrial Society. The World Future Society, Tokyo, IIS, Washington D. C.

Masuda, Yoneji (1968). Quoted in Shakai e, The *Information Society*: From Hard to Soft Society) or the introductory and popularising books by. Yoneji Masuda and Konichi *Kohyma.* www.pdfio.com/k 77958.html

Bell, Daniel (1976). The coming of Post-industrial society: A venture in social forecasting. Ed2. New York, Basic Books.

Shenk, David (1997). Data Smog-Surviving information glut. New York, Harper and Collins. www.davidshenk.com/books_data.html. [Accessed on June 30, 2011].

Foskett, A.C. (1982). *The subject approach to information*, Linnet Books, The Shoe String Press, Inc., Hamden, Connecticut, p. 1. Quoted in: Knowledge Dissemination: Determining Impact A Paper Presented at IFLA Durban 2007 Knowledge Management (KM) .CSIR, Impact Assessment Manager.

Machlup, F. (1980,1984). Knowledge: Its creation, distribution and economic significance. V1. Princeton, New Jersey, Princeton University Press, V1. V3.

The Hindu (1993). Role of Information Technology vital. The Hindu, Madras, 0th June 1993. In The Hindu Speaks on Information Technology.

Chakravarty Rupak,Information Literacy in the Knowledge Society: Empowering Learners for a Better Tomorrow. http://eprints.rclis.org/handle/10760/11393

Zurkowski, Paul G. (1974). The Information Service Environment Relationships and Priorities (Washington D.C.: National Commission on Libraries and Information Science, 1974) 6. ERIC ED 100 391.

American Library Association (1989). Presidential Committee on Information Literacy. Final Report. Chicago: American Library Association. http://www.ala.org/ala /acrl/acrlpubs/ whitepapers/presidential.htm

Todd, R. (2001). Transitions for preferred futures of school libraries: Knowledge space, not information place, Connections, not collections, Actions, not positions Evidence, not advocacy. Paper presented at the 30th Annual conference of the International Association of School Librarianship, Auckland, New Zealand. http://www.iasl-slo.org/virtualpaper2001.html

Parkinson, Ronald (2004). Planning Ahead For Knowledge Societies .. . . . *"a perfect storm" for global higher education.* Presentation at – Education India Conference, April 2003.Learning Outcomes and Information Literacy SCONUL

IFLA. (2006). Guidelines on Information Literacy for Lifelong Learning

Bundy, A. (2004). "One essential direction: information literacy, information technology fluency", Journal of eLiteracy, Vol. 1 No. 1, available at: www.jelit.org/archive/00000006/

IFLA (2004). 70th IFLA General Conference and Council.22-27, August 2004 .Buenos Aires, Argentina. and In World Summit on the Information Society. Plan of Action" (2004), IFLA Journal, 30, 1, p 80-81. http:// www.ifla.org/IV/ifla70/prog04.htm
(http://www.state.gov/documents/organization/27778.doc)

US National Commission on Library and Information Science and National Forum on Information Literacy with the support of UNESCO at Prague, Czech Republic, 20-23 September 2003

Information Literacy: Librarians' perspective

Kaushik, Mamta[1] and Khan, M.K.[2]

Information literacy is key characteristic of life long learning and an essential element of higher education. Promoting information literacy skills at all levels of education is the collective responsibility of teachers, librarians and administrators. This paper aims to argue for a conception of information literacy (IL) that goes beyond the abilities of finding information as it includes communication skills. An important issue in this is that abstractors exercise IL on a professional level. There is a heightened awareness in contemporary Higher Education of the crucial role of information literacy in teaching and learning. Three areas of development are identified: the systematic development of information literacy in teaching and learning; improvements in the electronic databases modelled on web systems familiar to students; and the increased. This article makes reference, from a librarians' perspective, to some of the key findings of the UBiRD study as they relate to information literacy and the use of electronic resources. It is an essential and integral competency for both the knowledge worker and effective knowledge management. Librarians need to realign their roles from providers and organizers of information, to facilitators and educators of clients' information access and process.

What is Information Literacy?

"Information literacy forms the basis for lifelong learning. It is common to all disciplines, to all learning environments, and to all levels of education. It enables learners to master content and extend their investigations, become more self-directed, and assume greater control over their own learning". (http://skil.stanford.edu/intro/research.html#1#1)

The Presidential Committee on Information Literacy defined information literacy as a set of skills, which requires an individual to: "recognize when information is needed and have the ability to locate, evaluate, and use effectively the needed information". (http://skil.stanford.edu/intro/research.html#2#2)

[1] Kaushik, Mamta, Assitant Librarian, Manav Rachna InternationalUniversity, India.
mamta_kaushik.citm@yahoo.co.in

[2] Khan, M.K., Librarian, Manav Rachna InternationalUniversity, India.

In January of 2000, the Information Literacy Competency Standards for Higher Education were approved and in February of 2004, the American Association for Higher Education and the Council of Independent Colleges endorsed them.(http://skil.stanford.edu/intro/research.html#3#3)

The Standards dictate that an information literate person:

- Determines the nature and extent of information needed
- Accesses the needed information effectively and efficiently
- Evaluates information and its sources critically and incorporates selected information into his or her knowledge base and value system
- Uses information effectively to accomplish a specific purpose
- Understands many of the economic, legal, and social issues surrounding the use of information, and accesses and uses information ethically and legally

Information literacy can no longer be defined without considering technology literacy in order for individuals to function in an information-rich, technology-infused world. (http://skil.stanford.edu/intro/research.html#4#4)

You will neither become information literate nor communication technology literate overnight. Just as with speaking skills and writing skills, your abilities will improve over time as you gain expertise in the topics you choose to investigate. The term information literacy, sometimes referred to as information competency, is generally defined as the ability to access, evaluate, organize, and use information from a variety of sources. Being information literate requires knowing how to clearly define a subject or area of investigation; select the appropriate terminology that expresses the concept or subject under investigation; formulate a search strategy that takes into consideration different sources of information and the variable ways that information is organized; analyze the data collected for value, relevancy, quality, and suitability; and subsequently turn information into knowledge (ALA 1989).

Information literacy is not the same as computer literacy (which requires a technological know-how to manipulate computer hardware and software) or library literacy (which requires the ability to use a library's collection and its services), although there is a strong relationship among all these concepts. Each of these literacy requires some level of critical thinking. But compared with computer literacy, information literacy goes beyond merely having access to and knowledge of how to use the technology--because technology alone does not guarantee quality learning experiences. And compared with library literacy, information literacy is more than searching through an online

catalogue or other reference materials because information literacy is not a technique, but a goal for learners (Gilton 1994).

Access to Information

There are two types of access to information—physical access and intellectual access. In today's technology-rich environment, physical access to information has never been easier. Intellectual access however, can be denied to the student who does not possess the cognitive strategies for selecting, retrieving, analyzing, evaluating, synthesizing, creating, and communicating. Web browsers and search engines yield thousands of hits on a variety of subjects. CD-ROM databases hold vast amounts of information. Everything from scholarly works to personal interest web pages are available on the Internet.

The internet library is one without order, and one without the benefit of review, selection, or the attention of a librarian. An editor has not scrutinized the works contained in this library before they are published. Work posted on the Web has not been judged to be accurate, current, appropriate or meaningful before it's available to anyone with Internet access. Information retrieval is easy, but the proof of the pudding is in the learner's ability to evaluate, organize, analyze, and apply information so that it becomes knowledge.

The Evolution of Information Literacy

Literacy is referred to in different terms: math literacy, reading literacy, media literacy, print literacy, visual literacy, cultural literacy, computer literacy. Each piece of literacy prescribes a particular process by which that content area can be more easily negotiated. But there is one -- Information Literacy -- under which all the other illiteracies reside because it is a tool of empowerment. Students who possess information literacy have a heightened capacity for doing meaningful, relevant work. "Regardless of where information literacy skills are employed, they are applicable in any school, play, or work situation."

Why Should We Be Concerned About Information Literacy?

The need to evaluate the credibility of information is nothing new, but until recently most learners could expect to deal with some carefully selected collections of reference materials in academic and public libraries, as well as a fairly limited range of widely accepted authoritative texts in the classroom or in the home library.

Not only must we be discerning learners but, in addition, we must be constantly learning. As the pace of global change has increased, so has our need for learning. Consider the tremendous changes

in both the amount and variety of information resources, as well as great changes in technology that affects our lives in everything from banking to medical care. Change requires us to know more and learn more about the world around us. Yet several scholars such as Breivik and Jones (1993) have found that the traditional illiteracies of reading, writing, and mathematical reasoning are insufficient for lifelong learning. The increasing quantity of information from all sources and the pressure to remain in a constant state of conscious learning means that we must be dexterous in the use of information, too. The need to handle and use information is present in all stages of life and the acquisition of the competencies of information literacy must be intertwined with the acquisition of the other illiteracies.

Implications for Teaching

Because becoming information literate is an active process, requiring the seeking out of knowledge from multiple sources rather than passively receiving and repeating back facts, the teacher's role must evolve from the giver of knowledge into being more of a coach or guide (Wisconsin Educational Media Association 1993). Teachers, professors, teaching assistants, librarians, administrators, and the community must collaborate to develop ways to involve the students not only in using classroom materials but also in using resources from the broader community and the mass media.

The goal is to prepare students early on to "learn how to learn" and carry these skills into other areas of their lives so that they can be independent seekers and consumers of information throughout their lives. This means shifting some of the responsibility of gaining knowledge from the teacher to the student and allowing students to develop questions, strategies to search for answers, and formulate conclusions. It also means having fewer lectures and replacing them with applied strategies for information literacy (Commission on Higher Education 1995).

Concurrently, educators and researchers must grapple with defining the standards and competencies associated with information literacy; develop effective new ways to engage learners and measure the outcome and impact of such learning.

Implications for Learning

Some of our learning occurs in formal settings where what we learn is packaged and prepared for us. But much learning also occurs in non-formal settings, and, informally as well. Information literacy is crucial in all three types of learning situations.

Becoming information literate will involve a drastic change from the way many students are accustomed to learning. First of all, it requires students to be more self-directed in their learning.

This kind of independent, active learning prepares students for real-life problem solving (Breivik and Gee 1989).

One successful method for developing information literacy skills is through resource-based learning which involves having students assume more responsibility for locating the very materials from which to learn. This approach develops lifelong learning skills because students are learning from the same sources which they will come to use in their daily lives such as books, newspapers, televisions, databases, government documents, subject matter experts, and others (ALA 1989). Moreover, resource-based learning provides an added advantage (i.e., it allows students to choose materials that match their academic levels and preferred learning styles thus individualizing the learning process for the individual student).

Implications for Librarians and Libraries

Librarians led the way in the early 1970s in conceptualizing the idea of information literacy and its relationship to lifelong learning. Early development of the concept of information literacy frequently focused on the future role of libraries and librarians in helping with the use and application of information (Beherens 1994).

The impact of moving from text-based learning to resource-based learning will involve heavier use of library materials and a demand for more and varied media resources, including print and non-print. Consequently, school administrators will need to re-evaluate how funds are distributed between the textbook budget and the budget for their library media resources. Public libraries will have to coordinate more closely with schools and other learning sites to ensure sufficient access to information resources and technology for all ages and abilities and to remain a strong community resource for lifelong learning.

These are important considerations for all types of libraries given the range of patrons who use these libraries and given that the linking of library holdings and the stepped up demand for resource sharing among libraries escalates the importance (and costs) of interlibrary loans.

Implications for the Workplace

Many changes are occurring in the workplace today. Employees are expected to keep up with rapid technological advances, to streamline operations and to possess the ability to be proactive problem solvers. Information literacy skills, which carry over from educational to occupational settings, are the keys to helping employees keep up with change in their jobs and careers, and in self-improvement and upgrading of skills.

Awareness of market trends, the business climate, and policies affecting business involves the active pursuit of information upon which decisions will be made. Such information has to be considered for its regency, bias, source, and accuracy. Failure to understand this on the part of schools and business will result in students who are unprepared for the real world of work; and, given the current economic problems of our country and concerns about America's international competitiveness, the costliness of information illiteracy is ill-afforded nationally and individually (Breivik 1992).

Implications for Society and Culture

"How our country deals with the realities of the Information Age will have enormous impact on our democratic way of life and on our nation's ability to compete internationally" (ALA 1989). As a society, we are confronted with a huge number of decisions to make daily among candidates, issues, products, and other choices.

Indeed, information technology appears to be broadening the gap between the haves and the have not. For example, minority and at-risk students, illiterate adults, people with English as a second language, and the economically disadvantaged are least likely to be able to access the kind of information that might lead to improvements in their lives.

Endnotes

The challenges of the next century will be met by obtaining economic value from knowledge and by ensuring that our now and future workforce can contribute and perform. The most important thing, in other words, is not specific skills, but a universal skill--that of using knowledge and its systematic acquisition as the foundation for performance, skill, and achievement".

The recent passage of the Telecommunications Act of 1996 heralded a new age of educational opportunity for our nation's school children, college students, and library users. The Act promotes universal service, particularly telecommunications services to underserved rural and urban areas. It opens up new avenues of information and makes information more accessible, perhaps thereby helping to increase and improve information literacy. The information superhighway has increased public interest in ways to empower people to access electronic networks and use information available through them. A lot of promises are being made about the boon to education offered by new information technology--but providing the complementary skills needed to convert opportunity to success must be the province of all educators.

Advantages and Disadvantages of information illiteracy Methods

Printed material has the advantage that it is one of the cheapest and the most effective method for searching. And it is available for use as and when required by the users. Students can work at their own and repetition is possible but the disadvantage is that it does not give the user the opportunity to experience interactive searching. Lecture method is one of the traditional methods to educate large number of users. But it has the disadvantage that without proper equipment for display, the interactive element of online searching cannot be presented moreover the speed of delivery can not be controlled by the receiver and repetition is not possible unless print handouts are available. Seminars and demonstrations are given to small number of users. The advantage is that the atmosphere is formal and there is interaction between students and library staff. The students can be motivated. But the problem is that in the absence of source materials students are not able to learn the use of specific tools for information retrieval. Audiovisual materials are used effectively for demonstrating the online searching. They are able to show moving images generated in computer search so creating a feeling of reality. Material prepared carefully can be used many times. These methods can be used even when the host computer/node/telecommunication lines are down. But the disadvantage is that they do not allow the students personally to experience the interactive capacity of computer based information retrieval system. The online training enables the students to carry out information searches on line. They are able to understand the concept of information retrieval better, but it involves high cost. No single method of promoting information illiteracy is effective. Choice of training method depends not only on the learning effects but also on resources , equipment, cost of use, etc. so the method should be chosen after assessing the resources a of the organization and evaluation of the methods in the scenario.

References

American Association of School Librarians and the Association for Educational Communications and Technology. (1996). Information Standards for Student Learning. Washington, DC.

American Library Association Presidential Committee on Information Literacy. (1989). Final Report. Washington, DC.

Beherens, Shirley J. (1994). "A Conceptual Analysis and Historical Overview of Information Literacy". College and Research Libraries.

Bellingham Public Schools. (1996). Course Outline: Information Literacy and the Net. Washington State University Web Site, (http://www.bham.wednet.edu).

Bertot, John Carlos, McClure, Charles R., and Fletcher, Patricia D. (1997). The 1997 National Survey of U.S. Public Libraries and the Internet: Final Report. Washington, DC: American Library Association, Office for Information Technology Policy.

Bleakley, Anne and Carrigan, Jackie L. (1994). Resource-Based Learning Activities: Information Literacy For High School Students. American Library Association, Chicago, IL.

Breivik, Patricia Senn and Jones, Dan L. Winter (1993). "Information Literacy: Liberal Education for the Information Age" *Liberal Education*, 79, (1).

Breivik, Patricia Senn and Gee, E. Gordon. (1989). Information Literacy: Revolution in the Library. American Council on Education and Oryx Press, Phoenix, AZ.

Breivik, Patricia Senn. Summer (1992). "Education for the Information Age" in Information Literacy: Developing Students as Independent Learners New Directions for Higher Education (Farmer, D.W. and Mech, T.F., editors.) San Francisco, CA: Jossey-Bass Publishers, No. 78.

Brittingham, Barbara. (1994). Higher Education Processes Web Site, (http://www.rrpubs.com/heproc).

Colorado Educational Media Association. (1994). Information Literacy Guidelines Colorado State Department of Education: State Library and Adult Education Office, Denver, CO. ED 381163.

Commission on Higher Education, Middle States Association of Colleges and Schools. (1995). Information Literacy: Lifelong Learning in the Middle States Region: A Summary of Two Symposia. ED 386157.

Darch, C., Karelse, C., and Underwood, P. (1997). Alternative Routes on the Super Highway. Independent Online-Higher Education Review. Independent Educational Media.

Drucker, Peter F. (1969). The Age of Discontinuity: Guidelines to Our Changing Society. Harper and Row. New York.

Eisenberg, M. and Berkowitz, B. (1990). Information Problem-solving: The Big Six Skills Approach to Library and Information Skills Instructions. Ablex Publishing Corp., Norwood, NJ.

Gilton, Donna L. (1994). "A World of Difference: Preparing for Information Literacy Instruction for Diverse Groups". *Multicultural Review*, 3, (3).

Hancock, Vicki E. (1993). Information Literacy for Lifelong Learning". ERIC Digest EDO-IR-93-1.

Hancock, Vicki E. September 1995. "Information Literacy, Brain-based Learning, and the Technological Revolution: Implications for Education". *School Library Media Activities Monthly*, 12, (1).

Lenox, Mary F. and Walker, Michael L. (1993). "Information Literacy in the Educational Process". *The Educational Forum*, 57, Spring.

Literacy Update. (1997). Literacy Assistance Center, Inc.

National Center for Education Statistics. (1997). Digest of Education Statistics, . NCES 98-015, by Thomas D. Snyder. U.S. Department of Education. Washington, DC

Rader, Hannelore B. (1995). "Information Literacy and the Undergraduate Curriculum". *Library Trends* 44, (2).

Slaughter, B. and Knupp, B. (1994). Measuring Preservice Teachers' Information Literacy Skills: Implications. Indiana University of Pennsylvania.

Wisconsin Educational Media Association. (1993). Information Literacy: A Position Paper on Information Problem Solving. Madison, WI. ED 376817.

National Center for Education Statistics. (1995). Advanced Telecommunications in U.S. Public Schools, K-12. U.S. Department of Education. Washington, DC

School of Information Studies at Charles Sturt University, Wagga Wagga, Australia, anlloyd{at}csu.edu.au

Is the Knowledge Society Information Literate: a case from Faculty of Applied Sciences (FAS), South Eastern University of Sri Lanka (SEUSL)

Mashroofa, Mohamed Majeed[1]

Creation and deployment of knowledge is vital for the present undergraduates as they are living in an information age. Adequate knowledge about Information literacy skills and the perceptions of the undergraduates are important for developing an Information Literacy programme in order to create them as lifelong learners. The purpose of this study is to identify the level of IL competencies of the undergraduate students of FAS, assuming that they are coming from a knowledge society. Questionnaire was used as research instrument and administered to 44 students of FAS and 41 returned the filled questionnaires at a response rate of 93%. The finding of this study indicates that though they are coming from knowledge society they are lack of Information Literacy Competency skills. On the other hand students perceived themselves as good in Library skills and research skills. This study recommends that it is important to teach information Literacy as credit bearing course unit to FAS students and the course should be designed according to the level of the students.

Key Words: *Knowledge Society, Literacy, Information Literacy, Information Literacy Assessment*

Introduction

Information and knowledge are most integrated terminologies applicable to knowledge society. These two play crucial role in learning. Lifelong learning is facilitated through Information Literacy skills. ALA (1989) defined that information literate person is someone who is able to recognize when information is needed, knows what information is needed to address a given problem or issue. And beyond that he has the ability to locate, evaluate and use effectively the needed information (ACRL, 2000). Though there are debates and arguments on the definition of the term Information Literacy (IL) the ultimate outcome of all those definition falls on creating lifelong learners and critical thinkers.

[1] Mashroofa, Mohamed, Majeed. Senior Assistant Librarian, South Eastern University, Sri Lanka
mashroof@scu.ac.lk

Knowledge society is a new strategic position of our society where the social and economic perspective is concentrated on the exploitation of emerging technologies, and well –defined knowledge and learning infra structures are the main vehicles for the implementation of knowledge and learning strategies. The final milestone is a society with access to knowledge and learning for everyone. Lytras, D.M. (2005) Considering this final milestone of a knowledge society (access to knowledge and learning) it cannot be achieved without the application of information literacy skills. The so called knowledge society who makes our undergraduate population today should posses the competencies to access, use, create and communicate information properly as a component of the knowledge society whose ultimate target is knowledge creation and deployment.

SEUSL and information literacy

Faculty of Applied Science is located at a separate campus from the main campus of South Eastern University of Sri Lanka (SEUSL). Though a series of workshops have been carried out to SEUSL undergraduates on IL the FAS students are not taught any systematic programme or any credit bearing course on IL. The freshmen of 2010/2011 were taught a 12 hours programme on IL throughout their intensive course. However, the author of this paper is in-charge for the FAS library has an intension to introduce IL as credit bearing course unit to the FAS students. In order to evaluate the IL skills of FAS students a preliminary test was carried out to the selected sample of students in all three academic years. The test included 2-4 questions on basic ideas about information sources, library website and OPAC. Search strategies, citing information, plagiarism and evaluation of information.

Significance of the study

Libraries and digital information resources can play a critical role in the education of today's students. Though the present day students have technology, it is questionable that to which extent they are aware that how to use technology and digital information in ways appropriate to the academic works. It should be explored by librarians and they should teach information literacy, especially how to access digital information, important policy issues, and intellectual property rights. Oblinger and Oblinger (2005) say that Net Genres typically lack information literacy skills and their critical thinking skills are often weak. So, it is important to consider how to improve their Information literacy and critical thinking skills.

The universal mission of any university is to turn the society for new knowledge and for the dissemination and preservation of knowledge. Information literacy is considered as not just a necessity, but basic human rights that promote social inclusion in all nations. Report of Alexandria Meeting in Oblinger et.al (2006). They urged governments and intergovernmental organizations to

pursue policies and programs to promote information literacy and lifelong learning, as they are essential for the development of the information society. The extent of the basic knowledge and skills of the students should be explored to design a course on information Literacy. Contents of the IL course will be based not only on the knowledge and expertise of the professionals but also the extent of the skills and knowledge of the learners.

Statement of the problem

Research problem of this study is focused on how students coming from knowledge society acquire and use information to accomplish their learning and research activities. It is important to identify their perceptions and self confidence toward their research skills. This preliminary evaluation will assist library professionals to design a valuable IL programme and assessment tool. The following research questions were investigated through this study.

1. How well do the undergraduates understand and use different information sources?
2. To what extent the students use the library web page and OPAC.
3. How proficient are the undergraduates at searching and evaluating information
4. To what extent the students are able to identify the basic elements of bibliographic citation.
5. What is the level of self confidence of the students towards their research skills and library skills?

Objectives

The aim of this study is to explore the information literacy competency level of undergraduate students, of FAS, SEUSL who are known as knowledge society. Specifically, to identify the skills and knowledge of the students on information sources, citations, plagiarism, searching information through library web page, OPAC, and other search engines. In addition this study identifies the perception of the students towards their ability.

Literature review

Knowledge Society

Twenty first century is characterized by rapid social, economical and technical change. According to Drucker (2001)." the next society will be knowledge society where knowledge will be its key resources and knowledge workers will be the dominant group in its workforce". Kalam, A.P.J. (2002) noted that in the twenty first century, a new society is emerging where knowledge is the primary production resource intend of capital and labour. According to him 'the ability to create and maintain the knowledge is the key factor in the prosperity of this society'. He further explains that how a nation qualifies as a knowledge society effectively is judged through its knowledge creation and deployment.

Knowledge society is defined as ".. a society which is well informed and knows how to use information for the betterment of that society. Todd 2001 in Seneviratne, W. (2004)

Knowledge society is characterized by communities of informed, active, healthy people with low levels of unemployment and crime and high levels of achievements and life satisfaction. In addition the following characteristics are identified by Chintakindi, S. (2003).

Characteristics of knowledge society;

- It is based on the net work economy
- Technological convergence
- High quality of education
- Rising wages
- Highest productivity and growth increasingly attributable to IT sector.
- Everything that can be digitized.
- Knowledge is widely dispersed and needs to be accessed through social network.
- Knowledge society facilitates interpersonal discussion. Knowledge society encourages sharing ideas, experience and solution. Information society is one of the components of the knowledge society. In the information age knowledge is a basic social need.
- Knowledge is the basis for designating the modern source as a knowledge society. In brief many scholars expect that knowledge society will bring informed citizens in the future. The present society should be organized to maximize the creation and use of knowledge.
- Knowledge creation and knowledge deployment of an individual is mainly depending on his ability to create and use information. Indirectly these two activities are influenced by IL skills of persons.

The world bank report distinguishes two types of knowledge, those are knowledge attribute leading to information problems and knowledge about technology, Mohammed S.(2003). He characterized the knowledge society as mentioned below.

- Open and timely access to information and knowledge
- Capacity to absorb and interpret information
- Avenues and opportunities to use knowledge for informed decision making and for transformation to higher quality of lives.
- Knowledge based society is a society that apply knowledge. IL should be one of the key talents of the knowledge society.

Literacy vs. Information Literacy

Literacy level of the civilians was encountered as important criteria to evaluate a nation's development basis on education. According to Encyclopaedia of Americana (1996) Literacy is defined as "able to read and write". Sri Lanka is proud of the literacy level of its citizens. A person is literate when one can both read and write with understanding a short simple statement on his/her everyday life (National Literacy policies, Sri Lanka) According to this report total literacy rate is 98% in 2010. It is expected to increase by 100% in 2015. According to UNICEF-Sri Lanka report the literacy rate of Sri Lankan youth during 2004-2008; male is 97% and female is 99%.The age level of this youth group is 15-24. However how many of them are information literate?

Concept of literate practices such as reading and writing is now expanding. Literacy is defined now as "the flexible and sustainable mastery of a repertoire of practices, associated with the texts of traditional ('old') and new communication technologies ('new') via spoken, print and multimedia. Luke and Freebody, (2000, p.9 in Scharber 2009, p.177). Here 'old' is considered as the traditional text (print based) whilst 'new' is meant the electronic text, whether they are print-based, sound based, visual based or a combination. So today literacy is no longer an end point to be achieved but rather a process of continuously learning how to be literate. The individuals of the knowledge society should be literate in both 'old' and 'new' ways.

Information Literacy is the term first introduced by Paul Zurkowski, president of the information Industry Association (IIA). He described information literate individuals as people "trained in the application of information resources to their work" (Patricia, 1999). She further described that people who have learned techniques and skills for utilizing the wide range of Information tools as well as primary sources in moulding information solutions to their problems. After that many more definitions have been describing the concept of Information Literacy and information literate persons.

Information literate person is one who has learnt how to learn. Brown et al (2003) in Holliday W.(2004) suggest that students are often over confident because they equate their technology savvy with information literacy. IL is most closely associated with students' knowledge base and thinking skills. Members of the Indiana University Library Assessment Planning Committee regard information literacy as the application of critical thinking to an information problem. Universities abroad are seeking students with IL skills. The following statement clearly expresses this view.

"Universities seek to attract students by accommodating their self-perception as learners who acquire information by developing their own questions, systematically evaluating sources, and selecting evidence to support their answers". (Howard, 2006 in Bamesk et al, 2007).
But in case of Sri Lanka we do not teach IL to the secondary school level and thus we are unable to expect those skills when they enter into universities. However to prepare them as life long learners it is the foremost duty of educationists to enhance the students' skills on IL.

IL, Information Fluency, Information Competency all terms are describes similar concepts. IL includes, visual literacy and Media literacy. Information Fluency emphasizes stronger technology and critical thinking skills. Information competency means integration of library literacy, computer literacy, media literacy, technological literacy, ethics, critical thinking and communication skills. (Lorenzo and Dziban , 2006 in Feiertag J.and Berge, Z.L.,2008).

Senewiratne, W. (2007) says that modern society is said to be highly information dependent and almost all social activities nowadays are information, knowledge and learning oriented. Information society is a term used for a society in which the creation, distribution and manipulation of information has become the most significant economic and cultural activity. Her study revealed that though higher language literacy rate is observed in Sri Lanka, IL skills of the people are poor. She has recommended a community information literacy model for rural Sri Lanka.

ICT Literacy

Patricia (1999) says Information Literacy is a keystone for twenty-first century learning.
The present undergraduate society faces challenges in sorting valid and quality information from misinformation. So, this students must blend skills in finding information, using information and think critically. They have to create knowledge. Hence IL skills should be developed to enhance knowledge creation.

However IL has many debating definitions and replaced by many terminologies the newly emerged definitions have to be analyzed and adopted in order to suite the current social phenomena. IL is defined as,

"ICT proficiency is the ability to use digital technology, communication tools, and/ or networks appropriately to solve information problems in order to function in an information society. This includes the ability to use technology as a tool to research, organize, evaluate and communicate information and the possession of a fundamental understanding of the ethical /legal issues surrounding the access and use of information". (Oblinger D. ed, 2006)

Considering this definition; technology is just a tool. ICT proficiency is not just using computers and surfing the internet but rather it is the proper use of technology to solve properly an information problem considering all ethical and legal issues. Today's knowledge society challenges students with over abundant of information with quality is dubious, the solution cannot be limited to improving technology. Instead, there is an increasingly urgent need for students to have stronger IL skills and apply those skills in the context of technology.

Students came from knowledge Society are considered as fluent in IT. IT is a tool and if they use it properly it can be an asset. If it is not used properly it can become an obstacle to achieving its intended purpose, so the matter then understands of how to discern good information from bad and how it all fits in perspective.

International ICT literate panel defined that ICT literacy is more than technology literacy. ICT literacy includes IL and digital environment (Katz, I.R.2007). Rockman (2004) indicated that students do not use technology effectively when they conduct research or communicate. It is noted in many researches that students today more technology savvy but lack information savvy.

IL Assessment

Ivantskaya (2006) has attempted to assess the IL level of health information consumers by using a 56 items online assessment tool called Research Readiness Self Assessment (RRSA). He found that while the majority of the students think that their research skills are good or excellent, many of them are unable to conduct advanced information searches, judge trustworthiness of health related websites and articles and differentiate between various information sources.

Ferguson, J.E (2005). carried out an online survey organized by IL Task force of Mary Land University Baltimore Country for incoming Biology students. The survey resulted that majority of students have some understanding of IL skills, however, a significant number were not familiar with important concepts, such as search techniques, identifying print citations, how to determine bias or quality of sources and correct citation behaviour when using research or copyrighted works. Assessment based on ACRL's IL competency standard for higher education was carried out as a national effort. Questions covered on definition, access, evaluation, management, integration, create and communication. Sixty three high schools, community colleges, and four year colleges and universities participated. This study resulted poor ICT literacy performances.

Today's learners of universities or present undergraduate population are born after 1982 and characterized as Net generation or Millennial. They are called as 'the google' and ' 'Nexters'. They are technological savvy and use computers and internet effortlessly. But in many researches carried out on this generation suggest that these students have poor academic research skills and frequently don't see anything wrong and have the habits of copying other people's work. This indicates that though they are already known about digital sources of information and effective internet users they are lack of some highlighted skills and knowledge on fair use of information, copyright issues etc.

Research design

Survey method was used to obtain information from undergraduate students. Quantitative and qualitative approach to data collection and analysis was used. The research instrument is a questionnaire which includes multiple choice questions and a very few open ended question. Questionnaire covers questions on various IL skills such as access to information through web, OPAC, citation and identification of scholarly sources, Organizing materials, plagiarism and search strategies etc. All multiple choice questions include a response 'not sure' in order to avoid the students to respond by guessing. Questions were linked to ACRL's IL competency standard for Higher Education. The questionnaire was administered to the undergraduate students of FAS, SEUSL. Population of this study was consisted of 220 students of FAS, SEUSL and a random sample of 20% (n=44) were drawn. Stratified random proportionate sampling technique was used to select sample. Descriptive statistics of SPSS package was mainly used to analyze the data. 41 questionnaires were returned at a response rate of 93%.

Once the questionnaire was prepared it was tested for quality and clarity through a pilot study with the help of some faculty members of FAS, SEUSL. After refining only it was administered to student sample.

Results and discussion

Results were analyzed under six main areas of information literacy. Considering the demography of respondents 87.2% (n=34) of respondents' age group fall between 22-23 years and the rest goes under 24-25 and gender wise 59% (n=23) female students and the rest are male students. Majority respondents (38.5%) are freshmen whilst 33.3% of them are second years and 28.2% are from third years.

OPAC, Library Web and Library Usage

In a typical seven days week, time spent for library research (in person or electronically) is noted by the respondents in Table 1.

Table 1: Time spent for Library research in a week

Description	Freq.	Percent	Valid Percent	Cum. Percent
None	7	17.9	17.9	17.9
1-4	18	46.2	46.2	64.1
5-10	9	23.1	23.1	87.2
11-20	3	7.7	7.7	94.9
More	2	5.1	5.1	100.0
Total	39	100.0	100.0	

46.2% (n=18) respondents use 1-4 hours per week for library research whilst 17.9% (n=7) do not use library. It is observed that a few students (7.7%, n=3) use 11-20 hours and more (5.1%, n=2) for library research. To locate books owned by SEUSL library 33.3% (n=13) respondents only use OPAC and 38.5% has mentioned 'not sure, whilst the others have responded for Google (17.9%, n=). Very few students are known about library web page. To get a list of e-journals available at SEUSL library only 10.3% (n=4) responded have marked for the correct path to 'access online journals' whilst 71.8% (n=) of them are 'not sure' and the others have identified the wrong path. This result shows that majority of the respondents do not use library web pages.

Information Sources

Regarding information sources 4 questions were asked. 69.2% (n=29) respondents are aware that Google is a search engine and 7.7% (n=3) responded as a 'research database. At the same time 61.5% (24) responded believe that web is the most current and accurate source of information for every topic whilst 15.4% (n=6) are not sure.

43.6% (n=17) are aware about what is an abstract and 20.5% (n=80 are not sure whilst some others have marked for wrong answers. Another question was asked to get scholarly information the most appropriate source they use for. 71.8% (n=28) responded websites and only 15.4% (n=6) responded for 'journal. The others marked for magazines, newspapers and even for 'not sure'. These students mainly rely on search engines and internet rather than journals. In addition only 23.1% (n=9) have known that scholarly publications are books and journals whilst 20.5% (n=8)responded websites, magazines and not sure. This indicates that respondents have no clarity regarding different types of information sources.

Citations and Referencing Style

Two bibliographical citations were given to the students to recognize the source first and to identify the element of citation. Citation of a journal article was recognized only by 23.1% (n=9) and the same percentage of students are 'not sure', whilst 38.6% (n=15) responded as 'book'. And for the second question the volume and issue number of an article was recognized only by 17.9% (n=7) respondents whilst 43.6% (n=17) students are 'not sure' and the rest has marked for wrong information. Another question was asked what are Harvard and MLA style referring to? Only 17.9% (n=7) responded correctly that both of these are 'formats for documenting the sources used for a paper whilst 51.3 %(n=20) are not sure and the rest have given wrong responses as classification system and article indexes. It is resulted that these students are lack of understanding about citations and referencing.

Search Methods and strategies

A question on Boolean operators was asked. 33.3% (n=13) students are capable of applying Boolean operators whilst 30.8% (n=12) are not sure and the rest were unable to apply the exact operator for a particular search. The students were asked a question that 'if you find a very good article on your topic, what is the most efficient source for finding related articles. Only 28.2% (n=11) responded 'Bibliography from the article'.30.85% has mentioned that library catalogue and the rest has noted other databases. This result indicates that these students are lack of search methods and application of search strategies.

Plagiarism and Evaluation of Information

- To evaluate the knowledge of the students on plagiarism a question was asked how you call for the failure to give credit to your sources of information. 51.3% (n=20) responded (n=12) for, not sure, whilst only 10.3% (n=4) responded for 'plagiarism and 16.4% (n=6) identified it as 'copyright'. It is resulted that they are unaware of plagiarism.
- To investigate the students' ability to evaluate information the students were asked to mark the unwanted one. The result has been tabulated in table 2.

The result indicates that they are very weak in evaluating information they retrieve.

Table 2: Unwanted Criteria for evaluating information

Description	Freq.	Percent	Valid Percent	Cumulative Percent
the timeliness of the information	4	10.3	10.3	10.3
the credentials of the author	16	41.0	41.0	51.3
the length of the information source	3	7.7	7.7	59.0
the accuracy of the information	4	10.3	10.3	69.2
not sure	12	30.8	30.8	100.0
Total	39	100.0	100.0	

Library Anxiety

At last an open ended question was asked to briefly explain the experience of searching information in the university library considering their confusion, uncertainty, anxiety at the beginning of the research. Majority of the students were did not respond to this question whilst a few of them have responded. A student has written that 'I don't know about the library catalogue. I searched for a book all over the library. It was a very difficult experience. I couldn't find the book. At last I asked the receptionist at the library service counter. She simply helped me to get the book".

Another student noted that "I don't know how to find a book in the library. I asked help from one of the senior and got the book I want. Again I have the problem to locate the information that I want in the book. I hesitate to ask again and finally I asked and she guided me to get the information from the book.'

These two experiences of the students indicate that they don't know about the catalogue and even after getting the book she struggled to locate the relevant pages. The second student might not have experience in reading books during his/her advance level or she might have anxiety and that hinders her in referring the pages.

Self Perception of Respondents

Even the students were lack of IL skills on the above topic just to identify their level of self confidence three question were asked about their research skill, library use skill, their value of information, copy right and fair use. 61.5% (n=240 respondents have self confident that they can solve an information problem at their own whilst 35.9% (n=14) respondents are unable. Responses for their research skill and library use skills have been mentioned in table 3.

Table 3: The research skill and library use skill of the respondents

Description	Very good	good	Unable to decide	Poor	Very poor	Total
Library use skill	2 (5.1%)	25(64.1%)	7 (17.9%)	3 (7.7%)	2 (5.1%)	41 (100%)
Research skill	5 (12.8%)	21(53.8%)	4(10.3%)	4(10.3%)	3 (7.7%)	41 (100%)

Majority of the students are responded for very positive in the above two aspects (very good & good).They have self confident in their research skill & library use skill. In addition they are aware that all the information available from internet is not free of charge. Majority of them 51.35 (n=20) are unaware of copy right and fir use of information.

Conclusion

The evaluation of undergraduate students of FAS, SEUSL have proven that they are lack of the IL skills. They are very weak on the baseline knowledge about library web pages, OPAC and information sources, referencing and citation styles and evaluation aspects. Though they perceived themselves as good and very good skilled personal for research and library use, a very good Information literacy programme is crucial and it should be made compulsory to these students in order to create the components of knowledge society as informed citizens.

Recommendation

A properly designed information Literacy course should be designed and taught to FAS students in order to create them as lifelong learners. They have to play prominent role in the knowledge society as knowledge creators. The curricula should possess each and every aspect of Information Literacy performance indicators as these students are very poor in baseline information on the topic. This programme should not only develop the research and information skills of the students but also avoiding library anxiety.

References

Association of College and Research Libraries. (2000). Information Literacy competency standard for higher education, ACRL, accessed on November 15, 2008 [Available at http://www.ala.org/acrl/ilcomstan.html]

Danish Ralph (1999). Information Literacy and Foundation for Life Long learning: Proceeding of the 4th National information Literacy conference, Adelaide, UNISA Library.

Dorner, Daniel, G. and Gorman, G.E. Information Literacy Education in Asian Developing Countries: cultural factors affecting curriculum development and programme delivery, IFLA journal 32 (2006):281, Accessed on August 03, 2009, [Available at http://ifl.sagepub.com/]

Eisenberg, M.B. (2008). Information Literacy :essential skills for the information age, DESIDOC Journal of Library and Information Technology. 28 (2), 39-47

Encylopedia of Americana, Vol. 17 (1996). Grolier incorporated, Danbury, 559

Ferguson, J.et al. (2005). A baseline information literacy Assessment of Biology students. Reference and user services quarterly, 46(2), 61-71

Feiertag, J. and Berge, Z.L. (2008). Training generation N: how educators should approach the net generation, Education + Training, 50 (6), Accessed on 24th November, 2010 [Available at http:www.emeraldinsight.com]

Holiday W.l. (2004). Understanding the millennials: updating our knowledge about students. Reference services review, 32(4), 356-366

Ivanitskaya,L..et al (2006). Health Information Literacy and competencies on Information age students: results from the interactive online Research readiness self-assessment (RRSA). Journal of medical Internet research, 8(2), Accessed on 12th May, 2011[Available at http:www.jmir.org]

Jayatissa, L.A. (2009). "A multifaceted programme for information skills development: University of Kelaniya." Journal of University Librarians Association of Sri Lanka 13, 5-22

Jones,K. (2007). Connecting social technologies with information literacy. Journal of web librarianship, 1(4), 67-80

Kalam, A.P.J.A. (2002). Ignited Mind: unleashing the power within India, Penguin Books: New Delhi

Katz, R. (2007). Testing information Literacy in Digital Enevironments: ETS's skills assessment Information Technology and Libraries.

Mashroofa, M.M. (2009). "New Vistas of Information Literacy education: a case from South Eastern university of Sri Lanka." Journal of University Librarians Association of Sri Lanka13 :23-36

Mashroofa, M.M. (2010). Information Literacy initiatives in Sri Lanka, Conference Proceeding, ICoLIS, University of Malaya, Malaysia

McDonald C. (2003). "K-12 Information Literacy in the Digital Age' Accessed on 18th August, 2010, [Available at http://www.Infopeople.org/training/past/2004/k12infolit/handout _infolitmodels.pdf]

Oblinger G. ed.(20060 Ensuring the net generation is net savvy. EDUCAUSE Learning initiative

'Building a knowledge Society: value, creation through people, knowledge and ICT" Conference proceeding on Information and Communication technology,((NCICT'03), Malaysia.

Patricia, S.B. (1999). Take II- Information literacy: revolution in education. Reference Services review , 27(3), 271-275

Patricia D.M. (2001). Assessing information literacy among undergraduates: a discussion of the literacy and the university of California Berkerly Assessment experience.

Scharber, C.M. (2009). et al. online book clubs for preteens and teens, library review, 58(3), 176-195

Seneviratne, W. (2004). Laying paving stones for a knowledge Society: Community information literacy (CIL) and an analysis of barriers to upgrade CIL in rural Sri Lanka in proceedings of World Library and Information congress, 10th IFLA general conference and council.

Staley, S.M.et al (2010). Standardised library instruction assessment: an intuition-specific approach. Information research, 15(30).

Wijethunga,P. (2008). Improving Information skills of the post graduate students of NILIS of University of Colombo. DESIDOC Jl. of Library and Information Technology 28 (2), 18-27

www.unicef.org/infobycountry/**sri_lanka**_statistics.html

Incorporating Information Literacy into University of Ruhuna Undergraduate Curriculum

Kuruppu Arachchi, Theja[1]

With in today's Information Society the students are challenged in their effort to effectively identifying and using the quality information. University librarians play a key role in developing graduates skilled to effectively use the scholarly resources, so that having greater control over their own learning. Information literacy (IL) being recognized as an important aspect that teach the skills necessary to find out information, university libraries worldwide are providing instruction in information literacy. This paper will discuss the embedding of IL within the Undergraduate Curriculum at University of Ruhuna. Course evaluation had highlighted the undergraduate students' interest on IL module as a key to improve their information seeking habits. Most of the students had suggested the need of more practical time and tutorials/assignments for gaining the insights into the strategies discussed in the lectures.

Introduction

Having access for a huge amount of information will not lead to be informed person without the skill of using this information effectively (ACRL, 2000). In the age of information explosion and technological development, students are challenged in navigating the overabundance of information resources, filtering them to get the most reliable and relevant for the need and applying the needed information. Ability to identify the information need, access information in various formats, evaluate and select the most appropriate information for the need and ethical use have become necessarily important for them to cope with the changing trends. According to the American Library Association, information literacy (IL) can be defined as the ability to "recognize when information is needed and have the ability to locate, evaluate, and use effectively the needed information" (ACRL, 2000. P. 1). Information literacy skills help students understand the critical behaviour of information explosion and the value of ethical behaviour when using information to generate new knowledge. According to Bundy (2004) information literacy is a prerequisite for participative citizenship, social inclusion, the creation of new knowledge, personal empowerment, and learning for life. The goal of integrating information literacy into academic curriculum is to succeed not only academic work at the university but also for their lifelong achievements. It is an opportunity and a

[1] Kuruppu Arachchi, Theja, Senior Assistant Librarian, Main Library, University of Ruhuna, Sri Lanka. tka@lib.ruh.ac.lk

challenge for universities to produce enlightened graduates who are constructive and skilled to shape the information society. To support in attaining the university objectives, the mission of the university library must move beyond excellence in information identification, acquisition and organization to access skills development.

As Nicholson (2009) states libraries build capacity by promoting information literacy and providing support and training for the effective use of information resources. University libraries have been involving into information literacy through library instruction during freshmen intensive program and user education programs. These short-term instruction limited to few hours seems to be not sufficient to improve the students ability to face the challenge of the new information paradigm. University libraries come to play a bigger role in making students more information literate. Practices varied at different institutions as IL workshops, seminars, online modules, credit bearing courses and course-integrated instruction. As Li (2006) states course integrated instruction has proven to be most effective and has the most impact on students. IL courses needs to be curriculum based to be seen by students as directly relevant to their course work. Even more ideally, courses should be compulsory and credit bearing (Ambrose, 2003) This paper describes the recent work of University of Ruhuna Library, introducing Information Literacy for undergraduate curriculum.

The Information Literacy (IL) Program

University of Ruhuna Library introduced IL to Undergraduate Curriculum in January 2010 with the aim of developing graduates having greater control over their own learning. It was decided to integrate IL to each faculty initiating from the faculty of Fisheries and Marine Sciences and technology in 2009/2010 academic session as a compulsory subject for undergraduates. Students in this faculty was the first group of undergraduates in Sri Lankan Universities who were offered with a formalized IL Course for their First Degree

Two modules were designed to meet the IL skills needs of first year students and fourth year research students. The modules were structured to be applicable to the learning and research environment of the university. Outcomes expected by the IL program include;

- improved skills to understand how scholarly information is organized.
- improved skills to locate, select and use appropriate information resources in order to obtain useful information in connection with studies or research work
- improved skills to effectively handle and organize the information obtained.

In identifying learning outcomes for the two modules library consulted the Association of College & Research Libraries' Information Literacy Competency Standards for Higher Education (ACRL

Standards 2000). The standards list a range of outcomes for assessing student progress toward information literacy.

The Course Design

According to Rockman (2004) information literacy curriculum should be campus wide; problem-based, inquiry-based, and resource-based (that is, it uses a variety of information resources); makes effective use of instructional pedagogies and technologies; learner-cantered; and integrated and articulated with a discipline's learning outcomes. Information Literacy goal of the University of Ruhuna Library is to provide students with knowledge of search for information and ethical use, in connection with there studies and research. It will help students to master more advanced and complex skills appropriate to their academic disciplines in the environment of rapid technological change and proliferating information resources. The detailed module structure is presented bellow.
The module for first year students is scheduled during the intensive program for the new coming students. It is a non-credit compulsory module. It covers the following topics:

- introduction to information literacy:
- recognizing the information need:
- different information sources and library services:
- organisation of information:
- search strategy:
- evaluating information and its sources: selecting the most appropriate for the need

The module for final year students is one credit and compulsory. It is scheduled to be held during the first semester and covers the following topics;

- information for research:
- ethical use of information: copyright, plagiarism, citation
- organizing accessed information:
- applying collected information: summarizing and paraphrasing
- presenting and communicating: appropriate documentation style, communication channels.

Thirty hours and fifteen hours have been allocated for the lectures and practical of the module for first year students and final year students respectively. Academic staff members were appointed as visiting lectures for conducting lectures and practical sessions. On successful completion of this module, students will be able to understand how scholarly information is organized and locate, select and use appropriate information resources in connection with studies or research work. According to Rockman (2004) Well-designed assignments are central to student learning, because

they provide opportunities for active engagement with subject content. On completion of each topic an assignment that relates directly to the lecture and to their major subjects and research is given. Final evaluation includes 75% marks for written examination and 25% marks for assignments.

Information literacy is common to all disciplines, to all learning environments, and to all levels of education (ACRL, 2000). IL goal of the Ruhuna University library was to integrate IL to the other faculty courses through collaborative efforts between librarians and faculty. When incorporating IL to the curricula in different faculties, module structure had to be changed according to the needs of each faculty. IL was introduced as an optional module to the undergraduates in the Faculty of Engineering in October in 2010. The module was designed based o the above two modules. IL was introduced to the third year students of Agriculture faculty in 2011 without the topics; documentation and citation styles which has already included in their curriculum. IL module for medical faculty has already been approved and the course will be started soon.

Assessment

It is important to observe students' progress in learning information literacy concepts and skills through the course. All the students are assessed on their skills development two sets of question papers consisting of multiple-choice question (MCQ) and essay questions were prepared for both modules. At the end of the semester examinations were held through the examination branch, University of Ruhuna.

Evaluation

Information literacy program consists of a combination of lectures, hands on practice during the practical sessions, assignments and a final examination. At the end of the series of lectures and practical, students were asked to evaluate the overall IL program.

IL modules had been designed taking the ACRL standards as a framework. According to the evaluation of the learning experience, students had appreciated collection and the creation of the contents of both modules so as to be beneficial for them to improve their ability to find information sources relevant for their studies. Both lectures and practical have been very useful and have developed skills that increase their ability to access information using variety of information sources. It has caused to improve their academic work. According to 85% of students this course had improved their internet and library catalogue searching skills. Some students need more clarifications on call number system. Most of the students had expressed the need of increasing the lecture hours as they need more clarifications on the topics discussed.

Two hour practical sessions were conducted using computing facilities in the library and in the faculty. Students had commented favourably on the practical hands-on sessions. According to the students practical sessions give the true result of this course, because it is important to develop their IL skills through practice. As future developments, students had suggested to include more practical hours to train them on how to access journals and databases. Computer labs needed to be enhanced with more computers for providing computer facilities for each student.

Achievements

1. Motivating students to learn information literacy skill is one of the challenges when integrating IL to the curriculum. It is important to investigate how student's interest on this newly introduces module, changed while following the lectures and practical. According to figure 1, student's interest on IL module had improved while following the course.

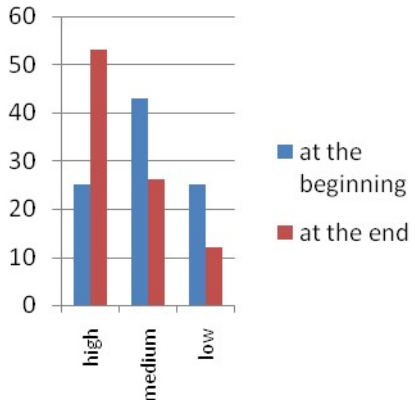


Figure 1: Student interest in the subject matter of the course had improved while following the course

Information literacy skills prepare students to meet the demands of the information age. Information literate graduates able to find evaluate and apply needed information. Improved interest of students to use the library and Internet and Online Resources while following the course, shows how the undergraduates immersed into information literacy.

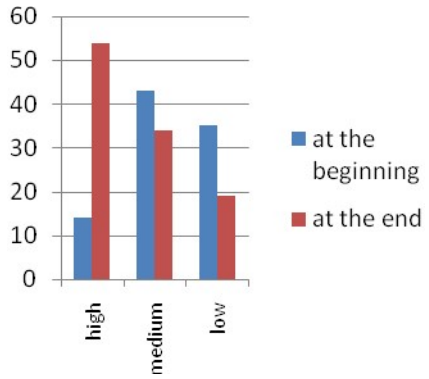


Figure 2: Student interest in the use of Library had improved while following the course

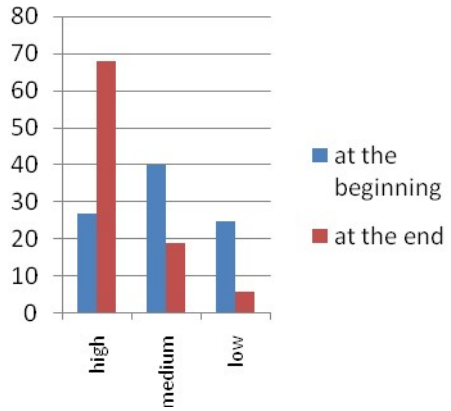


Figure 3: Student interest in the use of Internet and Online Resources had improved while following the course

2. Professional development refers to skills and knowledge attained for both personal development and career advancement University of Ruhuna Staff Development Program (SDP) aims to enhance the quality of its staff through training and educational opportunities. Being IL program for undergraduates successful, Vice chancellor's consent has given to incorporate Information Literacy to the SDP

3. Information literacy Instruction has made academic librarians as essential members of the teaching and learning process.

Conclusion

While providing access to demanding new resources to meet the information needs of academic programs and research in the university, University of Ruhuna Library has focused its strategic approach towards strengthening the undergraduate students with the skills needed to effectively use those information sources and become successful graduates and leaders. The library has made collaborative and preparative relationships with faculties and has implemented Information literacy program in three faculties and aims to introduce IL to all the faculties. Academic and library staff should collaborate to ensure that the programmes on offer are course-related and relevant to immediate student need. Librarians should be included in course boards and course-design teams as the IL modules needs to be developed relevant to the faculty needs. In the short term, faculties should recognise the need to allocate more curriculum time to IL programmes.

References

Ambrose, Anne., Gillespie, Brian (2003). Information-literacy programmes and course curricula : the case for integration. Level3, (1) - November. http://level3.dit.ie/html/issue1_ambrose1.html (Accessed October, 2010)

American Library Association. (1989). Presidential Committee on Information Literacy: Final Report. http://www.ala.org/ala/mgrps/divs/acrl/publications/whitepapers/presidential.cfm(Accessed September, 2009).

American Library Association. (2000). Information Literacy Competency Standards for Higher Education, Chicago: Association of College and Research Libraries. http://www.ala.org/ala/mgrps/divs/acrl/standards/standards.pdf (Accessed 2009, august).

Bundy, A. (2004). "Beyond information: the academic library as educational change agent." Paper given at the International Bielefeld Conference, Germany, 3-5 February http://conference.ub.uni-bielefeld.de/proceedings/bundy_rev.pdf

Candy, P., Crebert, G. and OLeary, J. (1994). Developing lifelong learners through undergraduate education. Canberra: Australian Government Publishing Service. National Board of Employment, Education and Training Report; 28. http://www.dest.gov.au/sectors/training_skills/publications_resources/profiles/nbeet/hec/developing_lifelong_learners_through_undergraduate.htm (Accessed 2010, June).

Centre for Information Technology in Education. (2000). 'Innovation in learning in the information society: a comparative international study' Dublin: CRITE; http://odtl.dcu.ie/mirror/crite/CRITEfinal.html. (Accessed 2009, February).

Doherty, John J. et al. (1999). "Teaching Information Skills in the Information Age: the Need for Critical Thinking", Library Philosophy and Practice, 1 (2)

Doherty, John J., Hansen, Mary Anna and Kaya, Kathryn K. (1999). 'Teaching information skills in the Information Age: the need for critical thinking', Library Philosophy And Practice 1 (2) Spring; http://www.webpages.uidaho.edu/~mbolin/doherty.htm. (Accessed 2009, September).

Information Society Commission. (2002). Building the Knowledge Society: Fourth Report of the Information Society Commission, Dublin: The Stationery Office 25; http://www.isc.ie/downloads/know.pdf. (Accessed 2011, May).

Li, Haipeng. (2007). Information Literacy and Librarian-Faculty Collaboration: A Model for Success. Chinese Librarianship: an International Electronic Journal, 24. http://www.iclc.us/cliej/cl24li.htm (Accessed 2009, January).

McClaren, Beth (2002). 'Changing paradigms, new partnerships: Information literacy programs in educational libraries', http://www.csu.edu.au/special/raiss99/papers/bmclaren.htm. (Accessed 2011, February).

Mammo, Yared. (2010). "Haramaya University Library and Information Services: Looking Back to Look Forward," International Information & Library Review 42 March: 14-26. [in Ethiopia]

Nicholson, Denise (2009). Digital rights management and access to information: a developing country's perspective. LIBRES Library and Information Science Research Electronic Journal, 19(1), http://libres.curtin.edu.au/libres19n1/index.htm. (Accessed 2010, august).

Ray, Kathryn and Day, Joan (1998). 'Student attitudes towards electronic resources', Information Research 4 (2), October; http://informationr.net/ir/4-2/paper54.html. (Accessed 2009, February).

Rockman, Ilene F. (2004). Introduction: The Importance of Information Literacy. In Ilene F. Rockman (Ed.), Integrating Information Literacy into the Higher Education Curriculum. (22). San Francisco, CA: Jossey-Bass.

http://media.wiley.com/product_data/excerpt/78/07879652/0787965278.pdf (Accessed 2010, August).

Information Literacy in Electronic Environment with reference to Medical Colleges

Kulkarni, Ravindra[1]

With the rapid development of information and communication technologies, the scope and diversity of information used in the learning process has become enormous. Developing the skills, knowledge and fluency to effectively utilise this information is a major challenge for all users in the library. Information literacy forms the basis for lifelong learning. It is common to all disciplines, to all learning environments, and to all levels of education. It enables learners to master content and extend their investigations, become more self-directed, and assume greater control over their own learning. The present paper further highlights the information literacy Programme at Medical College in detailed.

Keywords: *ICT, Internet, Information Literacy*

Introduction

Information literacy is an intellectual framework for recognizing the need for understanding, finding, evaluating, and using information. These are activities which may be supported in part by fluency with information technology, in part by sound investigative methods, but most importantly through critical discernment and reasoning. IL initiates, sustains, and extends lifelong learning through abilities that Information Literacy (IL) is an area of interest to librarians and Information professionals and it is pivotal to the pursuit of lifelong learning process.

"Information literacy—the ability to find and use information—is the keystone of lifelong learning." IL is also the ability to access, evaluate, and use information from a variety of sources. IL is a set of abilities requiring individuals to " recognize when information is needed and have the ability to locate, evaluate, and use effectively the needed information. " IL in terms of a set of competencies that an informed citizen of an information society ought to possess and to participate intelligently and actively in that society. Most current definitions of IL are built on that issued by ALA's Presidential Committee on Information Literacy: 'To be information literate an individual must recognize when information is needed and have the ability to locate, evaluate and use effectively the information needed... Ultimately information literate people are those who have learned how to learn'

[1] Kulkarni, Ravindra , Chief Librarian, Rajiv Gandhi Medical College, Maharashtra
chieflibrarian@rediffmail.com
ravindrackulkarni@gmail.com

Information Literacy is the set of skills needed to find, retrieve, analyze, and use information. The beginning of the 21st century has been called the Information Age because of the explosion of information output and information sources. It has become increasingly clear that students cannot learn everything they need to know in their field of study in a few years of college. Information literacy equips them with the critical skills necessary to become independent lifelong learners. Too often we assume that as students write research papers and read textbooks they are gaining sufficient IL skills. This is not so. IL skills may be introduced but what is needed is a parallel curriculum in IL forming a strong foundation of a college education.

As the American Library Association Presidential Committee on Information Literacy (January 10, 1989, Washington, D.C.) says "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. They are people prepared for lifelong learning, because they can always find the information needed for any task or decision at hand."

Information literacy – Importance

Have you ever heard of Data Smog? A term coined by author David Shenk, it refers to the idea that too much information can create a barrier in our lives. This data smog is produced by the amount of information, the speed at which it comes to us from all directions, the need to make fast decisions, and the feeling of anxiety that we are making decisions without having ALL the information that is available or that we need.

Information literacy is the solution to Data Smog. It allows us to cope by giving us the skills to know when we need information and where to locate it effectively and efficiently. It includes the technological skills needed to use the modern library as a gateway to information. It enables us to analyze and evaluate the information we find, thus giving us confidence in using that information to make a decision or create a product.

Information literacy – Need

The concept of Information Literacy may seem too broad and overwhelming. Why should students learn all this? Because we want to remove the obstacles to creativity which are caused by lack of understanding of the research process. We only want to introduce students to those skills which will allow them to succeed in their future chosen paths. This is not just for college students but all of us, as professionals, in the workplace and in our personal lives. Being information literate ultimately improves our quality of life as we make informed decisions when buying a house, choosing a

school, hiring staff, making an investment, voting for our representatives, and so much more. Information Literacy is, in fact, the basis of a sound democracy.

As U.S. Representative Major R. Owens has said "Information literacy is needed to guarantee the survival of democratic institutions. All men are created equal but voters with information resources are in a position to make more intelligent decisions than citizens who are information illiterates." American Library Association Presidential Committee on Information Literacy, Washington, D.C.

Information Literacy for Medical Education

Many associations and professions organizations have taken initiatives in information literacy and teacher education related activities. National Forum on Information Literacy (NFIL) submitted "Progress Report on Information Literacy" in 1998. One of its recommendation (Recommendation No.5) was: "Teacher Education and Performance expectation should be modify to include Information Literacy concerns." National Educational Technology Standards Project (NETS) has begun an effort to effectively support use of technology for teaching learning and administration (Thomas,1998, P.11). Their first step of standards focuses on a technology foundation for students and includes the use of technology research tools to "to locate, evaluate and collect information from variety of sources" (Thomas, 1998, P.22). American Association of School Librarians (AASL) and the Association for Educational Communications and Technology released "Information Literacy Standards for student learning" which addresses issues in information literacy independent learning and social responsibility as a guide for "school library media specialists and other K-12 educators as they cultivate and refine their students' information literacy skills in print, non print and electronic format". (Information Literacy Standards, 1998) The Education and Behavioural Sciences Section (EBSS) of the ACRL have emphasized on conceptually based skills for searching, retrieving and evaluation information for learners for different groups viz. graduates, undergraduates, practitioners and researchers. EBSS identified a sequence of skills that begins with understanding that the generation and communication of knowledge in education includes recorded and unrecorded sources and formats that differ in publication cycles and authority. In India, initiatives are now taken in the field of information literacy. Many conferences, seminars, workshops are organized. Delhi University, Madras University, etc have started Information Literacy programmes. But these initiatives are not sufficient to cope-up with the need. All the programmes are limited up.

Models of Information Literacy

The most frequently mentioned model is that of Christine Bruce. She has published a book (1997), there is a summary of her ideas on her web site (Bruce 1997), and she has published numerous articles on the topic (e.g. Bruce 1999). She used the phenomenographic method (involving in-depth interviews focusing on a few key questions) to identify seven different ways of experiencing information literacy: the "Seven faces of information literacy".

This was qualitative research, carried out with higher education professionals in Australia, and Bruce states that different cultural/ professional groups may exhibit a different range of conceptions. However, the work has raised strong interest with people in different countries. The faces are not seen as a way of "pigeonholing" people into a particular face, but are better used to help people reflect on their own approach to information literacy, understand other people's differing approaches, and become more information literate themselves. We, together with Stuart Boon, carried out a three year study, funded by the Arts and Humanities Research Council, into UK academics' conceptions of information literacy (and pedagogy for information literacy) in four disciplines: Chemistry, English, Marketing and Civil Engineering. We also used the phenomenographic approach. We identified different conceptions of information literacy in each discipline (Webber et al, 2005).

In Marketing, information literacy as: 1) Accessing information quickly and easily to be aware of what's going on; 2) Using IT to work with information; 3) Possessing a set of information skills and applying them to the task in hand; 4) Using information literacy to solve real-world problems; 5) Becoming a critical thinker; and 6) Becoming a confident, independent practitioner.

In English, information literacy as: 1) Accessing and retrieving textual information; 2) Using IT to access and retrieve information; 3) Possessing basic research skills and knowing how and when to use them; and 4) Becoming confident, autonomous learners and critical thinkers.

In Chemistry, information literacy as: 1) Accessing and searching chemical information; 2) Mastering a chemist's information skill set; 3) An essential part of the constitution, creation and communication of knowledge

In Civil Engineering, information literacy as: 1) Accessing and retrieving data and information; 2) Applying and using information; 3) Analysis and sense making; 4) Creating, and incorporating information into, a professional knowledge base

The above conceptions of information literacy were identified through research. The following drew on research, but were formulated by groups or individuals. The Standing Conference of National and University Libraries (SCONUL) set up a Task Force on Information Skills, which identified produced a "7 pillars" model of information literacy (see Standards page.)

Finally, a model which seems quite widely used in the USA to teach information skills is theBig6 information problem-solving approach (Eisenberg & Berkowitz, 2001). This bases learning around the six steps:

- Task Definition
- Information Seeking Strategies
- Location and Access
- Use of Information
- Synthesis
- Evaluation

Requirements

To acquire E-information literacy as defined above, users should first of all possess other basic literacy:

- Traditional notion of literacy - to read and write;
- Computer literacy - to understand and operate computers which are interfaces between networked information and end-users;
- Media literacy - to understand different media storing networked information and use them; and
- Traditional Information literacy - to locate, select, evaluate and use information effectively
- User Education on E-Literacy - Librarian's New Task

Roles for Librarians in a E- Information Environment

In a networked and E- information environment, librarian's role becomes "more expansive and complex because of technological advances in information handling as well as information users' demands for more efficient and complex information de-livery". In addition to the traditional library services based on the traditional print and AV resources, librarians are now information professionals managing, retrieving, analyzing, organizing and serving networked information to information consumers in an information driven society. Librarians are asked how to use information rather than just retrieve it, and, are asked to assist and train users to locate, evaluate and

use information effectively as information navigators rather than traditional bibliographic instructors. Librarians act not only as “the intermediaries” to assist in connecting users with networked resources, but further as partners with teachers to educate the target groups for network literacy. To retain their professional credibility, librarians must enhance themselves to understand and manage the complexities of networked information. Librarians must assume a leadership role in educating the community about the impact of information and network technology on teaching, learning, effectively working and productively living in an information age

User Education on E- Literacy

For librarians providing instruction in user education on network literacy, there are three elements that are different from traditional bibliographic instructions. First, librarians should organize and design an efficient teaching environment including facilities and select a suitable teaching method to provide instructional programs on network literacy to users. Networked information must be based on a networked environment. To setup physical equipment or facilities for network training should involve collaboration with computer/network specialists, and al so it should be based on the existing library network systems. In the University of Wisconsin Whitewater, there is a Computer Lab (called Bibliographic Instruction Lab) with 21 PCs linked to a Novell Netware LAN. All computers can access CD-ROM LAN databases, Internet (both Gopher and WWW) and library online cataloguing system (NOTIS, run by an IBM mainframe) through software in LAN server and c amp us network backbone. Students can follow instructor step-by-step and have hands-on practice using these networked workstations. There have been many discussions, practice models, guidelines and principles for instruction methods on electronic or networked information, such as University of Arizona Library’s Model for teaching Internet, RASD’s Electronic Information Sources: Guidelines for Training Sessions,

In summing up, the methods for network literacy instruction could be:

- Classroom presentation and lectures with computer demonstration;
- Workbooks and other printed texts (system and/or database manuals) for learner to practice with a networked terminal
- Multimedia and computer assisted/aided instructional programs (CAI) such as kiosk programs, computer programmed projects and audio/video instruction programs;
- Point-of-use signage;
- Individual instruction or counselling; and
- Electronic user guides in HTML for-mat with full text and/or full image, published on the WWW

Conclusion

Information literacy is the need of time. Variety in definition, concepts, models, standards and programmes are available. But blind application of existing Information Literacy models and programmes will not lead to correct destination. Therefore the need is to design a need based and subject specific model and programme which can be beneficial to the students. Imparting information literacy is not only a set of information which is to be transmitted, but it demands proper psychological foundation and needs to inculcate critical thinking ability through self directed learning and other teaching learning techniques which will be beneficial for life long learning. Imparting information literacy skills among the students should be integrated in the curriculum.. The educationists, librarians, teachers, universities should take collaborative decisions and efforts to start the Information Literacy movement.

References

American Library Association. Presidential Committee on Information Literacy. (1989). Final Report. Chicago: American Library Association. http://www.ala.org/ala/acrl/acrlpubs/whitepapers/presidential.htm

Bawden, David (2001). "Information and digital literacy: a review of concepts." Journal of Documentation 57 (2), 218-259.

Bruce, Christine (1997). Seven faces of information literacy in higher education. Brisbane: Queensland University of Technology. http://sky.fit.qut.edu.au/~bruce/inflit/faces/faces1.htm

Carbo, Toni (1997). Mediacy: knowledge and skills to navigate the information superhighway, in Infoethics Conference: Monte Carlo, Monaco: 10-12 March .Paris: UNESCO.

Eisenberg, Michael B. and Berkowitz, Robert E. (2001). The Big6 information problem-solving approach. Richmond Beach: Big6. http://www.big6.com/

Lenox, M. F. and Walker, M.L. (1993). Information literacy in the educational process. The Educational Forum. 57 (2), 312-324.

Rader, Hannelore. (1999). "The learning environment: then, now and later: 30 years of teaching information skills." Reference services review. 27 (3), 219-224.

Shapiro, Jeremy J. and Hughes, Shelley K. (1996). Information Literacy as a Liberal Art: Enlightenment proposals for a new curriculum. Educom review. 31 (2), 31-35. http://www.educause.edu/pub/er/review/reviewArticles/31231.html

Town, Stephen. (2001). "Performance measurement of information skills education: what's important?" SCONUL newsletter, (22), 21-23.

Webber, S., Boon, S. and Johnston, B. (2005). A comparison of UK academics' conceptions of information literacy in two disciplines: English and Marketing. Library and information research, 29 (93), 4-15.

PART 4

Celebration Sri S. R. Ranganathan Birth Anniversary

Session Chair – Prof. C.R. Karisiddappa

Emeritus Professor,

University Grants Commission, India

Lead Paper - Dr. M.P. Satija

UGC Emeritus fellow,

Guru Nanak Dev University, India

Remembering the work of S. R. Ranganathan for Academic Libraries and Library Education

Satija, M.P[1]

Describes Dr S R Ranganathan (1892-1972); the Father of Indian Library Movement, as a thinker, crusader and an unrivalled library statesman. Briefly mentions the plight of libraries and low status of librarians before him. Makes mention of his work at the universities of Madras, Banaras and Delhi and the development plans that he prepared for the university libraries of Delhi, Nagpur, Allahabad, Bombay, Mysore, and Bangalore. States his national mission of for improving the lot of and services of academic libraries and enhancing the status of librarians flowered in full bloom under the patronage of Dr C D Deshmukh (1896-1982), the first Chairman of the UGC established by an Act of Indian Parliament in 1956. Historically describes the work and recommendations of the UGC Committee on Academic Libraries(1957) constituted under his chair "to go into all the problems of university and college libraries…".Describes how Ranganathan used his professional clout and personal contacts with high-ups to secure academic status, pay parity with academicians and consequent social and academic recognition to his fellow librarians. Also describes his work for improvement of LIS education. Ends up with some suggestions to sustain this hard earned academic respect and social recognition

The Messiah Cometh

S.R. Ranganathan (1892-1972) donned many a hats at a time-- a revolutionary thinker, philosopher, educationist, preacher, doer, missionary, teacher, a librarian, and above all an unrivalled crusader. He worked single-mindedly and tirelessly for the development of libraries and library science in India. His exclusive devotion was freakish. More than purveyor of information and knowledge he valued libraries as instruments for all-round development of the country. At heart he was an internationalist, a humanist who saw libraries as a force in world peace and cooperation (Satija, 1992)

Though he remained in academies all his life yet his role in public libraries movement, library legislation for a national network of libraries accessible to one and all remains critically important

[1] Dr. Satija, M.P, UGC Emeritus fellow, Guru Nanak Dev University, India
satija_mp@yahoo.com

(Satija, 1987). He worked successfully to give librarians a professional identity. Revered gratefully as Father of Indian Library Movement, he got us social and academic recognition. In his life time he raised the library profession to great heights of academic respect and social responsibility. More than any facts and figures he taught us attitude and spirit and enabled us to think for ourselves.

Pre-Ranganathan Scene

He had an exceptional insight to observe the major problems of library services and librarians which had hitherto gone unnoticed and ignored as well. Libraries functioned as dark and dingy dumps of books with no norms for infrastructure, staff and services, and hardly any technique for organization and retrieval of documents. Books were considered sacred and precious to be preserved than risking their wear, tear, and loss in use. Librarians sat over the treasure as jealous guards. Rights of the readers were unknown. Carl M. White (1965) quotes Sir Maurice Gwyer, the then Vice-Chancellor of Delhi University: "The University library was a disgrace to the university." In fact he summed up the state of all academic libraries in India.

His Mission

On coming back in 1925 from England after his library training, Ranganathan was possessed by a mission to modernize Indian librarianship, university libraries and library science education. He saw librarians not as curator of books but facilitator of their use for communication of information and creation of knowledge. To achieve this he worked at intellectual, administrative, political and social levels.

His philosophy of library service is clearly enshrined in his *Five Laws of Library Science*, (1931, 2nd ed. 1957) while details of library management for efficiency and proper services and techniques of day to day operations are given in the *Library Administration* (1935, 2nd ed. 1959). In this book veritably called the bible of library management he systematically analysed about 1700 library in-house jobs and laid down precise procedures for their economic and neat performance. Experience is the basis of this work. Job analysis of each library routine was carried out scientifically in the Madras University Library. This is still considered his enduring work and his system analysis of library routines can be a reliable guide for designing library management software suits.

Library Development Plans

Ranganathan was invited as a consultant by many Indian universities to suggest a development plan for their libraries ; he chaired many a committee and commission and chalked out many plans and blueprints of his own to convey his vision to the government, educationists and to all those who

mattered. Apart from his rich experience of developing from the scratch the university libraries of Madras (1924-1944), Banaras Hindu University (BHU ,1945-1947) and Delhi (1947-1955), he also prepared library development plans for:

University of Delhi, 1942
Nagpur University, 1946
University of Allahabad, 1946
University of Bombay, 1948
University of Mysore, 1956
University Bangalore, 1966

UGC Committee on Academic Libraries

The most important one for the future of academic librarianship in India was the invitation from Dr C D Deshmukh (1896-1982), the first Chairman of the University Grants Commission (UGC) established by an act of Parliament in 1956. The UGC set up a committee on academic libraries in 1957 to suggest measures for their improvement (Gupta, 1992). P S G Kumar (1992.p.161) gives some historical glimpses of the momentous efforts: "Pay commission appointed by the Government of India did not consider academic library staff working in university and college libraries. The Inter-University Board was also silent on the issue". Ranganathan happened to meet and had a long conversation on library matters with Dr C D Deshmukh, the head of the newly established UGC, at the residence of the Vice–Chancellor of the Annamalai University. A few months later they again met at Madras. Deshmukh, impressed by his standing, commitment and experience, offered Ranganthan to chair a committee "to go into all the problems of university and college libraries in their entirety and make concrete proposals on the basis of which the UGC can formulate its policy". The other members of the Committee were:

S.R. Ranganathan, Chair
S. Bashiruddin
K.S. Hingwe
B.S. Kesavan
S. Parthasarathy.

The Task before the Committee

The task before the committee was historical, enormous in magnitude and full of political overtones. It was to involve the librarians *en masse*. The first meeting of this committee was held on 10th February 1958 and the last one on 14th February 1959. After a pan-India preliminary survey of the condition of academic libraries the committee organized an all India seminar on "Work flow in

university and college libraries" on 4-7 March, 1959 in Delhi. Inaugurating the seminar C D Deshmukh reaffirmed his faith in the value of libraries.

The committee made a survey of selected libraries and minutely worked out details for staff, building, infrastructure and routine in-house jobs called workflow. The committee made comprehensive and concrete recommendations for sources of library funds, per-capita expenditure on books and reading material, maintenance of accounts, norms for expenditure, book selection authority, books ordering procedure, promotion of reading habits through open access to stacks, norms for loss of books, weeding out unwanted or unserviceable documents; and above all the role of librarians and their status in the university system. Obviously, most of the recommendations of the committee were the pre-thoughts and vision of Ranganathan himself. The document was published later as: Development of University and College Libraries, New Delhi: UGC, 1965

Major recommendations and outcomes

- Matching grants from the UGC and the state governments were the then prevailing norms. The committee recommended the continuation of UGC grants even if the state governments failed to pool their share.
- Books purchase funds should be based on per capita membership for different categories of users. The norms prescribed by the committee may no longer be relevant, yet its model is still useful.
- Library fund of the academic institutions should be maintained and operated separately.
- Deshmukh and Ranganathan were aware that annual grants to the universities and colleges were not adequate to meet the requirements of buildings, equipment and for occasional modernization. The committee recommended occasional grants for academic libraries for innovations and new infrastructure.
- Librarians should be vested with authority to select books and other information material keeping in view the needs of the users. It clearly demarcated the role of librarian *vis-a-vis* subject experts for selecting books based on demands, both immediate and anticipated.
- It recommended a panel of experts to advise the librarian in making final selection of books and other reading material.
- It further recommended that the funding agency must allow sufficient time ranging from 12-17 months for judicious utilization of grants for collection building. Grants spent in a hurry and under pressure are a root cause of many ills and corrupt practices which make librarians suspects in the eyes of the authorities and public.
- The committee also recommended that 10-20% of the books grant could be spent for processing the documents and for purchase of stacks, if needed.

- Made the time-bound processing of documents necessary to make them available for use without unnecessary waste of time.
- Further recommended the cooperative acquisition of reading material on regional basis to avoid duplication of costly documents to allow optimum use of meagre funds. This clearly anticipates today's library and information consortia approach for collection building and information access. For this of course the union catalogues were to be compiled as tools for cooperative acquisition and access. He himself took the initiative in this matter and became a pioneer in compiling union catalogues.
- Recommended the concept and practice of open access to promote reading habits and maximize the use of books.
- Weeding of books was rather a bold proposal in those times. Books were considered as permanent store items. Librarians were supposed to have their safe and perennial custody. Only now weeding out of no more wanted documents is considered necessary and beneficial on many accounts.
- The committee surveyed library buildings in all aspects and gave clear instructions on their design, space allocation, furnishing and general architecture for safety of books and comfort of users. These recommendations were later adopted by the Bureau of Indian Standards as Indian Standard *"IS:1533-1960 Code of Practice Relating to Primary Elements in the Design of Library buildings"*.

Recommendation for status

To give librarians prestige, confidence and enhance their status the committee strongly recommended abolishing the post of professor-in-charge of the library in university and colleges. This practice took time to be fully implemented, yet emerges in other forms due to our own weaknesses.

The Committee clearly formulated the hierarchy of staff with designations, job description and pay scales. It was the Ranganathan Committee which relentlessly fought for the parity of library staff with the corresponding faculty positions in respect of pay-scales, status, promotions and other service conditions. All the recommendations were accepted by the UGC. It was not however a cake walk. His research assistant and a close associate Dr. M.A. Gopinath has been quoted saying "UGC was hesitant to accept all recommendations of the Ranganathan committee but they did accept due to Ranganthan's influence" (Sharma, R.N., p. 23).

Personal Clout

His fatherly figure, erudite knowledge and selfless aim for upgrading the library profession were enough to convince the high-ups to lend support to his mission. Late Professor A.P. Srivastava (1933-2004), Librarian Delhi University Library System, his staunch disciple wrote that Ranganthan used his connections with persons occupying positions of power to enlist their support. That way he was able to realize his mission of transforming libraries and librarianship. His association with Dr. S. Radhakrishnan (1888-1975) then VC BHU, later Vice-President (1952-1962) and President (1962-1966) of the Republic of India, enabled him to modernize the BHU Library, and Ranganathan always had a direct access to the *Rashtarpati Bhavan* during Radhakrishnan's presidency. Datta (1989,p.43) paying tributes to his work and efforts says: "But for the joint work of Ranganathan and Deshmukh, it would have been just impossible to think of academic status for academic librarians in this country". Citing examples of India, the library professionals of the South Asian countries achieved similar status for them. Sri Lankans always adore him as the father of library movement in Asia.

Sir Maurice Gwyer (1878-1952) who always admired his scholarship and social mission invited him to organize the library science department of the Delhi University. His station in Delhi (1947-1955) gave him a platform to impart a strong fillip to the library education. There he was instrumental in starting Master and Ph.D research programmes in library science. Thus India became a leader in LIS education not only in developing countries, or Asia but in the entire Commonwealth. Sir Gwyer was so happy with his work that he described him as "the Prince among librarians". In a special convocation on 7 March, 1948 while presenting him before the Lord Mountbatten (1900-1979), the then Chancellor of the Delhi University, for the conferment of the degree of D. Litt. Gwyer cited him with the words "His reputation...extends far beyond the borders of his own country…."

Soon after the acceptance of historic parity between teachers and librarians by the government Professor Srivastava happened to meet the overjoyed Ranganathan in late 1958 at Ujjain. He recalls: "His happiness was solely due to the realisation that … it would be easier [now] to attract talented and competent persons to academic libraries; which in turn would give an impetus to the profession." He adds further "I was able to see on his face an aura of divine happiness … [as] he was able to put the future generation of librarians on equal footing unknown hitherto".

Our Responsibility

Many a time this parity has been broken to be regained after another long and energy seeping struggle. It is still up to the library profession to keep this hard earned status secure by:

- Luring talent to the profession and then grooming and retaining it.
- Proactively proving useful and indispensable to the students, researchers and teachers in satisfying their information needs and guiding them in the labyrinths of their literature search.
- Venturing into teaching of information literacy to our patrons
- Making information services proactive, reliable and of course relevant and trendy.
- Doing marketing and advocacy of the profession as a whole. We need spirited and able advocates of the profession to show case its importance and value to the society at large.

Work for LIS Education

In 1961 the UGC constituted a Review Committee on Library Science in Indian Universities under the Chairmanship of Ranganathan. It for the first time laid down a standard pattern in detail for education of librarians in India (Kumar, 1992, p164). It *inter alia* recommended that:

- The universities should only conduct postgraduate and doctoral research courses in LIS in independent departments of library science.
- The minimum qualification for admission to B. Lib Sc should be a second class bachelor degree in any discipline.
- Professional content of one year B. Lib. Sc course should not be diluted by including extraneous topics such as general knowledge, or literary studies, and good handwriting.
- Greater emphasis should be placed on internal assessment of the students.
- Teacher-student ratio of 1:10 at the B.Lib.Sc. and 1:5 at the M.Lib.Sc. Levels should be maintained.
- Organise a regular course in teaching methods to train at least ten teachers every year, and research in library science should be promoted
  (Dhanasegaran, 1992, p.160).
- The report was published by the UGC in 1965 as *Library Science in Indian Universities.*

Ranganathan wanted full and independent status for the library science departments – just as other teaching departments, say physics or sociology. Earlier library science departments were part of the library where ill-prepared library staff taught the students. That was more or less training without imparting them any library education in the true sense. Thus teaching was devoid of academic and philosophical contents. Separation was a bold proposal for the bright future and professional growth

of LIS education and research in India. No wonder it was opposed vehemently by some vested interests of the day. Nevertheless, he had not mooted divorce as it is happening today. Whatever it be, had we remained stuck up in some corner of the university libraries then librarianship would have been seen as no more than a vocation of technicians and para- professionals. In brief he brought a revolution in the status of academic librarians. What we find today something as given or taken for granted, was achieved after a long strategic struggle.

Epilogue

If today we are occupying positions of status and respect then S.R. Ranganathan must be paid due tributes for securing all this for us – single handled. We have a bounden duty not only to preserve this legacy but perpetuate it and take it further the way the Father envisioned and dreamed. That would be the only true tribute to this work, vision and memory.

References

Datta, N. (1989). Academic Status for University and College Librarians in India. Delhi: Indian Bibliographic Bureau, 42-43,80-81,88-89,92-93

Dhanasegran,G. (1992). "Library and Information Science Education in India" In : Birth Centenary Publication of Dr. S. R. Ranaganathan. Annamalainagar: Annamalai Univesrity, 160-161

Gupta, O.P. (1992). Development of University Libraries in India after Independence. New Delhi: Concept, 53-54; 137-140

Kumar, P. S. G. (1992). Ranganathan: A Multifaceted Personality. New Delhi: B R Publishing.

Satija, M.P. (1992). S.R. Ranganathan and the Method of Science. New Delhi : Aditya, 23-36.

Satija, M. P. (1987). "Ranganathan and the Public Library Legislation in India" *Libri* 37(3) Sept.,307-320

Sharma, R.N. (1986). Indian Academic Libraries and Dr. S.R. Ranganathan. New Delhi: Sterling, 82-86.

Srivastava, A.P. (1977). Ranganathan : A Pattern Maker. New Delhi : Metropolitan, 70-76.

White, Carl M. (1965). A Survey of University of Delhi Library. Delhi: DU, Planning Unit, 1

Exploring the Role of LIS Schools in the Change Management Environment

Padmini, K.[1]

Change management is a systematic approach to dealing with change, both from the perspective of an organization and on the individual level. Change management is a method for reducing and managing resistance to change when implementing process, technology or organizational change. Thus change management in libraries calls for the new role of librarians as information managers. LIS education has its significant stand in building the profession. It has been taking necessary contemporary measures whenever change has taken place. It is a well known fact that 'change is the law of nature' and LIS is no exception to go along with the change. Keeping the latest trends in the profession in view, an attempt is made in the present article to explain the efforts made by LIS schools and to focus on what more needs to be done to train the professionals to satisfy the end-user information demands.

Introduction

Libraries were treated as store houses of knowledge. Material was limited and the use was restricted. As we know that change alone is constant, the libraries also crossed a lot many phases of changes to meet the ever growing information demands of their end users. Fore-seeing the situation, Dr.S.R. Ranganathan, the father of library science, included in his fundamental Laws of Library Science, as the fifth law, i.e. "A Library is a growing organism." When there is a quest to invite change, then the organization grows in a multi-dimensional way. Same can be visualized in the case of libraries and Library and Information Science (LIS) education.

The era in which we are today, has revolutionized the theory and practice of LIS. The major development that is taking place in Library and Information Centres today is the widespread availability and use of various kinds of Electronic Resources, which have been produced by applying modern IT. The commonly available Electronic Resources, namely, CD-ROMs, OPACs, web databases, the Internet and other networked information sources are competing with and in some instance replacing the print based information sources which have been in place for centuries as the primary media for storage and communication of recorded information. Electronic resources

[1] Prof. Padmini, K, Dept. of Library and Information Science, S.V. University, Tirupati, A.P. India padminisvu@gmail.com

have become the vital part of human life in 21st century. It has rapidly changed the way of seeking and disseminating information.

Change from an existing setup to a new environment has its own set of inherent problems and the problems become multi-fold when apply in a service institution as library. Libraries have been pioneers in adopting any new technology, the same holds true for information and technology also. The role of libraries has gradually changed from the traditional storehouse of information to access providers. There has been a paradigm shift in the ways libraries used to be managed.

The problems associated with the transition in the case of libraries have both content and a process dimension. The reason is that not only the library operation has got automated but also at the same time there have been drastic changes in the way information content used to be presented and organized. The tools and techniques that were suitable for traditional documents don't hold good for born digital documents, so, a whole new approach needs to be developed to handle the situation.

Change in libraries

Transformation of collection has taken place in libraries. Before the invention of printing press, libraries have accumulated their collection with different formats of documents such as clay tablets, papyrus, parchment, inscriptions, palm leaves, paper manuscripts etc. Later printed books and periodicals remained for more than 600 years as a staple medium of communication.

After industrial revolution till to date, the reading materials have undergone gradual change from print to non print media. Materials like Microfilm, Microfiche, Floppies, Tapes, CDs and DVDs and online databases etc., have become part of library collections. Now with the help of communication and networking technology, information available at other places can be accessed round the clock online. It has removed the space and time barriers in free flow of information.

Gradual shift in library services can also be observed. For a long time the library services were confined to issue and return of books. That was followed by reference, lending, referral, reprography, bibliographic services, etc. With the development of documentation and awareness of current information, the libraries have introduced advanced services such as CAS, SDI, indexing, abstracting, translation, literature search, state of art reports, bibliography and documentation etc. Now many libraries are providing online services, internet, electronic databases, electronic journals, etc.

Change management

The systematic approach and application of knowledge, tools and resources to deal with change. Change management means defining and adopting corporate strategies, structures, procedures and technologies to deal with changes in external conditions and the business environment. SHRM Glossary of Human Resources Terms, www.shrm.org Change management is a systematic approach to dealing with change, both from the perspective of an organization and on the individual level searchsmb.com Change management is a style of management that aims to encourage organizations and individuals to deal effectively with the changes taking place in their work. English Collins Dictionary (http://searchcio-midmarket.techtarget.com/definition/change-management#content).

Change management in libraries

Change in a library has different dimensions; changes are both content wise and process wise especially during the transition from a traditional library to an automated library where digitization is an ongoing process. The decision to go electronic triggers an entirely new way of organizing the library materials (content) and also the way in which the information or document is delivered (process).

It is a well known fact that change is the only constant. But more important is the nature of change, which is discontinuous and unpredictable. The ICT and the Internet have made a profound impact on the structure and functioning of different types of libraries. But the mission of all types of libraries, i.e. the preservation of and access to our documentary heritage is intact. Only the format of libraries and our response to external and internal pressures is changing. Besides technological changes libraries are faced with educational, social, economical, and cultural changes. The most striking impact on libraries has been that of the technological and fiscal changes.

Managerial and change issues encompassing the move to digital libraries are substantial and involve both human and resource factors. Moreover, the changes are often difficult to predict, dependant as they are on the ever-changing nature of technology.

Need for LIS education

Khan (1996) opined that with the growth in the number of institutions there has been an increase in the percentage of literacy, the number of persons reaching higher levels of education and the number of specialist in different subjects. Consequently the number of potential users of libraries, and the number of libraries of various categories – school, college, university, special, and public – have also increased. In turn, this has created a potential demand for a larger number of professional librarians. To meet this demand there has been a spurt in the number of library schools started.

Developing the capacity to sense problems, the capacity to think out and investigate the problems systematically using the appropriate tools and techniques, and the urge to keep op with developments in the subject is an important objective of education of librarians and documentalists.

The formulation of plans for education in library science and documentation is an integral part of the formulation of plans for the development of the library and documentation system in a country. Viewed in this way, two major factors appear to have influenced the content, and scope of education in library science and documentation.

New social objective and responsibilities

The libraries accepted new responsibilities to meet society's changing needs and demands from time to time so as to achieve the new educational, cultural, and economic objectives at the national and international levels. For instance, from the earlier concept of service to a few scholars, the library has accepted responsibility successively as an agency for:

- Harnessing leisure for fruitful purpose
- Universal education
- Self-education of the individual
- Fostering national integration to democracy safer and stable
- Promoting cultural contact, and mutual understanding and amity among nations
- Supporting the conservation of research production, and managerial potential.

Some or all these objectives are pursued simultaneously in the different categories of the library systems taken together and sometimes even in one and the same library

Developments in Library Science

Library science has now developed into a distinct field of specialization with its own normative principles, theories, techniques, and practices, capable of evolving itself to meet the growing dimension of library service consequent to the changing needs of society. In this respect, India has made significant contributions, particularly through the word of S.R. Ranganathan. A mastery of the theory and technique of library and documentation services requires a high intellectual calibre in the aspirant to the profession, as for any major discipline. Further, the course of education and preparation to master the theory and practice requires as much time as that needed to be proficient in any other discipline.

In the opinion of Singh (2009), the future of library as a social institution is very bright. The only thing is that the role of libraries and LIPs (Library and Information Professionals) is expanding. In

the post-industrial society, library is supposed to become a local gateway to world's knowledge and information, and LIPs are required to open their closed mind-sets to facilitate globalization of the indigenous knowledge and information. They are also required to develop their leadership competencies for leading and managing change in libraries.

LIS Education

According to Singh (2009) librarians are the best professional to organize knowledge and information to save the time of the information seekers. There is a lot of chaos in the public domain on the web. Librarians are required to retrieve pertinent information from the web, consolidate and repackage it for the benefit of the enc-users. In the digital age, customization and personalization of information is the heart of the matter. That can be done in a professional way by LIPs by using the best professional practices, such as library classification, library cataloguing, concept indexing, bibliographical control, and vocabulary control. But for doing that LIPs must be on sound footing with regard to the philosophy of library and information science, its theoretical foundations, and best practices.

As suggested by Dr. S.R. Ranganathan, "Right information to the Right User at the Right Time in the Right Format" needs excellent planning, management techniques and analytical skills. From where can any one gets all these, except from LIS education.

Information plays an initial role in economic, social, and cultural realms of the society and that an adequate library and information system is therefore essential. Such a system requires a professional library and information personnel of high quality in sufficient numbers to plan, organize, manage and operate a wide range of libraries, information centres and services; it should be able to draw upon a theoretical foundation established by fundamental research in library and information science. This requires skilled personnel.

LIS education is a professional education and it is a specialized area of human training. The primary aim of education of LIS should be the training of the intellect in matters pertaining to human knowledge and information. Its goal should be the achievement of the higher wisdom in promoting the utilization of knowledge and information for the benefit of mankind. A Chinese proverb says, If you plan for 1 year, plant grain; If you plan for 10 years, plant trees; If you plan for 100 years, plant men. Since our aim is to plan for the growth and development of library profession not only for hundred years but also for all ages to come, we must carefully plant and educate our future generation.

In an article, Murali Prasad and Vithal (2005) emphasized on the provision of humanistic LIS education. According to them, the greatest goals of LIS education system is the all round development of a student, so that he/she can play a positive role in his/her profession at large. This is only possible if human values are made an implicit part of education. In their view humanistic LIS education includes, social and cultural values, capability to access, communication Excellency, personality development, developing a sense of belonging, and guidance and counselling.

They concluded that the trinity of human resources, human values and professional education are crux of LIS and its development in this information Technology (IT) age. Without the harmony of these three, the LIS profession cannot progress. Traditionally speaking we can compare human resources as 'flesh' to human body and human values as 'soul' in the body.

An overview of LIS education

The LIS scene is witnessing a vast change, upheaval and revolution today. With the changing environment caused by automation, digitization, communication technologies, networks, globalization, etc. the awareness of the society has considerably increased making it a more interactive forum. The implication of these new trends demands a change in the present curriculum in such a manner so as to accommodate programs that will equip the professionals with knowledge, skills and techniques to acquire, organize and disseminate information according to the new requirements of the information market.

The LIS education in India may be said to have taken place with the introduction of a training course in 1911, in the erstwhile State of Baroda. The real beginning of systematic education in LIS can be traced to the initiatives of Dr. S.R. Ranganathan during the period 1926-1931 at the Madras University Library in association with Madras Library Association. The summer school leading to certificate in library science, which Madras University continued under the stewardship of Dr. S.R. Ranganathan till 1937. Later, Andhra University, Banaras Hindu University, Bombay University, Calcutta University and Delhi University introduced Post -Graduate Diploma Courses in Library Science in the year 1935, 1941, 1944, 1946 and 1948 respectively. Apart from these universities, DRTC in Bangalore and NISCAIR in New Delhi started the library science education programs. During 1947, altogether 27 universities were offering diploma courses in Library Science. In 1957, for the first time in the country, Aligarh Muslim University started B.L.Sc Course. The courses were offered at different levels such as Certificate, Diploma, Bachelor"s, P.G. Diploma, Master"s and research degree programs i.e. M Phil and Ph. D under different modes (on regular/on campus or distance/off campus or some times both) and schemes (annual or semester). The growth of

universities during post-independent India ensured improvement in the quality of education. It is due to the importance of libraries in various institutions, research centres and government departments, the demand for librarians also increased. This actually gave boost to Library Science Education in India.

Research in Library and Information Science

Chandrashekara and Ramasesh explained that the research in LIS in the past was considered primarily to provide a theoretical foundation to professional practice. The roots of research in LIS profession appears to be not very deep. Research in library science during the Twentieth Century in the area of LIS can be traced to the Library School of the University of Chicago, in mid-1920s. The visionary efforts of the Chicago School bore abundant fruit and offered leadership to the world in library science research. The pace of library research is picking up everywhere today due to social pressure, as well as, inspiration. In justifying the Ph.D. program in our profession, it has been urged that "if librarianship aspires to become a profession, it should depend upon research to develop its knowledge base and its theoretical framework".

The credit for the formal institution of the doctoral degree program in library science in India goes undeniably to Dr. S.R. Ranganathan (1892–1972). In 1951, he started providing Library science education at the University of Delhi, surmounting many difficulties and facing personal ridicule. The University of Delhi awarded the first de jure degree in library science in 1957 to D.B. Krishan Rao who worked on „faceted classification for agriculture". Doctoral research remained in the wilderness when Ranganathan shook the Delhi soil off his feet in 1955. In the 1960s and 1970s some doctorates on library-related topics were earned by library professionals under the guidance and supervision of faculties belonging to the disciplines such as sociology, history, law, economics, management, and the like. The mantle of reviving and furthering doctoral research facilities was assumed by J. S. Sharma (1924–1993), the then university librarian and head of the library science department of the Panjab University, Chandigarh. Under his guidance, the second de jure Ph.D. in library science was awarded in 1977 after a gap of full two decades. Thereafter, there was no looking back. Many universities followed with mostly individual efforts and enthusiasm. Doctoral research got a fillip in the 1980s and gradual improvement in facilities paved ways for India to maintain its Third World leadership in library research and library literature. Ph.D. programmes thereafter, mushroomed even despite the lack of facilities or adherence to standards.

The study has emphasized the perspective of the research activities in library and information science in Indian universities. So far, 802 Ph.D. theses were produced in the LIS subject. Good

number of Ph.D. theses was produced in the field of bibliometrics / scientrometrics / Informatrics, library management, university libraries, indexing system, and information seeking behaviour, and library and information services.

Need for change in LIS education

The demand for trained librarians and documentalists in different kinds of libraries- public, academic, special – is growing. The demand is likely accelerate even further with the establishment of a legislation-based public library system in all the constituent states of India with the efforts to provide better facilities for the education of all persons at different levels – from the primary school to the postgraduate levels – and with the number of research institutions and industries and business houses realizing the value of documentation as the basis for conserving human resources but in the transition stage there will be an imbalance between demand and supply of library and documentation personnel, an uncertainty about the subjects to be taught the duration of the courses.

Globalization and privatization in higher education is effected across the globe. Today the education is being shifted from service sector to commercialization at global level. In the information society the discipline library and information science, which is concerned with information organization is of greater importance to the society. As such there is an urgent need for imparting quality education and training by the Indian Library and Information Science schools, so that the product of these schools can comfortably sit to manage the modern library and information centres and the LIS schools can survive in the global market. There is an immediate requi9rement for changing the syllabi to modern techniques. The library and information professionals should learn the new technology skills.

Following are the skills required for a librarian in the contemporary world:

- Technical skills (ICT)
- Management skills
- Subject skills
- Information skills

History of LIS Curriculum development in India

Following is the brief account presented by Singh and Syed Mohd on curriculum development committees.

LIS curriculum change has been an inevitable continuous phenomenon in India. At the university level, the UGC mainly controls the general course structure of curricula. Since its inception, UGC

has given due emphasis to curriculum design for LIS departments, along with developments in university and college libraries, as evidenced in the following committees.

Ranganathan Committee on Development of University and College Libraries (1959)

Ranganathan committee was constituted for the development of University and college libraries in 1959.

Ranganathan Committee on Library Science in Indian Universities (1965)

The existing curriculum of most universities is based on the recommendation of the Ranganathan Committee and the committee set up by the UGC in 1978. The recommendations made by these committees where mainly for bachelors' level courses, which are outdated and irrelevant in the present day. In the 1980s, a marked change in LIS education programmes was required due to the introduction of information technology into the field. As a result, the next revision was initiated by the UGC in the early 1990s (Ranganathan 1965, Mahapatra 2006).

Kaula Committee on Curriculum Development in Library and Information Science(1993)

To bring a uniform national pattern to LIS education in India, the UGC appointed the Curriculum Development Committee (CDC) in 1990 to restructure the curriculum under the chairmanship of Prof. P.N. Kaula. The report of this committee was published in 1993 under the title "Report of the curriculum development committee on library & information science" (Kaula 1993). The publication of this curriculum helped university departments update their syllabi; however, the report was found unsatisfactory and was not adopted by most universities (Mahapatra 2006).

Karisiddappa Committee on Curriculum Development in Library and Information Science (2001)

Many changes have occurred in the ICT sector, which has had a direct impact on libraries. This caused the UGC to undertake a study on the previous CDC report. The committee discussed all aspects of the curriculum and proposed modular syllabi for Indian universities. The CDC (2001) recommended that "in view of the emerging network environment, in view of the fundamental shift in the goals of the library, and in view of the changes in information storage and delivery mechanisms, the educational programmes should cater the needs of these changed settings by including in their course contents, the knowledge and skills required to function effectively in such an environment". This curriculum enumerated in detail the contents of each module, along with objectives and expected outcomes. The report contains a detailed syllabus for a 2-year integrated program leading to an MLIS, along with the marking pattern, number of credits, and number of hours of teaching theory and practice. This syllabus has proved useful, and soon after its

publication, a majority of Indian universities modified their course structure to adopt it. Now, almost all LIS departments in India have common syllabi for teaching the LIS subjects. There are still some gaps in curriculum, and further revisions and updates are still needed.

Measures already taken

In accordance with the changes in the information demands of the society, LIS education has taken measures relating to its course designation, duration, curriculum, etc, since its inception. Following are some such recent measures:

- Basing on the suggestions of the CDC, many LIS schools shifted from one year BLISc and one year MLISc courses to two year integrated MLISc course.
- To sustain the quality of LIPs, internship, study tour, dissertation/project work are included in the syllabus.
- Many LIS schools established IT labs with the assistance of UGC, India.
- On par with the other disciplines. LIS also shifted to semester pattern.
- In some universities, as a requirement to NAAC, Choice Based Credit System was introduced.

Measures to be taken

- There should be National LIS system consisting of different sub-systems, viz., LIS professional associations system, LIS educational institutions system, Library system under each category (public, academic, special, etc.)
- LIS education must be strengthened with full-fledged, sufficient number of well qualified faculty, infrastructure to meet the needs, and required financial assistance.
- There should be uniformity in LIS curriculum throughout the country. For continuous monitoring of the discipline network of LIS schools is essential.
- Libraries and LIS schools must go hand-in-hand. LIS teachers need to interact with working librarians and vice-versa.
- Board of studies in LIS schools must include other LIS professionals, as members of their boards, so as to invite their views and experiences in the updating of the LIS curriculum.
- Good co-ordination between libraries and LIS schools pave way for better internship and apprenticeship opportunities to budding professionals to face the contemporary challenges.
- Through Industry – Institute Interaction, the thrust areas can be identified, LIS professionals can be trained through continuing education programs, and curriculum can be periodically reviewed and updated.
- Conducting awareness programs, workshops, etc., helps in developing positive attitude and removal of obsolesce among LIS professionals.

- Communication is a very important tool in change management. Communication could be effective by clearly explaining the purpose, visualize the situation, explain the plan and communicate the role to be played by the staff, research scholars, students, and other LIPs in the process of change. Change should involve people but should not be imposed on people.

Conclusion

Information, as the saying goes, is power. The primary object of libraries is to organize and provide access to information. This object will never change, although the format and the methods that are used can change dramatically providing new opportunities and challenges. Higher education, scholarship, technology and economics, which are all interrelated, play an important role in understanding the needs of libraries.

Like their colleagues every where, library professionals in India, particularly those serving at the high tech institutions, are already subject to various challenges. The introduction of computers was a challenge to all librarians. New technology may call for organizational change in the traditional library. Librarians may have to function more like consulting information engineers than as the traditional, passive custodians of information and dispensers of documents, moving from a collection centred model to one that in access and service oriented.

Dr. Ranganathan's fifth law of Library Science tells us about the ever growing nature of libraries. To support this growth, resources must be accumulated, skills must be improved and competencies must be developed. This can be achieved, undoubtedly, through a well planned LIS education system. The most important aspect is that we must learn to manage change before it manages us.

References

Chandrasekhara, M. and C.P. Ramasesh (2009). Library and information science research in India. In the Proceedings of Asia-Pacific Conference on Library and Information Education and Practice.530-537. http://www.tulips.tsukuba.ac.jp/dspace/bitstream/2241/ 102596/ 1/ps_11. pdf

Khan, M.A. (1996). Library science education in India. New Delhi: Sarup.

Murali Prasad, M.R. and K.S.R. Vital (2005). Human values in library and information science (LIS) education. In Proceedings of the Conference on "The Changing context of higher education: Challenges for librarians". (FALA 2005). Hyderabad: Sree Book. 187-192.

Singh, Jagtar (2009). Leadership competencies for change management in libraries: challenges and opportunities. In proceedings of International Conference on Academic Libraries (ICAL 2009), Delhi: Delhi University Library Systems: 310-313.

Singh, Joghinder and Syed Mohd. Shahid (2010). Changing needs of library and information science curricula in India. Library Philosophy and Practice (e-journals). http://digitalcommon.unl.edu/libphilprac/357 (online) [Accessed on June 15, 2011].

Competences for Library and Information Science Professionals: an Assessment

Chandrakumar, V.[1]

The need for competences for Library and Information Science Professionals is well recognised. The main aim of this paper is to asses the competences required for the LIS professionals in the present knowledge society with light of the curriculum of LIS Schools in Tamilnadu (India). To achieve this objective, the syllabi of LIS programmes have been analysed. This paper summarizes the ICT based contents available in their syllabi. And also discusses the trend of LIS education in Tamilnadu. The paper gives suggestions to LIS schools to adopt appropriate strategies to meet the challenges among the LIS professionals in the present era.

***Keywords**: LIS professionals; Professional competence; Professional skills; LIS curriculum; LIS education*

Introduction

The word competence means 'the quality of being competent', 'possession of required skill', or 'capacity'. Like any other professionals, Library and Information Science Professionals also require certain core competences to manage the libraries / information centers in an effective manner. The core skills include information handling, training and facilitating, evaluation and customer service. Skills such as cataloguing, classification, indexing, enquiry work and user education are all applicable in the new information age, and all have a place in facilitating the effective use of the Internet. The new managerial roles of LIS professionals are advocate, consortia manager, consultant, content manager, facilitator, guide/teacher, intermediary, knowledge manager, researcher, sifter, web designer, etc.

The effects of technological innovation and socio-cultural changes have an enormous impact on the information profession. The Library and Information Science professionals are to be well informed and highly skilled in information retrieval and evaluation, irrespective of format (Hallam, 2006).

IFLA has highlighted the importance of skills within professional courses, "Methods of teaching and assessment should be designed to develop or enhance students' interpersonal communication

[1] Dr. Chandrakumar, V., Assistant Professor, Department of Library & Information Science, University of Madras, India.
vcakilan@gmail.com

skills, ability to work in teams, and time and task management skills. At the professional level, emphasis should be placed on developing students' analytical and problem-solving skills" (IFLA, 2000).

The IFLA's (2000) guidelines for professional library / information educational programs recommended that the core elements in an LIS curriculum should include:

- the information environment, information policy and ethics, the history of the field;
- information generation, communication and use;
- assessing information needs and designing responsive services;
- the information transfer process;
- organization, retrieval, preservation and conservation of information;
- research, analysis and interpretation of information;
- applications of information and communication technologies to library and information products and services;
- information resource management and knowledge management;
- management of information agencies;
- quantitative and qualitative evaluation of outcomes of information and library use.

The Association of College and Research Libraries recommended that library schools should train graduates in theory, principles, and history of librarianship; in-depth knowledge of the higher education environment; preparation for scholarly work; understanding technological issues; conducting information literacy programs; planning and management; assessing library effectiveness; knowledge of legal and policy issues; consideration of ethical issues; and understanding and appreciation of diversity (Reichel, 1999).

Naylor (2000) mentioned eight advantages of developing and improving core competencies in libraries:

- Better human resource planning;
- More effective training programs;
- A list of critical technological capabilities;
- An opportunity for a strength-weakness analysis;
- Help with outsourcing options;
- Guidance for development or change;
- Vision of the whole organization; and
- Innovation is required for survival.

The new managerial roles of LIS professionals are advocate, consortia manager, consultant, content manager, facilitator, guide/teacher, intermediary, knowledge manager, researcher, sifter, web designer. The electronic environment of the 21st century will demand a range of skills from by LIS professionals, including:

- Technical skills;
- Information Technology (IT) skills; and
- Managerial skills.
- The National Knowledge Commission, India, outlined the skills required fulfilling the changing roles of libraries are:
- Library and information handling skills
- Service orientation
- ICT knowledge skills
- Communication and training skills
- Marketing and presentation skills
- Understanding of cultural diversity
- Knowledge mapping skills

Because of the rapid shift toward an information- and knowledge-oriented society, librarians and information professionals need to develop the required knowledge and skills to take advantage of ICT (Miwa, 2006).

Specifically, digital librarians are required for the purposes outlined below, among a host of emerging functions:

- To manage digital libraries;
- To organize the digital knowledge and information resources;
- To disseminate digital information from computer-held digital information;
- Provide digital reference services and other electronic information services;
- To provide knowledge mining from the emerging knowledge warehouses;
- To handle the tasks of mass digitization, digital storage process and digital preservation;
- To provide universal access and retrieval of digital knowledge, ultimately access to all knowledge resources available in digital form;
- To catalogue and classify digital objects and digital knowledge.

More specifically, one can consider the changes related to a major commitment to electronic journals alone:

- Communicating awareness of the e-journal collection to users;
- Obtaining institutional funding and support;
- Joining consortia and other "buying clubs";
- Contract negotiation and review;
- Setting and revising strategies for e-resource acquisition;
- Building a library staff with appropriate skills; and
- Managing the change.

ICT knowledge skill in one of the main and important skills / competences required for LIS professionals in the present Information / knowledge society. Thus, need for asses whether sufficient amount of ICT based courses incorporated in syllabi of LIS programmes or not.

LIS Education in India

The LIS education developed in India ahead of many developing countries, and has a strong foundation with significant contributions of stalwarts in the field. The formal Library Science Education in India was started by W.A. Burden at Baroda in 1911 and in Punjab University in 1915. Gradually other universities and library associations like the Madras Library Association (1929), the Bengal Library Association (1935), Madras University (1931), Andhra University (1935), Banaras Hindu University (1941), Bombay University (1944), Calcutta University (1946), and Delhi University (1947) started the Library Science programme. It was Dr S.R.Ranganathan who converted the certificate course to one year postgraduate diploma course in librarianship and later introduced masters and research programmes in the Delhi University. He was one of those renowned librarians who contributed substantially through their theoretical investigations to the recognition of library and information science as a scientific discipline (Varalakshmi, 2007).

More than 100 universities and institutes are offering courses in LIS at various levels [UGC, 2002). There are six levels of LIS education programmes, viz., Certificate, Diploma, Bachelor's, PG Diploma, Master's and Research degrees (Talwar, 2005).

Quality assurance has become a global issue for higher education, particularly due to prosperity and the resulting employability of the LIS professionals. Ramesha and Ramesh Babu (2007) also indicate the need for changes in the curriculum of LIS courses in view of the changing conditions and demands. Particularly at Master's level, special courses such as computer applications, system analysis, industrial information and medical information systems, expert systems, knowledge management, economics of information, marketing of information, digital libraries, etc., have been

introduced. Varalakshmi (2007) pointed out that the major challenge for LIS education now is to be with the technology.

Many countries experienced name changes from "library science" to "library and information science" in the 1980s and 90s, reflecting market demand for ICT information handling skills. Recently, some colleges/universities in these countries amended the names of their programs by getting rid of the word "library" while shifting the core of these programs from traditional print-oriented library and information science to ICT and knowledge-oriented informatics (Miwa, 2006).
Lack of infrastructure available at the LIS departments, lack of ICT access to LIS learners and teachers, lack of financial resource to augment and adopt the latest innovative means, lack of perception on the part of LIS learners, and lack of interest on the part of LIS teachers are the some of the barriers are confronting the use of ICT in the training and education of LIS in India (Ramesh Babu, 2001).

The job markets for the LIS professionals in India is not only traditional stakeholders such as public, academic libraries but also special libraries such corporate sectors.
Trends and issues in LIS education can be addressed in the following areas: (1) the current state of LIS education, (2) qualification systems for librarianship, (3) recent changes in curricula and job markets for certified librarians, and (4) collaboration and credit exchanges with other higher-education institutions in nearby countries (Miwa, 2006).

Objective

The main aim of this paper is to asses the competences required for the LIS professionals in the present knowledge society with light of the curriculum of LIS Schools in Tamilnadu (India). The objective includes to analyze the content of the syllabi of the LIS Schools; whether the syllabus included sufficient amount of the content on ICT based courses or not; and to assess the trends in LIS education to meet the ICT based skills required for LIS professionals.

Means and methods

To achieve the objective of the paper, the syllabi of various LIS schools have been studied. The predictable skills required have been compared with syllabi and teaching pattern to the students has been examined. The courses of Library & Information Sciences in Tamilnadu universities have been included in the study. The LIS schools in Tamilnadu have a range from oldest school to very recently emerged one. Amongst schools only the Annamalai University, Annamalainagar, Bharathidasan University, Tiruchirappalli, Bishop Heber College, Tiruchirappalli, University of Madras, Chennai and Pondicherry University, Puducherry have been included in the study. The

other universities offered LIS Programme are: Alagappa University, Karaikudi, Madurai Kamaraj University, Madurai, AVVM Sri Pushpam College, Poondy (Thanjavur Dt). The following universities were offered LIS Programmes and now closed their Departments due to various reasons: Bharathiar University, Coimbatore, Sri Chandrashekhara Sarawathi Viswa Mahavidyala, Kancheepuram, Manonmaniam Sundranar University, Tirunelveli, Gandhigram Rural Institute, Gandhigram (Dindugul Dt). The following institutions have started Library & Information Science programmes in under-graduate level and not take-off in the successful manner are Ramasamy Meekshi College, Udayarpalam and St. Peters University, Chennai.

Inferences and discussions

The LIS courses in the universities are in different levels and in two different modes such as Regular stream and through Distance Education. They offered courses from Certificate level to Research Programmes. The courses in Tamilnadu Universities are in the nomenclature of CLIS, BLIS, MLIS (one year programme / two year – integrated) / MLISc / M.Sc (Library & Information Science – offered by the University of Madras). It is noted that University of Madras has introduced LIS Programme as M.Sc – Information Science then again changed to Library & Information Science. The syllabi of the LIS Programmes in Tamilnadu has been updated / modified regularly. All the Universities moved to 'Choice Based Credit System' (CBCS) as per the guidelines framed by the Tamilnadu State Council for Higher Education.

The courses in the CBCS are two kinds: core and elective apart from soft skill courses to be taught compulsorily. The candidates should complete minimum required core courses and also can choose elective courses within the Department and/or in other Departments. If it is core course a candidate compulsorily opt that course, whereas if the course is tagged as elective course a candidate can opt or not depends upon his/her desirability and requirement.

All most all the LIS schools have introduced ICT based courses in their syllabi. It can be in the following categories:

Theory - Lecture oriented
Practical - Hands-on training in the Lab / Class rooms
On-site training - Internship / Summer courses in the Libraries / Information Centres
Special courses - (a) Seminars / Workshops / Conferences
(b) Training Programme
(c) Lecture – Demonstration

Based on the analysis of the content of the curriculum, the following inferences have been drawn:

- All the Universities are having a course on 'Introduction to Information Technology' Which contains basics about computer, networks and networking and introduces the library application software.
- All the programmes give importance to the operating systems such as *MS Windows, UNIX,* etc.
- Library automation is one of prime areas in ICT related courses in LIS Programmes.
- In Library automation, provision is made available to write programs for house-keeping operations in chosen software.
- All the Schools recognized the need for inclusion of content on E- Resources and included either as core course or in as elective course.
- Data analysis with particular software also given emphasize in the syllabus.
- Web technology also became a part of syllabi in the LIS Programmes.
- Importance given to communication tools and techniques focusing the telecommunication methods.

A field work has been introduced in the syllabus with the objective to enable the students to have first hand experience by working in various libraries and information centres. The Bharathidasan University and Bishop Heber College have introduced 'field work' in their syllabus. These institutions identified some of the important libraries within the city which include public, academic and special libraries to get hands-on experiences by the students. The students will work one day in a week in any one of the selected libraries. Thus they spend about 120 hours in the whole semester for fieldwork. The field work is to be done during the fourth semester.

On the other hand, the University of Madras introduced 'Internship' programme to their students with the same objective. The students can select any libraries to do Internship within the city and outside the city. The course was designed with 2 credits weight-age and students to work with one during summer vocation i.e., between second and third semesters. Same practice is followed in the Pondicherry University.

The courses in various universities / institutions (vide Appendix –I) shows that importance was given to ICT based curriculum. However, it is in the form of theory-based approach. The trends in LIS education in Tamilnadu moving towards the internationalization and globalization of LIS education with following ideas:

Renaming the Nomenclature: The University of Madras LIS School has changing the nomenclature from the Department of Library Science to the Department of Library & Information Science and to Department of Information Science.

CBCS System: Presently the uniform curriculum pattern is emphasized by the State Government, particularly the Choice Based Credit System (CBCS). In that pattern, there is avenue to incorporate and to up-to-date subject content whenever required. This will help to LIS Schools in Tamilnadu modify/ up-date the course content particularly ICT components.

Accreditation System: Singh (2003) expressed that to achieve academic excellence, it is of utmost importance that standards and norms of education are prescribed and adherence to them be made mandatory. Unfortunately, there is no national accreditation body for LIS education in India. India has to think about the national accreditation or certification system like western countries to ensure the quality higher education system in LIS.

UGC Model Curriculum – 2001: The University Grants Commission (UGC) has developed a Model Curriculum for the LIS education. The National Eligibility Test is being conducted for appoint teachers in LIS Schools and library professionals in the colleges / universities by the UGC based on the Model Curriculum. The LIS Schools in Tamilnadu should adopt / adapt the curriculum by the UGC's Model Curriculum, which will help to get eligibility for appointments.

Integrated Course: Instead of imparting the course as one year programme, two-year integrated programme is ideal for include all the necessary components in the syllabi of the LIS course.

Workshop Approach: Attention is therefore being paid to new teaching and learning approaches, moving away from the conventional lecture/tutorial model to a workshop format, and migrating from the traditional 13 week course to intensive programs such as 5 full days, with assessment to follow in the subsequent weeks. Seminars, tutorials, assignments and field tours should be effectively integrated with curricula involving outside experts and agencies.

Conclusion

Libraries generally agree that staff need to be multi-skilled with a broad set of library and information management skills. What needed are strategic thinkers, people who see and understand the big picture and the environment within which their library operates. These people also need the ability to be adaptable, flexible, to take risks, to embrace innovation and to be realistic about what can be done.

Another trend one can see world over closure of LIS schools and creation of new structures for institutions mainly through the merger and re-orientation of academic departments. The integration of ICTs in LIS curricula is still problematic in Eastern and Southern Africa largely due to resource support. In order to make LIS education relevant and current, there is a strong integration of new courses such as knowledge management, information literacy, multimedia, media and publishing studies, records management and basic computer technology into LIS curricula in general or as separate degree qualification programmes (Ocholla and Bothma, 2007).

As Miwa (2006) pointed out clearly that, though each program tries hard to balance LIS education with an IT emphasis in response to market demands, many of them are facing problems in expanding LIS education to meet the requirements for information professionals in an IT-based society. At the same time, it becomes more and more difficult to attract new students into traditional library oriented programs, as graduates tend to have difficulty securing employment. This situation calls for a radical reform of the curricula and systems of LIS education, by taking into consideration the market needs of the entire information service industry.

In the past, the entry-level qualification was sufficient for a librarian's future career, but today graduates need to be fully aware of the pace of change which will demand an open mind and commitment to ongoing learning throughout their whole career (Hallam, 2006).

In times of economic globalisation, cross-country mobility of the work force and with more employment opportunities in multinational companies coming up, the cooperation schemes and developing strategies for strengthening the ties between LIS Schools is warranted.

References

Hallam, G. (2006). Trends in LIS education in Australia. In C. Khoo, D. Singh & A.S. Chaudhry (Eds.), Proceedings of the Asia-Pacific Conference on Library & Information Education & Practice 2006 (A-LIEP 2006), Singapore, 3-6 April 2006 41-51. Singapore: School of Communication & Information, Nanyang Technological University

International Federation of Library Associations and Institutions (IFLA). (2000). Guidelines for professional library/information education programs. http://www.ifla.org/VII/s23/bulletin/guidelines.htm (Online). [Accessed on February 3, 2006]

Miwa, M. (2006). Trends and issues of LIS education in Asia. In C. Khoo, D. Singh & A.S. Chaudhry (Eds.), Proceedings of the Asia-Pacific Conference on Library & Information Education & Practice 2006 (A-LIEP 2006), Singapore, 3-6 April 2006, 18-26. Singapore: School of Communication & Information, Nanyang Technological University.

Naylor, R.J. (2000). Core competencies: what they are and how to use them. *Public Libraries*, 39,108-14.

Ocholla, Dennkis and Bothma, Theo (2007). Trends, challenges and opportunities for LIS education and training in Eastern and Southern Africa. New Library World, 108 (1/2), 55-78

Ramesh Babu, B. (2001). Training and education for LIS in India: Today and tomorrow. In Proceedings of the 9th International BOBCATSSS Symposium on Library and Information Science, Vilnius University, Lithuania, 29-31 January, 316-24.

Ramesha and Ramesh Babu (2007). Trends, Challenges and Future of Library and Information Science Education in India. DESIDOC Bulletin of Information Technology, 27 (5), 17-26

Reichel, M. (1999). Issues in higher education and library and information studies education. Background paper prepared for the ALA Congress on Professional Education. www.ala.org/congress/acrl.html (Online) [Accessed on April 5, 2011]

Singh, S.P. (2003). Library and information science education in India: issues and trends. Malaysian J. Lib.Infor. Sci., 8 (2), -17.

Thalawar, V.G. (2005). Quality education in library and Information science: Some issues. In IATLIS National Conference on Quality Education In Library and Information Science, Keynote Address, 27-29 October 2005, Bishop Heber College, Trichy.

UGC Model Curriculum for Library and Information Science. (2002). UGC, New Delhi.

Varalakshmi, R.S.R. (2007). Need for National Consensus on Library and Information Science Education in India. DESIDOC Bulletin of Information Technology, 27 (2), 13-20

Appendix – I

ICT Based Courses in the LIS Programme

Name of the University	**Name of the Course**	**Semester**	**Theory (T) / Practice (P)**	**Core (C) Elective (E)**	**Credits**
Annamalai University	Introduction to Information Technology	IV	T	C	3
	Computerised Database & Internet	-	T	E	3
	Documentary and Electronic Information Sources	-	T	E	3
Bharathidasan University	Library Automation (Theory / Practice)	III	T/P	C	3
	Information Technology	III	T	C	3
Bishop Heber College	Library Automation (Theory)	I	T	C	4
	Information Technology	II	T	C	4
	Library Automation (Practice)	III	P	C	4
	SPSS and MS Office Practice	III	P	C	4
	5. E-Resources	II	T	E	4
University of Madras	Introduction to Information Technology	I	T/P	C	3
	Information and Communication Technology	III	T	C	3
	Digital Libraries	IV	T/P	C	3
	Web Technology	-	T	E	3
	E-Publishing	-	T	E	3
Pondicherry University	Introduction to Information Technology	I	T	C	4
	Information Technology (Practice)	III	P	C	4
	Digital Libraries	IV	T	C	4
	Web Technology	IV	T	E	3
	E-Publishing	IV	T	E	3

PART 5

Institutional Regime for Knowledge Society

Session Chair – Mrs. S.C. Jayasuriya

Librarian, University of Colombo, Sri Lanka

Role of National Knowledge Commission in Access to Information: A Case Study of India

Choudhary, Aparna Sanjay[1] and Hirwade, Mangala Anil[2]

National Knowledge Commission (NKC) was constituted on 13th June 2005 with a time-frame of three years, from 2nd October 2005 to 2nd October 2008 which was extended to 31st March 2009. It is a high-level advisory body to the Prime Minister of India, with the objective of transforming India into a knowledge society. In its endeavour to transform the knowledge landscape of the country, the National Knowledge Commission has submitted around 300 recommendations on 27 focus areas during its three and a half year term. While the term of the NKC has come to an end, the implementation of NKC's recommendations is currently underway at the Central and State levels. NKC has identified five focus areas viz. Access to Knowledge; Knowledge Concepts; Creation of Knowledge; Knowledge Applications and Delivery of Services. Providing access to knowledge is the most fundamental way of increasing the opportunities of individuals and groups. Therefore, it is essential to revitalize and expand the reach of knowledge in society. In this context NKC has submitted recommendations on areas such as Right to Education, libraries, translation, portals and knowledge networks. The paper takes a detailed overview of the NKC recommendation in the focus area – Access to Knowledge. It also focuses on the developments and various initiatives taken at various levels based on these recommendations to facilitate Access to Information or Knowledge.

Keywords: *National Knowledge Commission, India, Access to Information*

Introduction

Knowledge has been recognized as the key driving force in the 21st century and the ability of any nation to emerge as a globally competitive player substantially depends on its knowledge resources. To foster generational change, a systemic transformation is required that seeks to address the concerns of the entire knowledge spectrum. This massive endeavour involves creating a roadmap for reform of the knowledge sector that focuses on enhancing access to knowledge, fundamentally

[1] Dr. Choudhary, Aparna Sanjay, Librarian, Smt Binzani Mahila Maha Vidyalaya, India
aparnachoudhary1@gmail.com

[2]Dr Hirwade, Mangala Anil., Assistant Professor, Department of Library & Information Science, RTM Nagpur University, India
hmangala@rediffmail.com

improving education systems and their delivery, re-shaping the research, development and innovation structures, and harnessing knowledge applications for generating better services.

Keeping this scenario in mind, the National Knowledge Commission (NKC) of India was constituted in June 2005 by the Prime Minister Dr. Manmohan Singh, under the Chairmanship of Mr. Sam Pitroda, to prepare a blueprint for reform of the knowledge related institutions and infrastructure which would enable India to meet the challenges of the future.

The Terms of Reference of NKC are

- Build excellence in the educational system to meet the knowledge challenges of the 21st century and increase India's competitive advantage in fields of knowledge.
- Promote creation of knowledge in Science and Technology laboratories.
- Improve the management of institutions engaged in Intellectual Property Rights.
- Promote knowledge applications in Agriculture and Industry.
- Promote the use of knowledge capabilities in making government an effective, transparent and accountable service provider to the citizen and promote widespread sharing of knowledge to maximize public benefit.

Focus areas of NKC

At the heart of NKC's mandate are five key areas related to Access, Concepts, Creation, Applications and Services. It has addressed the question of how to build a knowledge society from these perspectives, with particular focus on access to knowledge. Figure 1 shows the pentagon of Knowledge Pentagon.

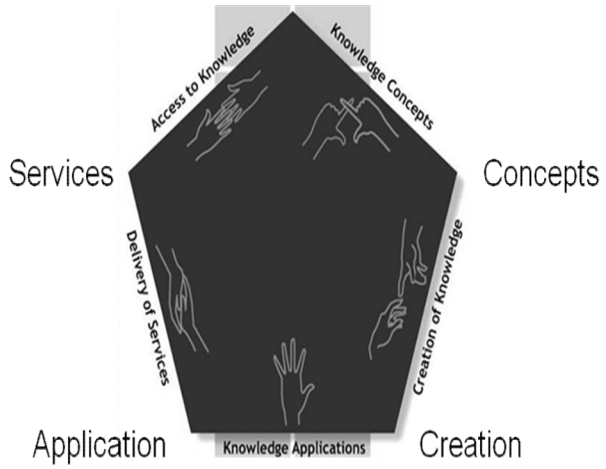


Figure 1: Knowledge Pentagon

The pentagon of knowledge covers following focus areas

- Access: It covers Right to Education, Literacy, Translation, Libraries, Language, Networks and Portals
- Concepts – Education: It includes School, Vocational, Higher, Professional, Open and Distance, More Talented Students in Maths and Science and More Quality Ph.Ds
- Creation: It includes Innovation and Entrepreneurship, Intellectual Property Rights and Science and Technology
- Application: It covers Traditional Knowledge, Agriculture; and Small and Medium Scale Enterprises
- Services: It includes e-Governance

Focused areas under access to knowledge

NKC has focused on following six areas in order to enhance the access to knowledge. These are

Right to Education

The 86th Constitutional amendment act made the Right to Education a Fundamental Right. However, to enhance universal access to quality education for Indian children, NKC recommends that there is a need for a central legislation affirming the Right to Education. This must entail a financial provision requiring the central government to provide the bulk of the additional funds needed for realizing the Right to Education.

Language

In multilingual country like India, the education must be imparted in home languages at the same time the international knowledge cannot be ignored. NKC has interacted through informal consultations on this subject with a wide range of people in government, academia, media and industry, including Chief Ministers of States, Members of Parliament, people in professions such as medicine and law and civil society organizations and provided the recommendations.

Translation

In a multilingual country, translation should play a critical role in making knowledge available to different linguistic groups. NKC has recommended developing translation as an industry and setting up a National Translation Mission with a focus on promoting translation activities across the country.

Libraries

To revamp the Library and Information Services (LIS) sector NKC has recommended a comprehensive census of libraries, modernizing management of libraries to ensure greater

community participation, including models for public private partnerships in LIS development and leveraging ICT for various applications.

Portals

NKC has also proposed the creation of national web based portals on certain key sectors such as Water, Energy, Environment, Teachers, Biodiversity, Health, Agriculture, Employment, Citizens Rights etc. The portals would serve as a single window for information on the given sector for all stakeholders and would be managed by a consortium consisting of representatives from a wide range of stakeholders to ensure that they have a national character.

National Knowledge Network

The key to successful research today demands live consultations, data and resource sharing. Towards this end, NKC has recommended the establishment of a high-end National Knowledge Network connecting all knowledge institutions in various fields and at various locations throughout the country, through an electronic digital broadband network with gigabit capacity.

Recommendations of NKC

NKC has provided certain recommendations in each of the focus area to improve the access to knowledge. These are

Right to Education: Recommendations

NKC believes that providing universal access to quality school education is a cornerstone of development and a minimum necessary condition for any progress towards making India a knowledge society. The recommendations are

- Central legislation: Legislation at the national level is required to affirm the Right to Education, which is a fundamental right mandated by Article 21A.
- Financial commitment: The Central Government must provide the bulk of the additional funds required to ensure the Right to Education.
- Time frame: The state-level legislation should specify the period within which universal education of reasonable quality is sought to be achieved, preferably within three years.
- Schedule of norms and standards: To ensure a minimum quality of education, it is important to have a schedule of norms for all schools to follow. The model bill does not have such a schedule of norms, and there is no specification of the minimum quality of education that schools should provide.
- Specification for teachers: Since teachers are critical in ensuring the quality of education, laying down well-defined but flexible norms for the minimum qualifications of teachers is particularly important.

- Justiciability: Any right, including the Right to Education, is only meaningful if it is justiciable. However, in the model bill sent to state governments, the onus is placed on parents/ guardians of the child. The responsibility of the Government, at different levels, must be recognized and made justiciable.
- Redressal mechanism: To ensure justiciability, a redressal mechanism should be outlined and an appropriate procedure must be set in place for students or parents in case the right is not upheld.
- Universal schooling: School education must be provided to all, which necessarily also requires that children of the disadvantaged, landless and minority communities must also be integrated, along with children with disabilities or special needs. This requires there should be no distinction made in terms of the type of schooling provided within the government system, for children from different social, economic and cultural backgrounds.

Language: Recommendations

In a multi-lingual country like India language is relevant not only as a means of communication or a medium of instruction but also as a determinant of access. Increasingly an understanding of, and a command over the English language, is perhaps becoming the most important determinant of access to higher education, employment possibilities and social opportunities. The recommendations are

- In multilingual / mixed medium school system, English and Indian languages should be treated at par.
- Both English and the home language of the student / the regional language should be taught right from Class I, primarily for communication (not emphasizing grammar at this stage) and also as tools to access information.
- There should be a provision to learn a third language from Class V onwards but it will not be compulsory.
- To bridge the current divide between English-medium and regional language medium schools, and recognizing that language teaching is not to be confined to the language class alone, all schools shall teach some non-language subjects, chosen by the school, in English, and others in the regional language, making sure however that the child's learning the subject is not hampered in any way.
- Appropriate steps should be taken to create language learning opportunities outside the class room.
- Conventional ways of teaching language should be supplemented by setting up small resource libraries at the class room level.

- Graduates with high proficiency in English and good communication skills be inducted without formal teacher-training qualification. They would be selected through an appropriate procedure and then given a short–term orientation.
- A National Training Service (NTS) should be set up for recruitment of language teachers and for certification of language competence.

Translation: Recommendations

High quality translated material is vital for increasing the access to knowledge in many critical areas, and for strengthening people's participation in education and the creation and dissemination of knowledge. However the current facilities for translation are inadequate and less than socially optimal.

Some of the issues under consideration of National Knowledge Commission are:

- Development of translation as an industry
- Promotion of printed as well as virtual publications
- Translate pedagogic materials and providing quality training for translation
- Projection of Indian languages and other literatures in South Asia
- Establishing a storehouse of information on translation

The NKC recommendations are

- There is an urgent need for expansion of quantity and improvement of quality of translation of different types (human, machine-aided, instant, etc.) and in different domains (literary, scientific, technical, business, etc.) that would provide greater access to knowledge across the country.
- Provide impetus for developing translation as an industry in the country.
- Establish a store-house of information on all aspects of translation involving Indian languages, and to make this available by creating, maintaining and constantly updating information on translations published, training programmes, translation tools/instruments and new initiatives, and facilities such as a 'National Register for Translators'.
- Promote printed as well as virtual publication of works on translation studies. Further provide a clearing house for all translation activities, both in theoretical and applied subjects, in as many Indian languages as possible.
- Create and maintain various tools for translation, including digital tools like Thesauri, Bilingual Dictionaries and software for translation. In addition, promote machine translation, leveraging emerging technologies to provide rapid and large volume of translation at a relatively low cost.

- Provide quality training and education for translators. Some ways this could be done include short term training programmes, course packages for translators that could be incorporated in the language teaching programmes, and fellowship programmes and research projects to encourage quality students. There is also need for guidance in the methodology of translation and undertake activities to enrich teaching and training activities in translation studies.
- Translate pedagogic materials at all levels (including primary onwards to tertiary education) specifically in natural and social sciences.
- Project Indian languages and literatures within South Asia and outside through high-quality translation.
- Set up a national web portal on translation as a one stop shop for all information on translation and to provide a forum for dialogue by creating a bulletin board for people to post questions and answers.
- Organize annual National Conferences on translation to take stock of activities and initiatives in the field, attended by experts, industry and practitioners in the field.
- Promote book launches, festivals, fellowships and prizes etc. and encourage collaborative translation work, as well as long-term multi-translator projects, and organise workshops for translators to interact and exchange views and experiences.

Libraries: Recommendations

The issues under consideration of National Knowledge Commission are:

Institutional framework of libraries;

- Networking;
- Education, training and research;
- Modernization and computerization of libraries;
- Maintenance of private and personal collections and
- Staff requirements to meet changing needs.

The recommendations are

- Set up a National Commission on Libraries: A permanent, independent and financially autonomous National Commission on Libraries should be eventually set up by the Central Government as a statutory body to address all the information and learning needs of the citizens of India. To launch the process in mission mode, a National Mission on Libraries should be set up immediately, for a period of three years. The Mission should subsequently be converted into a Permanent Commission.

- Prepare a National Census of all Libraries: A national census of all libraries should be prepared by undertaking a nation-wide survey. Collection of census data on libraries would provide baseline data for planning.
- Revamp LIS Education, Training and Research facilities: The proposed Mission/ Commission on Libraries must assess as soon as possible the manpower requirements of the country in the area of LIS management, and take necessary steps to meet the country's requirement through LIS education and training. To keep the LIS sector abreast of latest developments, necessary encouragement should be given to research after evaluating the research status in this field. Establishing a well equipped institute for advanced training and research in library and information science and services would provide the necessary impetus to this task.
- Re-assess staffing of libraries: In the changed context, it is necessary to assess the manpower requirements for different types of libraries and departments of library and information science, keeping in mind job descriptions, qualifications, designations, pay scale, career advancement, service conditions, etc.
- Set up a Central Library Fund: A specified percentage of the Central and State education budgets must be ear-marked for libraries. In addition, a Central Library Fund should be instituted for upgrading existing libraries over a period of 3-5 years. Initially, the value of funds from the Government sector may be Rs. 1,000 crores, which may be matched by the private sector through corporate philanthropy.
- Modernize library management: Libraries should be so organized and the staff so trained that they become relevant to user communities (including special groups) in every respect. Also, to optimize resources, efforts should be made to synergize the strengths of different types of libraries through innovative collaboration.
- Encourage greater community participation in library management: It is necessary to involve different stakeholders and user groups in the managerial decision-making process of libraries. Public libraries must be run by local self-government through committees representing users of the library. These committees should ensure local community involvement and should be autonomous enough to take independent decisions to conduct cultural and educational community based programmes. Libraries should integrate with all other knowledge-based activities in the local area to develop a community-based information system. In the rural sector, the responsibility for village libraries/ Community Knowledge Centres must lie with the Panchayats. These should be set up in close proximity or on the premises of schools.

- Promote Information Communication Technology (ICT) applications in all libraries: The catalogues of all libraries should be put on local, state and national websites with necessary linkages. This will enable networking of different types of libraries and setting up of the National Repository of Bibliographic Records and a centralized collaborative virtual enquiry handling system using the latest ICT.
- Facilitate donation and maintenance of private collections: There are numerous rich private and personal collections in India which need to be identified, documented and preserved for posterity.
- Encourage Public Private Partnerships in LIS development: Philanthropic organizations, industrial houses and other private agencies should be encouraged through fiscal incentives to support existing libraries or set up new libraries.

National Knowledge Network: Recommendations

Extensive educational infrastructure and resources are required to meet the challenge of producing quality trained personnel in sufficient numbers in the country. While the requirement of having sufficient numbers of quality educational institutions with adequate research facilities cannot be compromised, it is understood that one way of meeting this challenge is to share the existing educational material, equipment and facilities available in the limited number of centres of excellence, with a large number of universities and technical, agricultural and medical institutions throughout the country. National Knowledge Commission undertook a project to explore the possibility of establishing an efficient and cost effective network design to interconnect all Universities, R&D institutions, S&T institutions; Health service facilities, Agriculture research and extension institutions and Libraries in the country (possibly several thousand nodes) with an access speed of at least 100 Mbps.

The Recommendations are

- Build a National Knowledge Network with gigabit capabilities to connect all universities, libraries, laboratories, hospitals and agricultural institutions to share data and resources across the country.
- The network should consist of a Core using Internet Protocol (IP) and Multi-Packet Labelled Services (MPLS) technology, an Aggregation or Distribution network, and an Access or Edge network linking the institution's local area network (LAN) to the Core.
- The question of whether the network for e-governance and the Knowledge network should be one single network assumes importance and relevance depending upon the approach adopted for the realization of the network. In the recommended approach in the first phase, namely VPNs on commercial MPLS networks on Dense Wavelength Division

Multiplexing (DWDM), this question becomes irrelevant because several VPNs can be created on a commercial network and they could be entirely un-correlated, as may be the case with these two networks.

- Methods will have to be evolved both at the time of commissioning of the network as well as during operations, to ensure security of data along with privacy and confidentiality. Access to data from the Data Centre of a given institution should be under the control of the institution being addressed. An arrangement for authentication and authorization, with the participation of the connected institutions is essential to launch the network.
- The proposed broadband network envisages 100 Mbps or higher access bandwidth and therefore almost all the user institutions will have to upgrade their networks to be able to cater to these speeds. While several institutions may have the resources for doing so, a large number will need one time capital support to set up Fast Ethernet LAN (FELAN) which includes expenditure on routers, switches and optic fibre cable on the campus.
- The Knowledge Net initially proposed to be launched on existing commercial networks will therefore involve a recurring cost of Rs. 20-40 lakhs per institution connected, amounting to Rs 200-400 crores annually for 1000 institutions in the first phase. In addition there will be a one time capital investment in upgrading the LANs of these institutions to a 100 Mbps capability Fast Ethernet LAN.
- To ensure day to day coordination, operation and efficient utilization we recommend establishing a Special Purpose Vehicle (SPV) consisting of major stakeholders. Such an SPV should have professional experts pooled from various stakeholder institutions for coordinating and guiding various private vendors for speedy implementation. The policy, security and overall management should be the responsibility of the SPV and the operational support requirements should be met by the industry. One of the compelling reasons for such a mechanism is to provide assurance that the use of cyber space will in no way compromise the security concerns of the country.
- The Knowledge Network should be owned by the SPV consisting of major stakeholders. Government ownership is not desirable, despite the fact that substantial funding will be from the government.
- The type of trained manpower needed, though not large, is in great demand in the market, and therefore will require special remuneration and incentives.

Portals: Recommendations

A web portal is essentially a web site or service that offers a single point of access to information on a given subject and allows users to share and create a broad array of resources and services, such as case studies, e-mail groups, forums, search engines, within that sector. The NKC recognises that as

the drive towards decentralization, right-to-information, people's participation and transparency sweeps the country; tools like public portals can play an important role in ensuring that more people exercise their rights.

In this context NKC has adopted the following procedure for setting up of public portals on certain key sectors:

- Identification of champion/lead organization/s.
- Submission of proposal on architecture of the portal by the champion organization/s for consideration of the Commission.
- Identification of stakeholders and partners and setting up of framework for portal management.
- Development of content.
- Launch of Portal

Action taken

- The Government has been committed to implementing the Commission's recommendations. The action taken includes:
- Right to education: The Right of Children to Free and Compulsory Education Bill, 2008 has been introduced in the Parliament.
- School education: Under the Scheme for Universal Access and Quality at the Secondary Stage, 6000 high quality Model Schools are being set up, with at least one school in each Block. The first stream will consist of 2500 public funded schools (2000 in KVs and 500 in NVs template) in the Educationally Backward Blocks which have a significant SC, ST, OBC and minority population. The second stream of about 2500 schools would be set up through Public Private Partnership in other Blocks with emphasis on geographical, demographic, gender and social equity. Modalities for the remaining 1000 schools have yet not been finalized.
- English language teaching: Twenty five states have already introduced English as a subject from Class I. With the help of NCERT and CIEFL, the MHRD is guiding English Teaching in schools in the states/UTs by developing appropriate curriculum, materials and training of teachers with skills in English.
- Vocational Education and Training (VET): For expansion, redesign and quality enhancement of VET in the country a three tier structure has been constituted in July 2008 under the National Skill Development Mission (NSDM) consisting of:

- National Council on Skill Development: The functions of the Council under the Prime Minister would be to lay down policy objectives, strategies, financing and a governance model to promote skill development.
- National Skill Development Coordination Board: The Board will enumerate strategies to implement decisions of the Prime Minister's National Council on Skill Development. It would develop operational guidelines and instructions for meeting larger objectives of skill development needs of the country and also make appropriate practical solutions and strategies to be adopted by the Union and State Governments.
- National Skill Development Corporation: It will develop a system of institutionalizing measures to this end.

Higher and Technical Education

- To expand capacity and improve quality of higher education, the Government has sanctioned the setting up of 15 new Central Universities and 14 new Universities based on world-class standards.
- The Government is in the process of setting up eight Indian Institutes of Technology (IITs), 10 National Institutes of Technology (NIT), 20 Indian Institutes of Information Technology (IIITs) as far as possible in the Public-Private Partnership mode, three Indian Institutes of Science Education and Research (IISERs), seven Indian Institutes of Management (IIMs) and two Schools of Planning and Architecture (SPA).
- The Committee for Rejuvenation and Renovation of Higher Education has been set up for the review of UGC/AICTE.
- The Science and Engineering Research Board Bill 2008 have been introduced in the Parliament.
- The National Mission on Education through Information and Communication Technology (ICT) has been launched to leverage the potential of ICT in the teaching learning process with an aim to enhance the GER in Higher Education by 5 percentage points by the end of the XI Plan. Under this Mission 20,000 institutions of Higher Education and nearly 10,000 University Departments will be provided connectivity, beginning with a minimum of 5 Mbps for each one of them. The Central Government will bear 75 per cent of the connectivity charges for 5 years, even for institutions not belonging to it. The estimated cost of the Mission is Rs. 4612 crore.

Integrated national knowledge network

- During 2008-09 Rs. 100 crore has been allocated for the National Knowledge Network (NKN) which proposes interconnecting all knowledge institutions in the country with gigabit capabilities, for sharing resources and research. A high level committee (HLC) constituted by the Department of Information and Technology (DIT), under the chairmanship of the Principal Scientific Adviser, was set up to operational the network. The design of NKN was prepared by a Technical Advisory Committee set up by the HLC, and the initial implementation is being managed by NIC (under DIT).
- The network is ready for roll out and is awaiting a formal launch. The network would be operation in two phases. The core and distribution network covering 1000 nodes with gigabit capacity would be set up in the first phase and this process has already started. The network is scalable and coverage can grow up to 10,000 nodes/institutions.
- Translation
- The Government has approved the setting up of a National Translation Mission (NTM) with an outlay of Rs. 75 crore. The CIIL, Mysore is the nodal agency implementing the Mission.

Libraries

Based on the recommendations of NKC, the Department of Culture (DoC) proposed setting up a National Mission for Libraries (NML) in the XI Plan as a Central Sector Scheme. The EFC memo is under revision by the DoC and is being restricted to Rs. 180 crore earmarked for the same during the XI Plan. The NML will cover libraries under the DoC and the activities under it will include: National Census of Libraries; Modernization including networking of Libraries under DoC; establishing Knowledge Centres and Digital Libraries.

E-governance

The XI Plan envisages the creation of core infrastructure such as SWAN (State Wide Area Network), Common Service Centres (CSCs) and State Data Centres (SDCs) for creation of a common service delivery platform. SWAN has been implemented in 6 states/ UTs till date and in 18 states implementation is in process. Till date SDCs have been approved for 26 states by the Government. Under the approved CSC scheme which envisages establishing over 100000 CSCs across India, 20,558 CSCs have been rolled out. The process for roll out for another 250968 CSCs has also been initiated. The Protection and Utilization of Public Funded Intellectual Property Bill 2008 has been introduced in the Parliament. Ministry of Law and Justice has conveyed in-principle approval for new Standing Committee on legal education under IRAHE and consequent changes in the role of BCI, curriculum development, developing research tradition in law schools/ universities.

Proposal for setting up Centre for Advanced Legal Studies and Research (CALSAR) for the northern region at Manesar (Gurgaon) was submitted by the Department of Legal Affairs to Planning Commission. The Department has been advised to make budget provisions for the scheme of CALSARs in the XI Plan by the Planning Commission.

Intellectual Property Rights

The IP Office has put the relevant acts, rules, manuals on its website and there is no restriction on access to these materials. Digitization of all patent records is underway. Forty-five thousand patent records are already on the website. National Institute of Intellectual Property Management (NIIPM) to be set up at Nagpur. An IP Appellate Board has been set up for trademarks, geographical indications and patents. DIPP is examining the issue of sui-generic legislation for protection of traditional knowledge.

Conclusion

The recommendations of National Knowledge Commission play a vital role in improving access to knowledge. The action taken shows that various Government bodies and institutions are shouldering the responsibility of implementation of these recommendations but the process rate is slow.

References

National Knowledge Commission. Available at: www.knowledgecommission.gov.in/ (Accessed on 12 June 2011)

Reports-National Knowledge Commission. Available at: www.knowledgecommission.gov.in /reports /default.asp (Accessed on 12 June 2011)

Application and Conservation of Knowledge Management in Information Resource Centre: a perspective Approach

Rajev, M.K.G.[1]

The paper aims to explore the relevance of knowledge management and its uses in the Information Resource Centre. It discusses about the rise of Knowledge Management in libraries and how it got utilized through the various available resources, It examines the role of Information Resource Centre and Information Professionals in Knowledge Management. The paper states the various challenges faced by the Information Resource Centre and how it can be handled while applying the Knowledge Management in Information Resource Centre.

Keywords: *Knowledge Management; Information Resource Centre; Knowledge Initiatives; Knowledge Conservation*

Introduction

The ability to manage knowledge is becoming increasingly more crucial in today's knowledge economy. Knowledge management (KM) was initially defined as the process of applying a systematic approach to the capture, structure, management, and dissemination of knowledge throughout an organization in order to work faster, reuse best practices, and reduce costly rework from project to project were described in detail in (Nonaka and Takeuchi,1995). Knowledge management is a cross-disciplinary domain. Library professionals are already ushered into knowledge management activities and practices and the paradigm shift that is taking place whereby libraries are getting transformed into Information Resource centres. It will inject the new blood into the culture of library. The main contents include: knowledge operations, exchange of information, maintaining the mutual trust, developing and sharing of knowledge operation in information resource centre, applying the KM process, delighters of the users, enrichment and staff's quality as well as an all round improvement information of resource centre. This paper attempts to explore the utilization of the KM in Information Resource Centre and to examine the role of Information Managers in the application of various sources in Knowledge Management.

What is knowledge management?

Knowledge management is the concept under which information is turned into actionable knowledge and made available effortlessly in a usable for to the people who can apply it is cleared

[1] Rajev, M.K.G, Manager - Information Resource Centre, Sur University College, Sur, Sultanate of Oman. mkgrajev@suc.edu.om

described in (Information Week, Sept 1, 2003). (McGraw and Harrison-Brigs, 1989) observes that knowledge management makes use of mixture of techniques from knowledge-based system design, such as structured knowledge acquisition strategies from subject matter experts and educational technology.

Purpose of knowledge management in IRC

There is adequate evidence of many information centres that have benefited from KM initiatives. Based on these instances, KM experts debate that, for Information Resource Centre to be competitive and successive today, they need to continuously employ in two activities such as, finding the effective way to interpret the IRC ongoing experience into knowledge by structuring the knowledge by building the expertise wide expressions through keywords which make possible in successful retrieval. The second one is transmitting and influencing the Information Resource Centre to acknowledge the receipt of knowledge through time and space while transferring knowledge for better influencing. In this process, we need to consider the main aspects like what method we are going to use to transfer the information or knowledge, to whom we are going to transfer like users, in what form we are going to translate, whether the receiving team adapts the knowledge through proper context, make sure the process of transmitting knowledge goes with future learning (Shanmugam, C.G, 2002).

Knowledge management process in IRC

Information technology is a tool for knowledge management in libraries knowledge acquisition is the starting point of knowledge management in libraries. The application of information technology enlarges the scope of knowledge acquisition. The objective of knowledge management of libraries is to promote knowledge innovation. Knowledge innovation is the core of the knowledge economy society and as basis for collection, processing, storage and distribution of knowledge and information. IRC represent an indispensable link in the scientific system chain, an important link in the knowledge innovation. Secondly, libraries take part in scientific research process directly. The IRC work is a component of knowledge innovation. Thirdly, libraries must pay attention to diffusion and conversion of knowledge. Knowledge Management in IRC is to promote relationship in and between knowledge centre, between IRC and user, to strengthen knowledge working and quicken knowledge flow. In the knowledge economy era, IRC will carry out research on development and application of information resources, construction of virtual resource centres', protection of intellectual property rights in the electronic era etc, thus founding the base for knowledge innovation.

Application of knowledge management in IRC

An effective Knowledge Management program is a long term project and requires important dedication from the institute. Knowledge Management in Information Resource Centre should be paying attention on efficient research and development of knowledge, knowledge bases should be created, sharing and exchange of knowledge between IRC staffs (including its users), IRC staff training, explicit processing speeding up of the implicit knowledge and explicit processing sharing up of the implicit knowledge and realizing of its sharing. With the help of the Knowledge Management processes, libraries can convert data and information stored in various sources into knowledge and deliver only relevant knowledge to users. Knowledge Management within Information Resource Centre involves systematizing and providing access to elusive resources that help IRC managers and administrators to carry out the tasks more efficiently and effectively. Knowledge Management in Information Resource Centre is the combination of different processes such as acquisition of knowledge from different sources, classification, storing, indexing and dissemination of that knowledge, process and technology in such a way by which Information Resource Centre could fulfil the task in term of users' satisfaction. IT application broadens the extent of knowledge acquisition, raises knowledge acquisition speed and reduces cost of knowledge acquisition.

Conservation of knowledge management in IRC

In today's information obsessed economy, resource centre uncover the most prospects and ultimately, obtain the most assessment from cerebral rather than material assets. To get the most value from an institution's rational assets, KM managers sustain that knowledge must be shared and serve as the foundation for association. Yet better cooperation is not an end in itself; without an overarching business perspective. Accordingly, an effective KM program should help an association do one or more of the following:

(i) Advance innovation by heartening the free flow of thought and ideas; (ii) Improve user service by reformatting response time; (iii) Revenues to be boosted by receiving products and services to market sooner; (iv) Improving the retention of employee rates by recognizing the value of knowledge of employees and rewarding them for it; (v) Rationalize operations and reduce costs by eradicating redundant processes. These are the most common examples. A creative approach to KM can result in improved competence, higher yield and increased incomes in practically any institutional functions.

Role of information professionals in IRC

The conventional services and functions of the library are undergoing dramatic changes and a new concept of librarians and library is rising. Knowledge Managers plays a vital role in this revolution concept. Informational Professionals must then know how to administer and how do they handle, what they don't know. Knowledge managers should have capabilities for handling knowledge and fortify learning. Knowledge Manager should create an atmosphere and culture of openness, trust and joint effort through various interventions. The culture of knowledge sharing should be optimistic. This can be achieved by frequent interaction.

Informational Professionals should use information lecture as enabler to influence knowledge. They should develop the synergy between the potential of humans and competence of Information and Communication Technologies. They should try to utilize those technologies and escort by a knowledge companionable culture. Knowledge managers have to know enough about systems to be able to use suitable technologies to spot access and make use of relevant sources of technology. However, technical understanding on its own is not enough. Communication and association building skills are also needed to cooperate with information providers and the experience and skills are required to pull together a support package. There are new electronic tools to meet old ideas and goals; but without the condition that information professionals know how to provide and achieve the objectives of the Information Resource Centre.

Challenges of knowledge management in IRC

The major challenges facing KM include focusing on people or cultural issues, overemphasizing technology, conducting KM in isolation from goals, ignoring the dynamic aspects of content, and opting for quantity of content over quality. To keep pace with the challenges the Information Professionals have to increase their operational competence within the limited budgets allocated. (O'Dell and Grayson, 1998) have listed the following barriers in the proper implementation of knowledge management: (a) Ignorance that is not knowing who has the right information required for the job, (b) Lack of a relationship between the source and beneficiary of knowledge, (c) Lack of time to find out and absorb the best practices recommended for the application in IRC, (d) Time lag taken to implement best practices recommended across the structure, (e) changing the user needs of the IRC, (f) fear of loosing the comfort zone, (g) Financial constraints for knowledge sharing motivation. These Challenges has been easily overcome with the help of the knowledge managers by making a proper budget allotment, maintaining the perfect formats of knowledge management, preservation of perfect time and confidently applying the knowledge management processes to obtain a perfect growth.

Conclusion

Knowledge management facilitates a learning community to learn more successfully. Knowledge management is very important to an institution. Mission, origin, change and performance are four proportions of knowledge management, which define the value of an organization. The most significant area of knowledge management is the concept of tacit knowledge. The paper has tried to cover several characteristics of Knowledge Management processes in Information Resource Centre. Knowledge management is a powerful tool for endorsing innovation, appreciating and reengineering the various aspects of day to day activities of an organization. The utility of knowledge management in a information resource centre cannot be ignored. The knowledge is mounting very fast rapidity in each and every aspect of life and it is very difficult for the professionals to distribute the available information to the deserving person without using the promising techniques. It has been observed that KM best method for achieving the knowledge innovation. The application of knowledge management is the only result to acquire, store and retrieve information effectively. The knowledge management helps information professionals in humanizing the services being rendered to their users. Information professionals have to recast their roles as knowledge professional. The paper has touched the various challenges faced by the IRC on KM and discussed about the outcomes and how to handle the same. The information professionals' roles should not be limited to being the guardians of information but they have to obtain skills to keep themselves updated so as to manage intelligently and independently for the effective and competent knowledge management in Information Resource Centre.

References

Nonaka, I., and Takeuchi, H. (1995). The Knowledge-creating company: how Japanese companies create the dynamics of innovation, New York: Oxford University Press.

Rane V. (2002). Knowledge Management: Initiatives at NMIMS. Paper presented at the MANLIBNET 4th Annual National Convention, April 3 to 5, 2002, at National Institute of Financial Management, Faridabad.

Information Week (2003), Ten Principles of Knowledge Management Success. Available at http://whitepapers.informationweeks.com [Accessed on May 10, 2011]

McGraw, K., and Harrison-Briggs, K. (1989). Knowledge acquisition: Principles and guidelines, Englewood Cliffs, N.J.: Prentice Hall.

Shanmugam C.G. (2002). The Need for Knowledge Management in Special Libraries.pp.43-52. *In* S.Parthan, VKJ Jeevan(eds). Proceedings of the National Conference on Information Management in e-Libraries(ImeL). Kharagpur, 26-27 February 2002. New Delhi: Allied Publishers.650pp.

Dalkir Kimiz (2007). Knowledge Management in Theory and Practice. India.

Kumar Singh Pramod (2005). "Knowledge Management and its use in Library". In Proceedings of 3rd Convention planner, Assam University, Ahmedabad : 144-148.

Jhaveri A.P. (2001). Knowledge Management (KM)- Wealth from Information, *Computers Today*, 16-31 Aug.70-73.

Bhattacharya Partha, Chaudhury Pravin Kumar (2004)." Knowledge Management and its Utilisation- an overview". In proceeding of 2nd International CALIBER -2004, Ahmedabad: INFLIBNET:591-599.

Rathod Mata (2005). "Roles of Knowledge Managers in the Knowledge Management, In Proceedings of 3rd Convention Planner, Assam University, Ahmedabad: 228-235.

Sangeetha Keishaam, Suleta Thudam (2007). "Knowledge Management in Libraries in a Knowledge Bases Society". In Proceedings of 5th International CALIBER, Punjab University: INFLIBNET:331-336.

Sharma Jitendra Nath (2009). "Knowledge Management in Academic Libraries, CPDHE-ILL, University of Delhi, 8th – 27th June, 2009. Available at : http://dlis.du.ac.in/RC%20IN%20LIS/pdf/Presentations/Jitendra%20Nath%20Sharma.pdf [accessed on 5 May 2011]

Shukla, A. and Srinivasan, R. (2002). Designing Knowledge Management Architecture: How to Implement Successful Knowledge Management Programs. New Delhi, India:Response Books.

Davidson,C. and Voss,P. (2002). " Knowledge Management", Vision Books, New Delhi,2003.

Tiwari, Aravind, " Evaluation of Electronic Libraries", A.P.H. Publishing Corporation, New Delhi.

Gaur, Ramesh, C. and others(ed.) (2003). "Business and Management Libraries :Opportunities and Challenges in the 21st Century", Excel Books, New delhi.

O'Doll, C. and Grayson, C. (1998). "If only we knew that what we know: identification and transfer of internal best practices", California Management Review, 40, (3) 154-157.

Mishra, B.K and Mishra, S, K. (2005). Knowledge Management: Application of IT in KIET Library. Journal of Library and Information technology, 1(1), 41-45.

The strategic importance of knowledge management in library science

Kaushik, Natasha[1]

At work, knowledge Management refers to a collection of processes that govern the creation, dissemination, utilization, updating, applying the knowledge for achieving the organizational objectives and providing user satisfaction. The knowledge economy is a new concept that has appeared world-wide in recent year. Knowledge management is a completely new concept and method of management. This paper describes the role of knowledge management in Library and Information Science. It describes the approaches, strategies and benefit of knowledge Management. It also describes the different tools, technology, challenges, guidelines and control mechanism for the development of library science. Knowledge management are needed in order to ensure that deliverables from library professionals to the development of a quality of work and user satisfaction. This paper is attempted to highlight the importance of knowledge management in library and information science. This paper also describes how knowledge management play role in different areas of specialisation in the library science.

Introduction

Libraries have faced many difficult times in their history. Even in present time some of those difficulties are still in existences as challenges. Library continuously expending and the size of the library is remaining decreasing. Expectations increase while resources are limited. Information explosions Places new information technology and knowledge resources before users. As user are the key persons of library, library staff has stress how to combat this situation and how to provide more with less to the users. This situation thrust information professional to think about knowledge management. Knowledge has become the key driving force of the human civilization in the present day. Knowledge has been the core. Today every organisation, institution and libraries etc. has understood the importance of knowledge. Every libraries and other organisation throughout the world are utilizing technology tools to make their system more competitive and dynamic. The concept of knowledge management is also applicable to academic libraries, university libraries etc. it is holistic approach for managing library to satisfy its end user.

[1] Kaushik, Natasha, Librarian, B.S Anangpuria Educational Institute, Faridabad, Haryana

Knowledge Management

Knowledge

Knowledge is the full utilization of information and data, coupled with the potential of people's skill, competencies, ideas intuitions, commitment and motivations. A holistic view considers knowledge to be present in ideas, judgment, talents, root cause, relationship, perspective and concepts. Knowledge is stored in the individual brain or encoded in organizational process, documents, products, services facilities, and systems.

Knowledge management

Knowledge management is a systematic, organized, explicit and deliberate on-going process of creating, disseminating, applying, renewing and updating the knowledge for achieving organizational objectives. Knowledge management is a process of knowledge generation and innovation through an efficient organisation and sufficient exploitation of information and knowledge resources. K.M is the collection of processes that govern the creation, dissemination, and utilization of knowledge in one form or another. K.M has been around for a very long time; practitioners have included Philosophers, Priest, Teachers, Politicians, Scribes, and Librarians etc.

According to Meridith Levinson "Knowledge Management is the process through which organization Generate value from their intellectual and Knowledge- Based Assets."

Knowledge management is an audit of " Intellectual Assets" that highlight unique sources, critical functions and potential bottlenecks which hinder knowledge flows to the point of use it protects intellectuals assets from decay, seeks opportunities to enhance decisions, services and products through adding intelligence , increasing value and providing flexibility.

Objective

For implementing of knowledge management in libraries guided by few objectives and objectives begin to bring more focus to the library intentions. Objectives should be purposeful, short term, consistent with goal.

- Continuous quality of work improvement.
- Continuous cost reduction.
- Reducing unproductive efforts and eliminate rework.
- User oriented services.
- Give high priority to user satisfaction and provide current information.
- Promote knowledge innovation.

Source of knowledge

Knowledge is collected from all existing sources including people, system, data stores, file cabinets and desktops. All knowledge of value is stored in the organizational knowledge repository. The right knowledge will go to the right person or system at the right time. Current knowledge can be retrieved from the system at any time in the future.

Components

- Data, Information
- Rules , Procedures
- Pre-determined Meaning
- Best Practise
- Pre-defined action
- Pre-specified outcomes
- Human and Machine Intelligence Environment
- Stable and Predictable Computational Inputs
- Attention/Motivation/Commitment/Creativity/Innovation
- Environment/ Out comes/ Action/ Performance

Principles

Libraries should have a mission statement which provides a common framework of decision making and direction for the organization and it should be properly communicated through the organization. What is to be done? By whom? And how? Should be clearly stated, for that purpose, what are the problem solving methods and tools. Knowledge management for libraries should work on following principles.

- User satisfaction is the main principle
- Delight of user.
- Decisions are made based upon factual information.
- Education, training and development of human resources.
- Quality planning with strong librarianship.

Approaches

- Information oriented approach
- Knowledge oriented approach
- Systematic approaches
- Holistic approaches
- Mechanistic approach

Strategies

- Knowledge may be accessed at three stages, before, during or after knowledge management related activities.
- One strategy to K.M involves actively Managing Knowledge (Push Strategy).
- Another strategy to K.M involves individuals making knowledge requests of experts associated with a particular subjects on an adhoc basis (Pull Strategy).
- Rewards (as a means of motivating for knowledge sharing).
- Storytelling (as a means of transferring tacit knowledge).
- Cross-Project Learning
- After Action Review
- Knowledge Mapping
- Expert Directories
- Knowledge Fair
- Social Software
- Knowledge Sharing
- Knowledge Reuse
- Knowledge Creation
- Knowledge Acquisition
- Collaborative Technologies

Benefits of knowledge management

- Produce and conserve new value
- It sure beats ignorance
- Better decision making and planning
- Speed innovation
- Improve the flow of knowledge
- Avoid waste and duplication
- Improve the services and support of user
- Improved team communication
- Reduced problem solving time
- Helps ensure the right information, get to the right people at the right , time to make the right decision.

Role of knowledge management

K.M was consulted from time to time during the formulation of strategic plan, policy and control mechanism and for development of library science guidelines and formal corporate culture programs. The main responsibility of knowledge manager is to manage the creation and delivery of knowledge and to support its utilization by the end user community. K.M play very important role in library is to promote knowledge innovation. It is helpful for collection, processing, storage and distribution of knowledge and information. Libraries must pay attention to diffusion and conversion of knowledge. Knowledge management in libraries is to promote relationship in and between libraries, between library and user, to strengthen knowledge internetworking and to quicken knowledge flow. Knowledge acquisition is the starting point of K.M in libraries so that K.M play very vital role in risen knowledge acquisition speed and reduces knowledge acquisition cost. Next is service delivery if library wants its user may gain maximum benefit of services they must know how to use it. Here, the role of library staff, to present library services in simple way that these may not create any hurdles before users in using library services. The role of knowledge management in libraries will become more and more important along with the development of knowledge economy.

Tools and technology

- The internet and extranet
- Warehousing data and data mining
- Decision support systems
- Content management system
- Document management system
- Some of the common knowledge management tool administration function is:
- Hardware administration
- Software administration
- Network administration
- Security administration
- These tools are very helpful for all the activities capturing, cataloguing, storing, transforming and disseminating information
- Information technology
- Storage architecture technology
- Database management system technology
- Metadata technology
- It is the key technology in knowledge management.

Implementation

In an academic library user's satisfaction means fulfilling his/her expectations. It is very important to trace out their actual requirements. Library staff must understand the users and establish quality goals for providing quality services. They have to know the answers of the questions such as:

Who are the users? i.e. Their different categories, if they are undergraduate/ postgraduate student, research scholars, teachers or guides etc.

What are their requirements? Type of study materials they have to look for needed information. Librarians must be fully committed to set objectives and principles to implements knowledge management in library.

Challenges

There are few challenges for library manager or librarians while planning objectives or target or goal for their library development.

- How to make library atmosphere dynamic and vibrant.
- How to ensure involvement of employees.
- How to maintain level of commitment.
- How to motivate employees become result oriented.
- How to provide user satisfaction or user oriented services.

Conclusion

In the fast changing context of library and information system, a new community of information professionals will be necessary with a variety of new skill and knowledge. By applying of the K.M, librarians can improve their libraries. It is not an easy process. It needs to be implemented regularly and when fully implemented honestly, will result in a significant improvement for library as well as for its users. Knowledge management is a strategic process, since it is goal oriented; involve planning, implementation and outcome in the form of required knowledge for organisation activities. K.M system required well balanced approach between human resource and information technology tools. So that knowledge management plays a very important role in library science.

References

Riggs, Donald E. (1992). Strategic Management in libraries. New York: Advances in Librarianship. Vol.16

Nagarajan, R.S (2005). Knowledge Mgt. New Delhi: new age international (p) limited.

Wang delv. The collection and processing of knowledge.

http://www.bsti.ac.cn/bsti kmchina/gei/048001.htm

Management.com http://www.management.com

http://www.knowledgeinnovation.org

http//Wikipedia.org.

Continuing Education Programmes (CEPs) for Empowering LIS Professionals in India: A Road Map for SAARC Countries

Ramesha[1] and Ragavan, Srinivasa[2]

The new millennium with mystifying convergence of IT has opened new challenges to LIS profession. This has resulted to continuing Education Programmes (CEP) and lifelong learning, for capacity building in consonant with contemporary changes. The LIS profession in India has created several mechanisms to organize and conduct several CEPs through which professionals are continuously enabled to update their professional knowledge and skills, in practice and teaching. There is a good organizational infrastructure and identified areas related to the recent developmental trends and as such LIS professionals and educators have facilities for updating their knowledge at veritable levels and intervals. The paper highlights the aspects of the organizational infrastructure and the emergent areas of applications in LIS teaching, research and professional practices in India, which can be a model for the SAARC countries those who are seeking to utilize the LIS human resources from this part of the sub-continent and outside in the South Asian region seeking its collaboration in such manpower development work.

Keywords: *Continuing Education Programme (CEP), Lifelong Learning, LIS Profession, India.*

Introduction

The present networked digital environment with convergence of information and communication technology (ICT) has opened new challenges and opportunities for LIS profession. This has resulted to Continuing Education Programmes (CEPs) and lifelong learning, for capacity building in consonant with contemporary changes. The LIS education despite this high degree of diffusion of knowledge of information technology has maintained its unique identity and traditional focus. The development in the area of technology convergence with LIS has necessitated LIS professionals and educators to perpetuate their learning and in the deployment of the skills to the users and to the learners. It has been observed by Ashcroft and Watts (2004) that " the emergence of electronic

[1] Dr. Ramesha**,** Associate Professor, Dept. of Library and Information Science, Bangalore University, India bbramesha@gmail.com

[2] Dr. Ragavan, Srinivasa, Librarian & Head, Bharathidasan University, India. bdulib@gmail.com

information resources have created subsequent changes in the skills needed by information professionals" and "Information professionals are now expected to be aware of and capable of using emerging information communication technologies". In this context it is also highlighted that "Professional bodies, such as CILIP in the UK and the ALA in the US, recognize the importance of continuing professional development in order to keep skills and expertise up-to-date for all aspects of LIS work". In this context in India several programmes and activities are organized by the statutory, professional and regulatory organizations since early 1970s. The primary organizations involved in this process are the UGC, AICTE, national, state, regional, associations and institutions have taken very active role in organizing regular and need based skill development programmes both for LIS practitioners as well as to the educators. The role of professional bodies in this context is widely recognized and it is substantiated by Fisher (1994) on the role of professional bodies in professional development. The magnitude of LIS practitioners and the teachers can be assessed from the broad estimate of about 55 thousand libraries of all categories and more than 120 LIS teaching departments imparting education from certificate to doctoral programmes through formal channels as well as large number of distance learning facilities available in India. The LIS scenario is changing at a very random pace though there is a structural development in the application of technologies in libraries as well as with new trends in management of libraries. This calls for building and upgrading skills of LIS practitioners as well the teachers. As pointed out since the early 1970s regulatory and statutory bodies in higher education like UGC, the national associations like ILA, IASLIC the specialized autonomous LIS bodies like INFLIBNET, DELNET, NCSI and many more similar organizations it is observed are continuously involved in the skill development programmes for Librarians and teachers of LIS in India. Hence the paper take stock of institutional infrastructure and the new areas of competences focused to build skills among the LIS professionals and educators in India. It also foresees how these skills acquired through some of the finest institutions and associations can be utilized by the other nations in the South Asian region and in particular by the SAARC countries.

Need of continuing education programme for LIS professionals

One of the major challenges forced by the Information and Communication Technologies (ICTs) is continuous and overall learning process in all of services which is also termed as lifelong learning process. Lifelong learning as a concept involves formal, non-formal and informal education and training programmes. Such a work on a regular and continued stream requires a permanent establishment of organizational infrastructure and needs such a facility at different levels. On the other hand the involvement of the statutory government organizations, professional association, and even the individual department/institutions level have to get involved in this work and need the necessary physical, manpower and equipment facilities and infrastructure. Counting on these

requirements and also considering the essential need for skill development programme with the changing paradigm of teaching and learning influenced by technology is demanding for acquisition of knowledge and skills in rendering service as well as importing latest knowledge to the learners. The need is due to the user's perceptions and expectations which are getting renewed due to number of opportunities available to the users outside their formal educational channels. As examined by Webb (1992) "a fresh look at education, training and continuing professional development (CPD) at all levels and in all sectors of the library and information science profession, for what currently exists and to meet the future needs". As a matter of fact the academic computing skills can be acquired through informal means which can be utilized for the improvement teaching and learning in the formal means. Due to the availability of e-learning and m-learning facilities academic computing in general and knowledge of e-learning tools in particular is becoming essential. In this context the need for continues skill development has a place in every sector of education. It is exceptionally so in the context of LIS education as it covers entire domain of human knowledge. Brown (1992) has chalked out a framework for such continuous professional development for LIS professionals. So it is important in this context to identify how such needs are fulfilled and what are the organizational infrastructure available as well the with identification of core areas in which these competencies are created among the LIS practitioners and as well among educators in India. The need for continuing professional education is stressed long ago by Feather and Smith (1988) and it is apparently more so in developing countries. Cortez, Britz and Kigongo-Bukenya (2008) have addressed the need for structured access to continuing education opportunities for LIS faculty in Africa in general and in sub-Sahara Africa in particular. The authors have identified number of challenges and barriers faced by these countries in CEP. So in this context, Indian LIS faculty and professionals can associate for designing and delivery of appropriate continuous professional development programmes and Short Term Courses (STCs).

Organizational infrastructure

As mentioned earlier in India there are number of channels at different levels, national, regional and local, through which the continuous professional development programmes are being organized and conducted by the number of statutory, organizations, professional associations and specialized agencies and institutions. The institutional infrastructure is well established in India with all necessary and essential facilities for in-house training. As a result they have built adequate expertise to impart such training outside their own requirements. Given here below are some of the organizations and agencies which are actively involved in CPD and have the requisite and adequate infrastructure in conducting such programmes.

- Academic Staff College (ASC) under University Grants Commission (UGC)
- Professional Associations – National and Regional
- Specialized Agencies like INFLIBNET, DELNET, NASSDOC, DESIDOC, INDEST, Vidyanidhi,
- Specialized Training Institutions namely NISCAIR(INSDOC), DRTC, NCSI
- Depts. of Library and Information Science
- Individual Libraries and Information Centres

Academic Staff Colleges (ASC)

The UGC in India established ASCs within the administration of a University to impart the continuing and skill development programmes for teachers and practicing librarians. The Orientation Courses and the Refresher Course are the two streams organized by the ASCs for the LIS practitioners as well as for educators number of Short Term Courses (http://www.jntu.ac.in/asc-workshop.php) are also organized by them which will help in empowering the participants to acquire the necessary knowledge and skills in teaching, research and practice. ASCs have excellent physical infrastructure facility including independent housing for conducting the programme which includes multimedia classroom with Internet connectivity, IT labs, housing for the participants and library. Besides the physical facilities ASCs invite experts from different regions and subject areas as a Resource Persons to deliver the lectures and demonstration on latest areas of development in the selected topics. An attendance to continuing and skill development programmes has attracted many professionals in their respective areas and has become one of the very popular beneficial promotional activities.

Professional Associations

The two national associations in India, the Indian Library Association (ILA) and Indian Association for Special Libraries and Information Centres (IASLIC) since their establishment have taken the task of imparting professional knowledge through their conferences, pre-conference tutorials and training programmes in the contemporary areas of professional knowledge. The IASLIC has even created Special Interest Groups (SIGs), to focus on the new and emergent issues of LIS and therefore the trends of developments are also discussed in the conferences.

Apart from the ILA and IASLIC, there are other professional associations in India like Society for Information Science (SIS) and Indian Association for Teachers of Library and Information Science (IATLIS), Medical Library Association of India (MALI), Management Library Network (MANLIBNET) which are also actively involved in organizing professional advancement programmes regularly. The IATLIS for example organized in recent years National level

Workshops for LIS teachers under the theme "LIS teachers and the Digital Future" with the collaboration of national level institutions like IITs and IIMs. The SIS in mid-1990s organised two International Conferences one on "Database production and distribution: resources, technology, and management" (1993) and the second on "Digital Libraries" (1996) with an eye on the futuristic view of the profession.

Specialized Agencies

The growth of information institutions and systems has caught the attention of Government of India as early as in 1970s this resulted in launching the NISSAT programme under the Department of Science and Technology (DST). The NISSAT was responsible for the development of Information Infrastructure in national laboratories under CSIR. The NISSAT organized several courses as a capacity building exercise of the LIS professional working in the national laboratories which helped in the creation of national and sectorial information centres like, National Information Centre for Food Sciences (NICFOS), Mysore, Information Centre for Aerospace Science and Technology(ICAST), under National Aerospace Laboratory, Bangalore. The efforts of NISSAT in this context empowered the LIS professionals to gain substantial knowledge of planning and design of specialized information institutions, under R and D, Industries and Business organizations.

The developments in IT and impact on libraries particularly the Library Networking visualized the establishment of National Library Networks like INFLIBNET and DELNET and also resulted in conceptualizing several metropolitan library networks. The INFLIBNET, a UGC autonomous centre established in 1988 was given the task of networking University and College Libraries in India. The two agencies specializing in library networking are organizing annual national conventions, CALIBER and NACLIN to take stock of the progresses made in the area of Library Automation and Networking and the participation and deliberations of these meetings are most enlightening experience of professional areas. In recent years they are also focusing on the Digital Libraries, Open Access Initiatives, Knowledge Management and other similar upcoming issues in LIS.

The documentation centres in India also made a parallel contribution in the skill enhancement of LIS professionals and in this contest, DRTC, NASSDOC and NISCAIR (Former INSDOC) and NCSI (under IISc) are also conducting continuing education and training programmes for the professionals. The DRTC and NISCAIR are also running formal education courses in Information Science and Technology with slanginess towards IT oriented study and teaching.

The Vidyanidhi is engaged in the creation of Digital Library of Electronic Theses and Dissertations (ETD), with financial assistance from Ford Foundation, Microsoft and other international and

national funding agencies like DST in India. The programme under its banner has also engaged several training programmes as part of professional competency building work.

This profile of contributions from specialized agencies is dealt in very briefly here, as detailed contributions of these agencies is far and wide and also presents in depth treatment of the subject of discourse viz., LIS.

Departments of Library and Information Science (LIS)

The pioneering work of LIS education in India is referred to Baroda School, which made the auspicious beginning for formal course in LIS as early as in 1911, in concurrence with the Baroda Library Movement. Since then the LIS education in India has been on the rise. Today, more than 120 Universities are offering courses in LIS from Certificate level to doctoral programmes. Among the developing countries, India has the largest number of Ph.Ds. in LIS this number is nearly 1500 at present. Several studies and reviews on the LIS research trend and on the census of Ph.D. Theses output in India were carried out by Kumar (1999), Patra (1996), Chandrashekar (2009) and Garg (2009). The papers also give a prolific image of Ph.D. guidance expertise available in Indian LIS departments. There are teachers who have guided doctoral works in many diverse areas of LIS and cover both traditional and contemporary subjects with ICT applications.

The Departments of Library and Information Science are also actively involved in organizing National/International Conferences on the modern and emerging areas of LIS. The participation in these conferences is highly sought as they expose the teaching faculty in particular about the latest developments in the areas of LIS and also deal with modern teaching methods, curriculum development and pursuance of research in the areas of recent applications. The teaching faculties have also created substantial magnitude to learning and teaching materials and they have also been contributing to the Self Instructional Materials (SIM) including A-V tools generated by the Distance education programmes like Indira Gandhi National Open University (IGNOU) and the distance education courses in LIS offered by several State and Central Universities. These SIMs and A-V materials are under Open Access Course Ware and can be accessed free world-wide with a simple registration process. The e-Gynakosh of IGNOU is an example of this instance of Open Course Ware (OCW). The LIS-OCW work can be extended to cover the entire South Asian Region by receiving inputs from respective countries and rendered accessible via Internet/WWW.

Libraries and Information Centres (LICs)

India possesses a vast number of public, academic and special libraries, which according the National Knowledge Commission's rough estimate is around 55,000 libraries of different categories and magnitudes. There are more than 500 Universities and 26,000 Colleges with libraries adapting

to latest technological developments. Besides there is large number of professional college libraries, in engineering, health science and management and these have reckoned importance of the libraries and are engaged in providing service with a modern developmental touch. To ***"Keeping up with Jones"*** attitude these libraries are organizing conferences, seminars and workshops as part of improving in-house professional development activity. The themes of such scientific meetings give an exposure to recent developments in LIS areas. This shows the skill development activities are initiated from the very basic level and rise to reach the tip of the organizational pyramid.

Vision for the future

The realization of the 07th International Conference theme "Contribution of the Academic Librarians towards a knowledge Society" can be achieved by implementing the resultant deliberations of the conference. One of the main outcome of this paper is " ***the Vision has to be for the continuous professional development as it has necessitated due to the influence of not only ICT but the inward flow of experts from allied fields to the LIS work and research" to lead the knowledge society.*** In this context it is overwhelmingly so that India possesses necessary expertise for the future development of the LIS profession which would see more and more interdisciplinary applications and diversity. It would be desirable to oversee the proper implementation of the recommendations of the conference for the said purpose a Core group of experts in LIS from teaching, practice and research can be created that would be advising different nations to derive benefits from such conference outcomes and also from the countries which have the necessary manpower resources. The INFLIBNET as part its work has created an Experts' database in different subjects and this can model be augmented with inputs from other nations of the South Asian Region also.

Conclusion

The profiles of continuing education programmes and facilities available in India show the wealth of expertise available in this part of the sub-Continent. It wouldn't be out of context to state that, setting aside the developed countries, India possesses professional and technical competency at all level of LIS professional knowledge, in teaching, practice, guidance and consultancy. This road map of LIS manpower resources and the facilities for education, research, training and further education can be utilized for the benefit of the nations in the South Asian Region.

Acknowledgements

The authors wishes to acknowledge with thanks, Prof. A.Y. Asundi, Former Professor and Chairman, Dept. of Library and Information Science, Bangalore University, Bangalore for his professional input for the paper.

References

Ashcroft, Linda and Watts, Chris (2004). ICT skills for information professionals in developing countries: perspectives from a study of the electronic information environment in Nigeria. *IFLA Journal*. 31(1), 6-12.

Brown, T. (1992). A framework for continuing professional development for library and information services staff. British Library. R and D., Department. *BLRD Report*; 6070, 58.

Chandrashekar M. and Ramasesh, C.P. (2009). Library and Information Science research in India. Asia –Pacific Conference on Library & Information Education & Practice, 530-537.

Cortez, Edwin M., Britz, Jonannes and Kigongo-Bukenya, Isaac. (2008). Strategies for Continuing Professional Development of LIS Faculty in Sub-Sahara Africa. Word Library and Information Congress: 74th IFLA General Conference and Council, 10-14 August 2008, Québec, Canada. http://www.ifla.org/IV/ifla74/index.htm (Accessed on 2nd May 2012)

Digital Libraries: Annual convention and conference.18-20 Jan 1996. SIS'96.

Feather, John and Smith, Inese A. (1988) Post-qualification training. *International Library Review*; 20 (4) 459-468.

Fisher, B. (1994). Professional organizations and professional development. *British Journal of Academic Librarianship*. 9(3), 167-783.

Garg, Ram Gopal, Tamrakar, Rajnish and Tamrakar, Amit (2009).:Doctoral Research on Academic Libraries and Allied Fields in Indian Universities : A Bibliometric Study. *ICAL 2009 – Vision and Roles of the Future Academic Libraries.* 193-99.

International Conference on Database, Production and Distribution(INFOTEX-93), Organised by Society for Information Science and held at Bangalore, Nov.28 to Dec. 1,1993.

Kumar, P.S.G. (1999). Research in library and information science. *DESIDOC Bulletin of Information Technology*. 18(01), 11-17.

Patra, Swapan Kumar, and Prakash Chand (1996). Library and Information Science research in India: A bibliometric study. *Annals of Library and Information Studies*. 53 (4), 219-23.

Webb, Sylvia P. (1992). Information UK 2000: education and training. *Aslib Proceedings*. 44 (6), 257-259.

The Websites of various Organizations in India referred in this paper are;

http://www.ugc.ac.in	(Accessed on 3rd May 2011)
http://www.aicte-india.org/	(Accessed on 9th May 2011)
http://www.inflibnet.ac.in/	(Accessed on 15th May 2011)
http://www.delnet.nic.in/	(Accessed on 15th May 2011)
http://www.vidyanidhi.org.in	(Accessed on 20th May 2011)
http://www.niscair.res.in/	(Accessed on 20th May 2011)
http://www.drtc.isibang.ac.in/	(Accessed on 25th May 2011)

http://www.ncsi.iisc.ernet.in/ (Accessed on 25th May 2011)
http://www.ilaindia.net/ (Accessed on 25th May 2011)
http://www.iaslic1955.org/ (Accessed on 2nd June 2011)
http://www.sis.org.in/ (Accessed on 2nd June 2011)
http://www.manlibnet.in/ (Accessed on 2nd June 2011)

PART 6

Innovative Research for Knowledge Society

Session Chair – Mr. U. A. Amarasiri

Director, NILIS, University of Colombo, Sri Lanka

Lead Paper - Dr. P. Wijetunge

Librarian, University of Peradeniya, Sri Lanka

Capturing Organizational Stories as a Method of Transferring Significant Tacit Knowledge – 1: a Model Elicited from an Exploratory Case Study in a University Library

Wijetunge, Pradeepa[1]

This study explores the possibilities of transferring tacit knowledge from a retiring Librarian, through storytelling in order to avoid the loss of most crucial tacit knowledge accumulated by the Librarian through the rich organisational and professional experiences, especially in dealing with problem situations, to the university library after the retirement of the Librarian. The study used the case study method to address two objectives; 1) To explore the potential of storytelling to transfer tacit knowledge from the Librarian to the junior executives. 2) To examine whether captured stories serve the pursuit of knowledge by the junior executives. Two research questions were formulated to achieve these objectives. The first research question (RQ1) How can the tacit knowledge of a retiring senior executive be captured through stories? was framed and addressed to achieve objective one and the second research question (RQ2) Can the captured "stories of work" benefit knowledge workers in their pursuit of tacit knowledge? was framed and addressed to achieve objective two. The study was based on primary data collected from the Librarian and seven executive staff of the Library by means of two Interview Schedules and the entire study was underpinned by an extensive review of research literature related to organizational storytelling. Qualitative as well as quantitative methods were used to analyse and interpret data. This paper discusses the findings of the study with regard to RQ1 which proved that stories can be captured using the story capturing model elicited from the research. Nevertheless findings also established that the comprehensiveness of the tacit knowledge that could be captured through stories would depend on the degree of confidentiality of the contents of the stories. Based on these findings it was recommended that, the library should take initiatives to exploit the already prevailing habit of organizational storytelling in the library as a management tool in a deliberated manner.

Key Words: *Storytelling, Story Capturing Model, Tacit Knowledge, Knowledge Transfer, Retiring Employees*

[1] Dr. Wijetunge, Pradeepa, Librarian, University of Peradeniya, Sri Lanka
librarian@pdn.ac.lk

Introduction

Sri Lanka has a long history and culture of storytelling but in the contemporary fast-moving society this relaxed life style is disappearing rapidly but not completely. The tradition still prevails with a change in the contents of the stories. Ratnapala (1991) established that modernisation has brought about the industrial-lore instead of folklore with stories based on industry and becoming a common feature in the urban and semi-urban societies. There is no recorded literary evidence of library-lore in Sri Lanka but within the library context storytelling is an informal day to day occurrence. Nevertheless the notion that stories are being used as a management or formal training tool as has been discussed by some researchers (Denning 2004, Prusak 2001 and Snowden 2005a – 2005f) **is not common** in Sri Lanka. This paper will be the first to examine the application of stories to transfer tacit knowledge from a senior professional to others in a modern library context.

The university, in which the research was based on, had its origin in 1921 as a University College and was established as an independent university in 1967. Currently it has seven faculties, one campus, one school, seven affiliated institutions and four study centres**.** The library system consists of the main library serving five faculties and two branch libraries serving two faculties. Twelve executives and about 80 other support staff members are headed by the University Librarian. While the collection consists of approximately 500,000 print and non print materials it caters to around 7000 undergraduates, 2500 postgraduate students, 1100 academic and 700 non-academic staff members.

The Librarian joined the library in 1971 and has progressed in the career ladder both academically and professionally. She was appointed as the University Librarian in 1989. Her 40 year professional life span is dotted with many challenges and opportunities through which she managed to deal with successfully and to earn a reputation and respect of the university and professional communities. Librarian's tacit knowledge, accumulated through the rich organisational and professional experiences especially in dealing with problem situations is far beyond the reach of her junior staff including the researcher. These contemplations made the researcher question about the loss of most crucial knowledge and ascertain a technique to retain such knowledge within the library after the retirement of the Librarian, which consecutively led to the study.

General concern was that when the Librarian retires a high percentage of the corporate knowledge which consists of the knowledge of the culture of the library, knowledge of the day to day operations, knowledge of past successes and failures within the library and awareness of what went into the planning and decision making that formed the library as Lahaie (2005) opined, will be lost forever. Such a loss of tacit knowledge possessed by the Librarian will have a significant negative

impact on the performance of the organisation in future if the successors do not learn from past failures and successes.

There has been extensive attention on stories and storytelling within the organisations as a knowledge management strategy but there has been no formal or informal research in this domain conducted within the Sri Lankan university library context. Although the Librarian has a habit of passing her organisational knowledge to the colleagues through stories related to the organisational history this was never perceived as a management tool.

Therefore the objectives of this study were; 1) to explore the potential of storytelling to transfer tacit knowledge from the Librarian to the junior executives and 2) to examine whether captured stories serve the pursuit of knowledge by the junior executives.

This research project provided an opportunity to gain insights into transferring organizational tacit knowledge retained by the employees, to others through storytelling. Findings were firstly expected to underpin the policies and practices for improving the staff training and mentoring procedure of the library in future. Secondly it was intended that the reporting of findings would fill the void in the body of storytelling and tacit knowledge transfer literature in the library context. Thirdly it was expected that the findings would help the other departments of the parent university and other organizations external to the university would be able to use storytelling as a method of transferring tacit knowledge from retiring employees.

Significance of Tacit Knowledge

Tacit knowledge is "non-codified disembodied know-how that is acquired via the informal take-up of learned behaviour and procedures…tacit knowledge does not involve the generation and acquisition of tangible products and processes, or the more formal element of intangible knowledge flows associated with specific research, technical or training programs" (Howells 1996: 2). Tacit knowledge is "…experience that is embedded in an individual such as perspective and inferential knowledge. It includes insights, hunches, intuitions and skills that are highly personal and difficult to formalize, and as a result are hard to communicate or share with others" (Nunes et.al 2006:105). The commonality of these definitions is that tacit knowledge is perceived as a personal, intangible, hard to share cognitive element explained using terms like intuition, hunch, and insights.

Recognition of tacit knowledge and its importance has a number of crucial implications for the organization. As Nonaka and Takeuchi (1995) opines firstly it generates a whole different view of the organization not as a machine but as a living organism. Secondly, this recognition of the

organization as a living organism leads to thinking about creation of new knowledge in an organizational perspective. Thirdly it leads the Western oriented managers (in contrast to the Japanese managers) to focus on highly subjective insights, intuitions, and hunches instead of thinking that knowledge can be acquired through training manuals, books and lectures.

There is ample empirical evidence proving the significance of tacit knowledge in the organization. Harlow (2008) using a sample of 108 firms has proved that there is a positive association between tacit knowledge and the firm outcomes. Chen and Mohamed (2010), Krogh (1998), Leonard and Sensiper (1998) and Roy and Roy (2002) also have confirmed this point of view. Sigala and Chalkiti (2007) have established that tacit knowledge has a positive effect on firm's performance at strategic as well as operational level and cites many other previous studies to confirm their standpoint. The mere nature of tacit knowledge not only makes its exploitation difficult, but also causes a loss to the organization when the employees holding the much valuable knowledge leave the organization. The following section will briefly discuss the issue of knowledge loss.

While 26 per cent of the organisational knowledge is contained in paper documents, 20 per cent in electronic documents and 12 per cent in electronic databases 42 per cent of the organisational knowledge resides in the brains of the employees (Lahaie 2005). Yet, these employees function in a dynamic environment of change and challenge and many factors affect their employment stability causing the loss of knowledge to the organization when they move out carrying the unarticulated tacit knowledge contained only in their brains. The loss of tacit knowledge has a significant negative impact when the long- serving senior executives leave the organization. When they depart from the organisation they take with them the knowledge of the culture of the organisation, knowledge of the day to day operations, knowledge of past successes and failures within the organisation and awareness of what went into the planning and decision making that formed the organisations into what it is today Lahaie (2005). The role of the senior executive is highly specialised and an organisation possesses only a few members of this rank. Planning, directing, controlling are the primary managerial functions (Robbins et.al. (2003) of the senior executive and a successful senior manager must have a deep knowledge of every aspect of the organisation and its purpose to perform these tasks competently. Such deep knowledge accumulated throughout the years becomes the corporate knowledge and along with the exit of a senior executive, such corporate knowledge and memory of what has been tried and succeeded or failed , re-planned, re-worked and re-evaluated are lost which eventually can lead to decreased competency levels of the organisation (Lahaie 2005).
To minimize the loss of such tacit knowledge, it needs to be transferred from the individual to others so that one person's knowledge acquired through experience can be shared by the other members of the organization. Such transfer of tacit knowledge is crucial for the organization because; "Having

an insight or a hunch that is highly personal is of little value to the company unless the individual can convert it into explicit knowledge, thus allowing it to be shared with others in the company" (Nonaka and Takeuchi, 1995:11).

Transferring knowledge will avoid solving the same problems over and over again (Shearmur, 2000), the owner of a particular piece of knowledge does not have to be present and available in order to share this knowledge (Stover 2004) and when tacit knowledge is converted to explicit knowledge, the organization is in less danger of losing its knowledge capital when employees leave the organization. Articulation gives permanence to tacit knowledge and it can be more easily be shared, stored, combined and manipulated in a variety of ways (Davenport and Prusak 1998).

Based on the assumption that human knowledge is created and expanded through social interaction between tacit and explicit knowledge Nonaka and Takeuchi (1995) presented an often quoted conceptual model for transferring tacit to explicit knowledge and vice versa - the SECI[1] model. While SECI model provides a conceptual explanation of the knowledge transfer process, a wide range of practical methods are discussed in the literature. Some of the key methods elicited from a benchmark study (ACPQ 2008) include Communities of Practice, transfer of job related knowledge, mentoring and apprenticeship and leveraging the knowledge of the retirees. They all have their strengths and weaknesses and an organization, depending upon its needs can use one or several methods to transfer tacit knowledge to explicit knowledge. The appropriateness of *Storytelling* (which is one such method), for tacit knowledge transfer within the context of a university library was explored in this research.

Organizational storytelling

An organizational story is "a detailed narrative of past management actions, employee interactions, or other intra- or extra- organizational events that are communicated informally within the organisation. Such narratives will ordinarily include a plot, major characters and outcome. A moral, or implication of the story for action, is usually implied if not explicitly stated" (Swap et.al 2001: 103).

Researchers have ascertained a variety of objectives for using stories in an organisational setting. They are used as a problem solving tool (Boyce 1996, McLellan 2006 and Steen 1999), for action research, sense making, innovation and new product development (Boyce 1996) and for entertainment (Prusak 2001a**,** Snowden 2005f). Because it is a powerful and free technology which

[1] **S**ocialisation, **E**xternalisation, **C**ombination and **I**nternalisation = SECI

doesn't need expensive hard/software or experts, it can be used to communicate with a large number of people amazingly rapidly (Prusak 2001) and for informal education, training and socialization of new employees (Boyce 1996, Reamy 2002a,2002b and Snowden 2005a). They are also used to maintain institutional history and decision making (Snowden 2005a). Stories are used as a foundation of many formal and informal communities, to create a new paradigm and to introduce new ideas, get people on board and to promote the new idea (Reamy 2002a). Stories and legends generate commitment, make sense and control the organization (Wilkins and Martin 1979). They are used to transfer different kinds of knowledge i.e. sharing norms and values, developing trust and commitment and sharing tact knowledge (Sole and Wilson 2002).

A range of benefits of storytelling within the organizational context has been identified in the literature. It is a successful communication method (Breuer 1998, McLellan 2006 and Prusak 2001 and 2001a) because a story can communicate ideas quickly, naturally, clearly, truthfully, collaboratively, entertainingly, movingly, and interactively and intuitively, than in abstract discussions. Stories can also communicate persuasively since there is a possibility of listener inventing a parallel story in his own environment and it becomes his/her own (Prusak 2001).

Tacit knowledge can be transferred from one person to another successfully; by telling a story with feeling the teller can communicate more than what the teller explicitly knows (Prusak 2001). Sharing stories enables people to learn through other peoples experiences (McLellan 2006). Prusak (2001a) also agrees that it re-connects the speaker with the spoken. According to him writing separates the speaker from the spoken and oral storytelling reconnects the speaker with the spoken thereby enabling the listener to share the speaker's personal, tacit knowledge more than the mere contents of the message. He further declares that storytelling re-connects the knower with the known[1]. From a cognitive psychological perspective, Swap et.al (2001) recognized three reasons for stories to be powerful as a method of knowledge transfer; 1) the availability of heuristics - When corporate culture is made vivid through stories, the availability heuristic predicts they will become more memorable, 2) elaboration of information - To the extent that people reflect upon and integrate information with what they already know, they will remember it better (Swap et.al 2001:106) and 3) the episodic memory involved in stories - The recall of events directly experienced is called episodic memory while general knowledge about the world is called semantic memory… Stories are

[1] "As a child we learn some things through direct anxiety. We acquire knowledge from others, knowledge that we don't have first-hand experience of ourselves, but which we are told to take on faith from others. As an increasing proportion of our knowledge comes from others, which is often in direct conflict with our direct sensory apprehension (e.g. the earth revolves around the sun), we become disconnected with the bases for our knowledge of the world. Storytelling helps re-establish that connection by linking knowledge with the specific context in time and space in which it arose" (Prusak (2001a).

clearly episodic in nature and many features of the story will be encoded in memory and will be readily available for retrieval Swap et.al 2001:107). There is ample empirical evidence confirming that storytelling is a beneficial method for tacit knowledge transfer (Bhardwaj and Monin 2006, DeLong 2002, MacMillan 2008, Ottewell 2009, Seidman and McCauley 2003, Wende and Haghirian 2009, and Wende, Philip and Dubbeker 2002,

Despite these numerous benefits several problems related to oral delivery and capturing of stories also have been identified in the literature. A significant drawback of the stories related by individuals is that they are told from the perspective of one individual. Such a single point of view may not be particularly relevant to others and may differ from the individual's perception of events (sole and Wilson 2002). It can become static if the teller doesn't have appropriate skills and when the story is distanced from the realities (Sole and Wilson 2002, Ferneley and Sobreperez 2009). Furthermore, individuals can use stories to endorse their own personal viewpoints and attitudes. Stories can also be seductive, because the listener can get absorbed in to the content of the story and have difficulty in critically evaluating its knowledge content. When this happens the listener is distracted from the real purpose of the telling (Sole and Wilson 2002).

Story capturing has been discussed at two levels by the researchers; 1) skills of story capturing and the sequences of story capturing. Ruggles (2002) recommended developing three skills to leverage the power stories within the organization; storytelling, story capturing and story understanding. Morgan and Dennehy (1997) advocated five sequential steps that a good story should have: setting, build-up, climax, learning and new behaviour awareness. Another group of researchers have discussed diagrammatic methods of story capturing sequences. Haghirian and Chini (2002) presented a simple cyclical model of storytelling consisting of intention, creation, narration and reception

Snowden (1999, 2005d) Ferneley and Sobreperez (2009) and Seidman and McCauley (2003) also have diagrammatized the story-capturing process. However these authors have paid more attention to capturing and decomposing the organizational anecdotes so that significant elements can be stored and used to construct organizational stories at a later stage which will enable creating a story for specific purpose by combining elements from several stories rather than using a single original story.

Research Methodology

Assessment of the context, motivation and the nature of the research problem revealed that the overall research philosophy most appropriate for the research is phenomenological than positivist (Cresswell 1994) and the research questions pointed towards a need to study storytelling with a more qualitative than quantitative orientation. However the research study contained a quantitative orientation in measuring the effectiveness of storytelling, by using a numeric scale to express the effectiveness.

Of a multiplicity of research methods available it was decided that the case study approach was the most suitable because "In a case study …the researcher explores a single entity or phenomenon ("the case") bounded by time and activity) a program, event, process, institution or social group) and collects detailed information by using a variety of data collection procedures during a sustained period of time" (Cresswell 1994: 12). Librarian whose tacit knowledge was attempted to be transferred through stories was the case in this study. To address the research problem two research questions were identified; RQ1 How can the tacit knowledge of a retiring senior executive be captured through stories? and RQ2 Can the captured "stories of work" benefit knowledge workers in their pursuit of tacit knowledge?

Capturing stories

Preliminary preparation was accomplished by carrying out a literature review to formulate the theoretical foundations of storytelling as an academic discipline. Six management dimensions of the Librarian; as a staff manager, a work process manager, a customer services manager, an administrator, a professional expert and an academic[1] were established considering the significance of the tacit knowledge involved in these dimensions, to gather stories from. In order to address RQ1 it was decided to gather a variety of stories related by the Librarian and a pilot story- gathering initiative was conducted before the actual data gathering commenced using a structured interview schedule. It was established that story gathering from the Librarian consisted of six steps;

1. Story eliciting,
2. Relating by the Librarian,
3. Note-taking
4. Story building by the researcher,

[1] The Librarian as an academic has many dimensions i.e. as a teacher, researcher, curriculum developer etc. but the researcher believed that more than these dimensions, Librarian has a considerable amount of tacit knowledge useful for the junior executives in safeguarding the academic status of the librarians within the university context, therefore stories related to this aspect were selected for the research.

5. Refining of written stories by the Librarian and
6. Adding the refined stories to a catalogue by the researcher.

Step 1. Story eliciting

Librarian was briefly explained the concept of organisational stories and its implications on tacit knowledge transfer and a couple of research papers were given to her to obtain further insights. The structured Interview Schedule was also provided a few days prior to the pilot session to support the story recall. It was expected that the stories would start flowing in smoothly but the progress was slow. Only four stories could be collected in this manner and the pilot study proved recollecting stories would take a considerable amount of time. Storytelling was a frequent and spontaneous activity of the Librarian but the researcher observed a temporary impediment of the habit during the early stages of data collection. The reasons could be lack of time and uncertainty of the stories to be related[1].

To address the slowness of story flow, researcher attempted to reminisce the stories listened to in the past, note down key points and to provide them to the Librarian to help recalling. However this too was slow because the recollection by the researcher was also consuming time and only five stories could be gathered in this way. Seeking support for story recalling was then extended to the Personal Assistant to the Librarian who proved to be a good source of remembrance[2]. He has been serving in the post for almost 22 years and could unearth historical incidences which provided roots for more stories. Eleven *story roots*[3] were elicited in this way.

Sometimes one story root served as an instance of recollection for several other story roots. Depending on the availability of time these secondary story roots were also noted down at that given moment or notes were made for a future session.

[1] 1) lack of time to recollect the appropriate stories for the research which was conducted under artificial circumstances (relating stories for the research rather than for sharing the organizational history or organizational information) and
2) the consciousness that stories related will be written down and the uncertainty of what to relate (whether a particular story is suitable to be related for the research, whether a particular story should be related at all due to its sensitive nature etc) due to lack of experience in such storytelling research.

[2] When the researcher casually mentioned about the research to the PA and that story elicitation is becoming difficult due to time and memory constraints he immediately mentioned few stories and with more time given to him, came up with 15 incidents that has been circulating in the library over the years as stories, which have been forgotten by the Librarian as well as the researcher.

[3] The term *story root* is used here to denote a past incident which the Librarian has related as a story to others.

Step 2. Relating of stories by the Librarian.

Once the stories or story roots were recalled by the Librarian, the complete stories were related to the researcher for the purpose of the research. Storytelling sessions revealed that there was a continuous flow of stories related to certain domains than others. For instance there were more stories related to Staff Management and Work Processes than stories related to Academic and Senior Professional domains.

With regard the content of the stories, Sole and Wilson (2006) perceived that stories related by individuals are told from the perspective of one individual and that such a single point of view may not be particularly relevant to others, but this drawback was not applicable to this research since its purpose was to explore, elicit and transfer the tacit knowledge of one individual considered as a significant knowledge holder of the Library. Therefore recording the stories of Librarian could be justified.

Although it is customary to tape-record the interview sessions to capture the responses accurately, no attempt was made to tape – record the storytelling sessions because neither the researcher nor the Librarian was familiar with tape-recording in a research environment[1]. The researcher functioned as a passive listener when the storytelling started to avoid influencing the flow of the story or their contents.

Step 3. Note-taking

The third step of the story capturing process was note-taking by the researcher. While the Librarian was relating the story, salient points like characters, time period, location and major incidents were noted down. Lessons to learn from the story were also noted down.

It was observed that when the stories were related orally, in addition to the facts, there were many other non-verbal cues enriching the story, for example facial expressions, fluctuations of the voice

[1] a) Both the researcher and the storyteller were new to the research subject and both have not used tape-recording in a research environment. Therefore the researcher believed that working with two unfamiliar concepts would impede the storytelling / gathering process.

b) Storyteller and the researcher had no prior exposure to storytelling as a management tool; therefore it was believed that creating a simulated environment by tape-recording would have introduced a mechanistic artificiality thereby forcing some details of stories to be condensed or obscured.

c) After the pilot study it was established that certain stories could not be recorded at all due to the confidentiality of the content. Deciding on what to / what not to record during the storytelling sessions would have doubled the time on data collection because the researcher would have to listen to the story first and then discuss with the Librarian about its suitability for recording and then request the Librarian to relate the story again for recording. As the available time with the Librarian for the research was limited and collection of a fair number of stories was more important than having a few recorded stories, recording was not attempted.

and hand gestures. Yet these cues could not be noted down to be added to the written down stories. Hence they were rather static and missed all the supporting information like personal attitudes, beliefs and feelings towards the story which conveyed much more than the story's message. This supports Prusak's (2001a) observation that writing separates the speaker from the spoken but oral storytelling reconnects the speaker with the spoken thereby enabling the listener to share the speaker's personal, tacit knowledge more than the mere contents of the message. It also supported Ruggles' (2002) and Reamy's (2002) viewpoints that face-to-face storytelling reverberate better and listener becomes connected to the content as well as the context. But when they are transcribed the stories become static and lose their power and impact.

Step 4. Constructing the complete story

During the fourth step of the process the researcher developed the complete stories using the notes made earlier, by filling the gaps and expanding the notes. Morgan and Dennehy's (1997) first three steps; Setting, Build-up and Climax were followed to build-up the stories. Each completed story consists of three components; the Setting which explained the background information relevant to the story, Story itself and lessons to learn by the readers as identified by the Librarian, but depending on the confidentiality of the contents sometimes all three components were not written down.

Writing down the stories was fairly straight forward and easy but translation had to be handled with care. Since the language of everyday communication in the library is Sinhala, the story eliciting sessions were conducted in Sinhala and the researcher later translated the notes and built-up the stories in English. However the problems encountered by **Parker (1910)**[1] in translating peculiar Sinhala idioms used by the rural villagers in to English, was not encountered by the researcher because the gap between the cultural context as well as the standard of Sinhala in which the stories were delivered by the Librarian and the standard of English used to translate was not as wide as in Parker's case. The original Sinhala used to relate stories and the incidents were close to present times. However, some difficulties were encountered in finding exact English terms to record certain terms. Other than in such instances the translation of stories in to English without any literal improvements was a straightforward affair. Researcher did not attempt to refine the English of the translated the stories because such an attempt would have introduced words, meanings and sentence structures different from the original storyteller.

[1] Ratnapala (1991: xxiii) mentioned that there was a serious defect in Parker's methodology because Parker's knowledge of colloquial Sinhala was insufficient to understand the tales he had to rely on interpreters. In the translation of the tales, it lost a good part of its original flavor.

Step 5. Reviewing

Fifth step of the process was the Librarian reviewing the stories written down by the researcher for accuracy of the facts and lessons to learn. Whenever the Librarian was not satisfied with a written down story, steps 2 o 5 were repeated until accuracy was achieved. Researcher intervention was maintained at a minimum level at this stage to avoid researcher bias.

Step 6. Adding the completed stories to the catalogue

Once the writing was completed to the satisfaction of the Librarian it was again reviewed whether any confidential information which could have harmful effects on any person or organization were included in the stories. Once all aspects were checked the stories were added to a catalogue according to the six management dimensions of the Librarian.

By diagrammatizing the six-step story capturing process, a Story Capturing Model could be generated (Figure 1) for the benefit of future researchers who need to capture organisational stories.

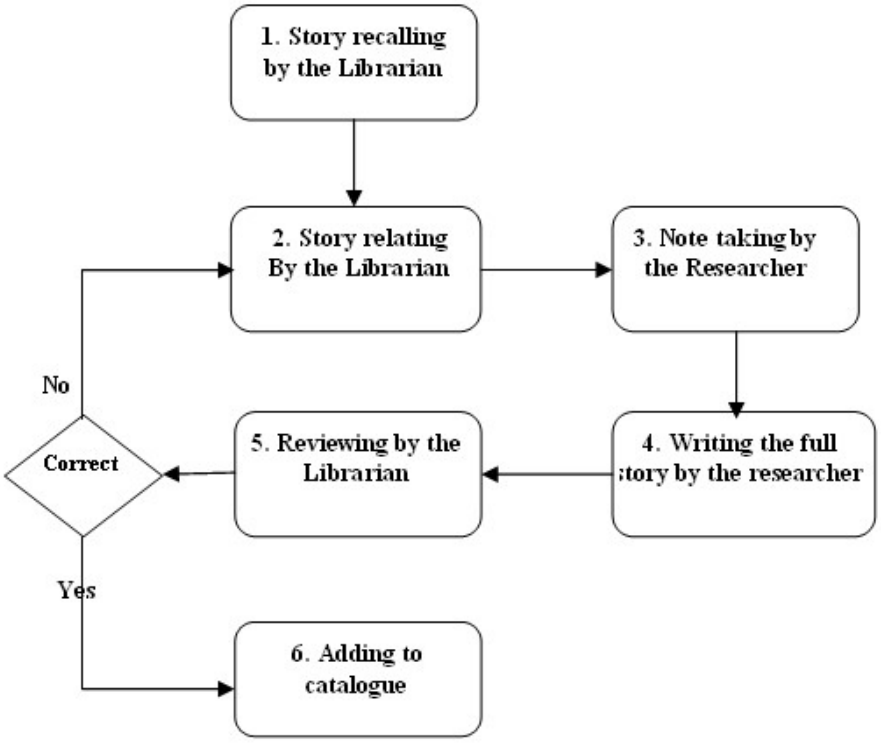


Figure 1 - Story Capturing Model

Model developed during the research process

A special feature of the stories captured using this model is that they are not spontaneous stories related by the Librarian but stories created using step 1 to 5 for the purpose of the research. With this model the RQ1: *How can the tacit knowledge of a retiring senior executive officer be captured through stories?* Could be answered that it can be done using the story capturing model (Figure 1) elicited from the research. Nevertheless the comprehensiveness of the tacit knowledge that could be captured through stories would depend on the degree of confidentiality of the contents of the stories. This would be tested in the following section.

Recommendations

Since the study suggests that organizational stories can be captured and used by the knowledge workers in their pursuit for tacit knowledge, the library should take initiatives to exploit the already prevailing habit of organizational storytelling in the library as a management tool in a deliberated manner. For this several activities are recommended;

- Introduce the theories of organizational storytelling to the staff through publicizing the findings of this research and studies in other countries so that the benefits and purposes of storytelling are appreciated.
- Developing storytelling skills (storytelling, story crafting and story understanding) of the staff as Morgan and Dennehy (1997), Ruggles (2002) and Reamy (2002a) have advocated, in order to exploit its advantages for transferring tacit knowledge.
- Encourage periodic story-circles in the library to exchange organizational stories (as a management tool rather than an entertaining or socializing event) as a teaching / learning event.
- Creating a digital repository of stories consisting three types of stories;
    - Stories related by the staff recorded in multimedia format in such a way the originality of the narration is retained by recording the non-verbal cues in addition to the text as Ruggles (2002) recommends.
    - Stories constructed for training purposes using anecdotal material as discussed by Snowden (2005d). A wide variety of stories could be constructed to suit the needs of the library setting overcoming the problems of storytelling.
    - Interactive stories which encourage the story users to think creatively and analytically about the messages and lessons contained in the stories rather than

accepting the storytellers version without any reasoning as Seidman and McCauley (2003) has recommended[1].

To implement these recommendations the management need to appreciate the Difficult-to-replace, inimitable organizational specific tacit knowledge and realize its contribution to the competitive advantage of the organization. The management also should perceive the significance of incorporating a strategy to minimize and retain tacit knowledge within the organization even after the knowledge owning employees leave the organization and incorporate such knowledge strategies in to the overall strategic plan of the organization.

It is necessary to mention here several limitations of the study. The findings were based only on a single case, in a single organization carried out during a six-month period, within the boundaries of a specific organisational and social culture. Therefore additional case studies would be necessary to test the validity and reliability of the Story Capturing Model. Since the story collection for the research was carried out not under normal organisational environment but under a research environment, the stories included in the catalogue may not reflect the stories which expose most significant tacit knowledge elements for the knowledge seekers.

Conclusion

Lahaie (2005) established that 42 per cent of the organisational knowledge resides in the brains of the employees but the organization loses it and when they move out. Attempts are made to transfer this tacit knowledge from holder to others so that the loss is minimized. A variety of methods are used for such transferring and storytelling is one such method. Sri Lanka has a long history and culture of storytelling and the modern dynamic society has added industrial-lore to long-existing folklore. Yet, there is no literary evidence of library-lore being used to transfer tacit knowledge in Sri Lanka although it is an informal day to day occurrence within the library context. This research attempted to fill the void by exploring the potential of storytelling in transferring tacit knowledge from a senior University Librarian.

[1] Seidman and McCauley (2003) have presented a pilot study on retaining the knowledge of retiring workers. Their study consists of five stages; 1) identifying significant knowledge and top performance in the organization 2) use of specialized interview method (Naïve New Person Interviews) to get the workers relate stories about their work which include cuing mechanisms, decision making, risk detection and management 3) using Digital Coaching Technology to enhance knowledge 4) creating a database and 5) use of the database by the successors or anyone who requires knowledge. Facilities are provided for the others also to add, update or revise the contents.

The study had two specific objectives; to explore the potential of capturing tacit knowledge of the Librarian through stories and to examine whether captured stories serve the pursuit of knowledge by the junior executives. Two research questions were formulated to achieve these objectives and were addressed through qualitative and quantitative research methods.

Findings proved that stories can be captured using a six-step model elicited from the research but the findings also established that the comprehensiveness of the tacit knowledge that could be captured through stories would depend on the degree of confidentiality of the contents of the stories. It was further established that, captured "stories of work" **do** benefit knowledge workers in their pursuit of tacit knowledge and this will be presented in another paper to be published in future.

References

ACPQ. (2008). Overcoming knowledge loss: key knowledge retention and transfer approaches. http://kmedge.org/wp/overcomingknowledge3.html. Accessed on 24.07.2010

Bhardwaj, M and Monin, J. (2006). Tacit to explicit: an interplay shaping organisation knowledge. *Journal of Knowledge Management*. 10(3). 72-85.

Boyce, M.E. (1996). Organisational story and storytelling: a critical review. *Journal of Organisational Change*. 9(5). 5-26.

Breuer, N.L. (1998). The power of storytelling. *Workforce*. 77(12). 36-42.

Chen, L. and Mohamed, S. (2010). The strategic importance of tacit knowledge management activities in construction. *Construction Innovation*. 10(2). 138-163.

Cresswell, J.W. (1994). Research design: qualitative and quantitative approaches. Thousand Oaks. Sage.

Davenport, T. and Prusak, L. (1998). Working knowledge. Boston, MA. Harvard Business School Press.

DeLong, D. (2002). Better practices for retaining organizational knowledge: lessons from the leading edge. http://www.ostknowledge.com/pdfs/DeLong.Best%20Practices.1B8CEpdf Accessed on 27.07.2010.

Denning, S. (2004). Telling the right story. http://www.stevedenning.com/Documents/Leader-Ch-1.pdf Accessed on 13.07.2010.

Denning, S. (2006). Effective storytelling: strategic business narrative techniques. Strategy and Leadership. 34(1). 42-46.

Ferneley, E. and Sobreperez, P. (2009). An investigation into extracting and analysing stories. International Journal of Organisational Analysis. 17(2). 121-138.

Haghirian and Chini (2002). Storytelling: transferring tacit corporate knowledge in different cultures. A-research-in-progress paper. Accessed on 31.08.2010.

Harlow, H. (2008). The effect of tacit knowledge on the firm performance. Journal of Knowledge Management. 12(1). 148-113.

Howells, J. (1996). Tacit knowledge, innovation, and technology transfer. *Technology Analysis and Strategic Management*. 8(2). 91-106.

Krogh, G. (1998). Care in knowledge creation. *California Management Review*. 40(3). 133-153.

Lahaie, D. (2005). The impact of corporate memory loss. *Leadership in health Services*. 18(3). 35-48.

Leonard, D and Sensiper, S. (1998). The role of tacit knowledge in group innovation. *California Management Review*. 40(3). 112-132.

MacMillan, D. (2008). Issue: retiring employees, lost knowledge. Bloomberg Businessweek. http://www.businessweek.com/managing/content/aug2008/ca20080820_195439.htm.
Accessed on27.10.2010

Martin, J. et. al. (1983). The uniqueness paradox in organisational stories. Administrative Science Quarterly. 28(3). 438-453. Quoted in Swap et. al. (2001).

McLellan, H. (2006). Corporate storytelling perspectives. *The Journal for Quality and Participation*, 29(1). 17-20.

Morgan, S. and Dennehy, R.F. (1997). The power of organizational storytelling; a management development perspective. *Journal of Management Development*. 16(7). 494-501.

Nonaka, I. and Takeuchi, H. (1995). The knowledge creating company. New York. OUP.

Nunes, M. B. et.el. (2006). Knowledge management issues in knowledge-intensive SMEs. *Journal of Documentation*. 62(1). 101-119.

Ottewell, S. (2009). Some companies are taking proactive steps to retain knowledge. http://www.chemicalprocessing.com/articles/2009/114.htm?page=print Accessed on 27.07.2010.

Prusak, L. (2001). Storytelling in organizations. http://www.creatingthe21stcentury.org/Larry.html Accessed on 13.07.2010.

Prusak, L. (2001a). Why storytelling at this particular time? http://www.creatingthe21stcentury. org/Intro7- Why-story-now.html Accessed on 26.07.2010.

Ratnapala, N. (1991). Folklore of Sri Lanka. Colombo. State Printing Corp.

Reamy, T. (2002a). Imparting knowledge through storytelling, Part 1 of a two-part article. http://www.providersedge.com/docs/km_articles/Imparting_Knowledge_Through_Storytel ling.pdf Accessed on 13.07.2010.

Reamy, T. (2002b). Imparting knowledge through storytelling, Part 2 http://www.providersedge.com/docs/km_articles/Imparting_Knowledge_Through_Storytel ling.pdf Accessed on 13.07.2010.

Ruggles, R. (2002). The role of stories in knowledge management. *Journal of Storytelling and Business Excellence*. Quoted in Bhardwaj and Monin (2006).

Robbins, S.P. et.al. (2003). Management – Canadian. 7th ed. Englewood Cliffs, NJ. Prentice Hall. Quoted in Lahaie (2005).

Roy, P. and Roy, P.M. (2002). Tacit knowledge management in organizations: a move towards strategic internal communication systems. *Journal of American Academy of Business*. 2(1). 28-33.

Seidman, William and McCauley, Michael (2003). Saving retiring knowledge workers' "secret sauce". www.Cerebyte.com/articles/Retiring%20Knowledge%20Workers.pdf. Accessed on 27.07.2010.

Sigala, M. and Chalkiti, K. (2007). Improving performance through tacit knowledge externalization and utilization: preliminary findings from Greek Hotels. International Journal of Productivity and Performance management. 56(5/6).456-483.

Shearmur, J. (2000). The use of knowledge in organizations: a preliminary exploration. Knowledge, technologies and Policy. 13(3). 30-48.

Snowden, D.J. (1999). The paradox story; simplicity and complexity in strategy. http://www.cognitive-edge. com/ceresources/articles/56_1999_11_Paradox_of_Story.PDF. Accessed on 31.08.201.

Snowden, D. (2005a). The art and science of story or "Are you sitting comfortably?" Part 2: the weft and warp of purposeful story. http://www.cognitive-edge.com/ceresources/articles/36_Art_of_Story_2_-_Weft_and_Warp_final.pdf Accessed on 13.07.2010

Snowden, D. (2005b). Knowledge elicitation: indirect knowledge discovery. Part two of basics of organic knowledge management.

http://www.cognitive-dge.com/ceresources/articles/8_Organic_KM_2_of_3_discovery.pdf Accessed on 13.07.2010.

Snowden, D. (2005c). The art and science of story or "Are you sitting comfortably?" Part 1: gathering and harvesting the raw material. http://www.cognitive-edge.com/ceresources/articles/5_Art_of_Story_1-Gathering_and_Harvesting_v2_May05.pdf Accessed on 13.07.2010.

Snowden, D. (2005d). The ASHEN model: an enabler of action. Part one of basics of organic knowledge management. http://www.cognitive-edge.com/ceresources/articles/7_Organic_KM_1_of_3_ASHEN.pdf Accessed on 13.07.2010.

Snowden, D. (2005e). Story circles and heuristic based interventions. Part three of basics of organic knowledge management. http://www.cognitive-edge.com/ceresources/articles/9_Organic_KM_3of3_interventions.pdf. Accessed on 13.07.2010.

Snowden, D. (2005f) Story telling: an old skill in a new context. http://www.cognitive-edge.com/ceresources/articles/10_Storytellling1_-_Old_Skill_New_Context_.pdf Accessed on 02.09.2010.

Sole, D. and Wilson, D.G. (2002). Storytelling in organizations: the power and traps of using stories to share knowledge in organizations. http://lila.pz.harvard.edu Accessed on 13.07.2010.

Steen, M. (1999). Storytelling sells. InfoWorld. 21(22). 87.

Stover, M. (2004). Making tacit knowledge explicit: the ready reference database as codified knowledge. *Reference Services Review*. 32(2). 164-173.

Swap, W. et.al. (2001). Using mentoring and storytelling to transfer knowledge in the workplace. *Journal of Management Information Systems*. 18(1). 95-114.

Wende, Erik and Haghirian, P. (2009). Storytelling as a tool for knowledge transfer in the IT industry. 17th European Conference on Information Systems. http://www.ifi.uzh.ch/pax/uploads/pdf/publication/1220/Proceedings_of_17th_European_Conference_on_Information_Systems_2009_Wende.pdf Accessed on 31.08.2010.

Wende, Erik; Philip, Tom and Dubberke, S. (200?). Storytelling – an instrument to bolster knowledge transfer in offshore software projects. http://www.ifi.uzh.ch/pax/uploads/pdf/publication/1221/Storytelling_KT_20090320_ew_sd.pdf. Accessed on 31.08.2010.

Wilkins, A. and Martin, J. (1979). Organisational legend. Unpublished research paper, No. 521. Graduate School of Business, Stanford University, Stanford, CA. Quoted in Boyce (1996).

Digital Literacy: The Talisman of the LIS Curriculum and the Resurrection of LIS Profession

Suresh, B.[1] and Ramkumar, P.[2]

A major section of the User community is able to ignore the library and LIS professionals in their information seeking efforts as the Internet and WWW provide an exuberant information environment with tools and strategies of ICTs. The profession is reaching a near extinction state. This is due to the fact that, LIS professionals lack the education, training and practices. Three fourth of the LIS curriculum is theory based and papers promoting professional practice is lacking. Hence, it is apt to supplement the curriculum with digital literacy which alone can breathe in an air of confidence into the Library and Information profession. Digital literacy should be designed appropriately and adopted at the LIS course program. This paper discusses the need for and significance of digital literacy curriculum to resurrect the LIS profession.

Introduction

Librarians are not only changing the way they work, but also witness the changes in their work environment due to the advent of computers and Information Communication Technologies (ICTs) in abundance into the library and its overall management. "Today modern librarianship is a profession with a diversity of opportunities and challenges and LIS professionals have to play a vital role in the process of information organization, retrieval, repackaging and its communication. Now the designation of jobs has been changed to Web Manager, E-Publisher, Knowledge Manager, Information Manager/Officer, Internet searcher etc. To survive in this fast and ever changing digital world, LIS professionals must be well equipped, highly qualified and professionally competent with different skills." What started earlier as a manually operated traditional libraries, have changed a lot in accordance with the developmental changes, increasing the dimension of tradition based digital services to the user community. All this is possible due to the corresponding changes in the LIS curriculum. Digital literacy is the term and talk of the day that should find a prominent spell in the LIS curriculum.

The enormity of information availability compelled the Librarians to adopt 'Information Literacy' programs for the benefit of the user community. This was on the lines of S.R. Ranganathan who

[1] Suresh, B, University Librarian, Madurai Kamaraj University, Madurai , India

[2] Ramkumar, P, AMET University, Kanathur, Chennai, India

introduced the concept of 'Initiation to Freshman', synonymously identified as User education and User orientation or User Training. Such programs simplified the retrieval and use of information from a complex structure of information storage. This concept got transformed into the term Information literacy.

Information Literacy

The United Nations Educational, Scientific and Cultural Organization (UNESCO) has drafted the following definition: "Literacy is the ability to identify, understand, interpret, create, communicate and compute, using printed and written materials associated with varying contexts. Literacy involves a continuum of learning to enable an individual to achieve his or her goals, to develop his or her knowledge and potential, and to participate fully in the wider society." Libraries, irrespective of their system affiliation, right from their inception, have been supporting and supplementing the development, promotion, and advancement of literacy at the core of their mission. Information literacy is more meaningful and akin to the library users and the academic community. ALA Presidential Committee (1989) on Information Literacy in its Final Report, released in 1989 defined that Information Literacy is a set of abilities requiring individuals to "recognize when information is needed, have ability to locate, evaluate and use effectively the needed information." The proliferation of information with rapid speed and changing shape of the sources of information supported with the constantly changing technologies affects the understanding of everything around.

Scholars have found that the traditional literacy of reading, writing and mathematical reasoning are insufficient for life long learning, as Breivik and Jones (1993) expressed. Information literacy is not only required in the context of libraries but also in anyone's day to day affairs. Reflecting this concept, Darch et al., (1997) affirmed that, "The need to handle and use information is present in all stages of life and the acquisition of the competencies of information literacy must be intertwined with the acquisition of the other literacy." It was Information literacy till yesteryears. Today, it is digital literacy, a term that overtakes information literacy.

Digital Literacy

Libraries have shifted from the Traditional path to the digital track. The paradigm shift has changed the way in which information and communications are enabled and disseminated through the Internet warranting for an expanded vision of literacy. This expanded vision, adopted by libraries aims to ensure the entire user community regardless of level and subject affiliation or intellectual capacity, of their full participation in the digital age.

Information Communication Technologies (ICTs) and their applications and production systems warrant for new skills in order to develop, operate and maintain hardware and software enabling an efficient and effective use of their capabilities. Information societies have transformed into knowledge societies. Naturally, Information literacy needs a transformation into digital literacy in accordance with the environmental changes that have permeated into the society in general and into the academic community as an imperative.

In the present day environment, there is a consensus that, the introduction of ICTs as workplace technologies require users to acquire the required knowledge in its thoroughness to apply a new set of basic skills, generally referred to as "digital literacy" or "digital literacy skills" to have smooth handling of the environment.

"Digital literacy" evolved as a broad term encompassing information literacy abilities "requiring individuals to recognize when information is needed and have the ability to locate, evaluate, and use effectively the needed information", as well as competencies in creating content, reflecting on one's own conduct and social responsibility, and taking action to share knowledge and solve problems. Digital literacy also is associated with the ability to use computers and other devices, social media and the Internet. Digital literacy itself is an emerging concept but there needs to be a common understanding of the parameters it covers. The concept of digital literacy is a development over information literacy and has a lot of developments required to suit the present day digital and virtual information environment with a slant to the Internet and the World Wide Web.

Need for Inclusion in the LIS curriculum

The barriers between the information resources and the users remain a constant excepting the content holding formats. To anyone looking at the concept of digital literacy, it may seem to include the provisions of information literacy and computer literacy. But digital literacy, though contains aspects from both, comprises of more provisions relevant to the digital environment. When the concept of digital literacy is included, it adds more aspects of library related operations like handling searchable databases, downloading and installing open source software programmes, social networking provisions, developmental provisions of the Library 2.0 and the like.

The absence of sufficient provisions in the LIS curriculum, the LIS professionals are not able to intercept the users' dialogue on the net which seems to bifurcate the LIS professionals and the users. Many a time, the users are Internet savvy and make the LIS professionals feel small. Because of a portion of the user community is able to handle their information needs on the net independent of

the LIS professionals; it does not mean that everyone knows. The trial and error method may earn success to some extent to the users but not always. There is a general feeling that in the present day digitally developed environment may not require the LIS professionals or their service anymore. It sounds as though the paradise of the LIS professionals is lost, at least in the case of duty conscious personnel. The frequency of articles discussing, "Do we need libraries? Or Do we need Librarians?" is becoming higher because Librarianship is not able come to the rescue of the users seeking the LIS professionals' help. The profession is moving towards doomsday. If it has to be resurrected, it is time; Digital Literacy in clear terms should find prominence in the LIS curriculum.

Digital Literacy: Curriculum

The syllabus for digital literacy should aim to create an understanding of the concept of digital literary, its significance in promoting learning, teaching and research environment and its relevance to libraries and information services; Have the knowledge and skills to practice and promote digital literacy in their own professional and academic work; Comprehend the variety and nature of digital information sources, and appreciate methods for finding, accessing and producing digital resource; enable to show the role of knowledge organization and critical thinking in the evaluation and use of digital information resources; possess skills for teaching and communicating the principles and practice of digital literacy including the use of networked resources;

Conclusion

Libraries will have to stop lamenting over the drifting significance of library bound resources and services. A new concept is coming up strengthening 'Onsite' services and library as place of learning commons. A major section of the User community is able to ignore the library and LIS professionals in their information seeking efforts. This is due to the fact that, LIS professionals lack the education, training and practices. Hence, it is apt to supplement the curriculum with a paper on digital literacy which alone can resurrect the fallen image and spirit of the Library and the profession.

References

American Library Association (ALA) (1989). Presidential Committee on Information Literacy. Final Report Washington, DC.

Breivik, Patricia Senn and Jones, Dan L. (1993). Information Literacy: Liberal Education for the Information Age. Liberal Education, 79 (1).

Darch, C., Karelse, C., and Underwood, P. (1997). Alternative Routes on the Super Highway. Independent Online-Higher Education Review. Independent Educational Media.

Study of Disciplinary Archives in Library and Information Science: with Special Reference to E-LIS

Bhongade, Devendra[1] and Hirwade, Mangala, Anil[2]

The present paper deals exclusively with disciplinary archives in Library and Information Science. A disciplinary archive contains a body of publications from several scientific institutes within a specific scientific discipline. Presently E-LIS has 11833 documents. A detailed content analysis of E-LIS has been carried out to study the self archiving trends of LIS researchers. There are 69 LIS repositories reported in Directory of Open Access Repositories (DOAR) out of which 13 are disciplinary archives. These archives have been studied by using various parameters viz. authority, size, types of contents, software used, languages and copyright policies. E-LIS is the most flourished disciplinary archive in LIS, which was established in 2003 and having a team of volunteer editors from 44 countries and support for 22 languages. In a few years, E-LIS has been established as the largest international open repository in the field of library and information science. Searching or browsing E-LIS is a kind of multilingual, multicultural experience, an example of what could be accomplished through open access archives to bring the people of the world together.

Keywords: *Disciplinary Archives, Open Access Archives, E-LIS, DOAR, LIS Repositories*

Introduction

Open Access self-archiving model is liberal on peer review. It simply provides persistent digital repository where authors/ owners of the content may archive their documents. Self –archiving can be achieved in three ways viz.

- Putting articles on author web sites.
- Depositing articles in disciplinary archives.
- Depositing articles in institutional archives and repositories.

[1] Dr. Bhongade, Devendra. Principal, Jivan Vikas Mahavidyalaya, Maharashtra, India
devendra.bhongade@gmail.com

[2] Dr. Hirwade, Mangala Anil.Assistant Professor, Dept. of Library & Information Sc., RTM Nagpur University, India
hmangala@rediffmail.com

Disciplinary archive

A disciplinary archive provides access to e-prints for one scholarly discipline or multiple scholarly disciplines. A disciplinary archive can be searched or browsed. E-LIS is the famous disciplinary archives for library and information science.

E-LIS

E-LIS means E-prints for Library and Information Science (E-LIS) is an international open access archive for e-prints related to Librarianship, Information Science and technology, and related application disciplines, in keeping with the objectives of the E-prints movement and the free online scholarship (FOS) Movement. E-LIS is an international Open Archive for Library and Information Science (LIS) established in 2003. Over 9,000 papers have been archived to date. E-LIS has grown to include a team of volunteer editors from 60 countries and support for 22 languages. It accepts published or unpublished documents in scientific or technical areas; authors can self-archive and a proxy service supports depositors. Metadata are set for each document type and are checked in accordance with editorial guidelines set by an international editorial committee. In few years, E-LIS has been established as the largest international open repository in the field of library and information science. Searching or browsing E-LIS is a kind of multilingual, multicultural experience, an example of what could be accomplished through open access archives to bring the people of the world together. Because librarians are so involved in open access advocacy, E-LIS is a key to encouraging open access for all repositories, by giving librarians the experience they need to speak with confidence when talking with researchers and open access archives, and the experience to provide the best possible assistance to self-archiving faculty. The mission of E-LIS is to remain international and world-wide: a place where people from all over the world can deposit their documents and contribute to the world-wide dissemination of knowledge and to improve knowledge of the building and management of open archives working practically in the field within the framework of Open Digital Libraries. Not only to promote open archives in various disciplinary environments, but also to create a valid and credible model in LIS discipline for the building of a world Library and Information Science archive and to establish a base for communal work between librarians information technology professionals, and to enhance the Open Access movement.

E-LIS has recently migrated to Dspace. AePIC CILEA is proposed in 2010 to change from EPrints Software to DSpace due to business and maintenance reasons. E-LIS repository is currently supported by CILEA through the AePIC team, FAO of the United Nations and DURASPACE that supports E-LIS since 2011. E-LIS users can both browse by authors, conferences, countries, journals/books, subjects, titles, years and search (simple or advanced) the archive. E-LIS accepts content of many different types. Most of the submissions are journal articles or PowerPoint

presentations; E-LIS also includes books, book chapters, conference posters, datasets, library instructional materials, and newspaper articles, among many others.

Figure-1: Home Page of E-LIS (Accessed on 9.05.2011)

Analysis

Subject wise Distribution of E-Prints in E-LIS

Library and Information Science is a manifold subject having various aspects. It has been observed that E-LIS has made several sub sections to manage the collection of E-prints. Total 12 subject Headings are used by E-LIS. The details are shown in Table-1

Table 1: Subject wise distribution of E-print in E-LIS (9.5.2011)

Sr. No.	**Subject Heading**	**No. of Prints**	**%**
1	Theoretical & General aspects of LIS	831	4.5
2	Information use & Sociology of Inf.	3601	19.4
3	Users, Literacy & Reading	1146	6.2
4	Libraries as Physical Collections	1920	10.3
5	Publishing & Legal Issues	656	3.5
6	Management	812	4.4
7	Industry, Profession & Education	1165	6.3
8	Inf. Sources, Supports, Channels	3520	18.9
9	Inf. treatments for Inf. Services	1927	10.4

10	Technical Services in Lib. Arch. Museum	970	5.2
11	Housing Technologies	153	0.8
12	Information Technology & Lib. Tech.	1895	10.1
Total		18596	100

It has been observed from Table-1, that total 18596 e-prints are available in E-LIS as on 9.5.2011. 'Information use & sociology of information' is the dominating subject heading having 3601 (19.4%) e-prints. It is followed by the subject heading having 'Information Sources, Supports and Channels' 3520(18.9%) e-prints. The minimum number of e-prints is reported in the subject heading 'Housing Technology' i.e. only 153 (0.8%).

Year Wise Distribution of E-Prints in E-LIS

Table-2 shows year wise distribution of e-prints in E-LIS. It has been observed that the maximum e-prints are being published or submitted to E-LIS in the time period of 2000 to 2010. This means that E-LIS covers the most recent information. 10147(85.2%) e-prints are from the period 2000 to 2010 are included followed by year 1990-2000 time period i.e. 1465 (12.3%).

Table 2: Year Wise Distribution of E-prints in E-LIS

Sr. No.	**Year**	**No. of E-prints**	**Percentage**
	1960-1970	03	0.02
	1970-1980	14	0.1
	1980-1990	119	1
	1990-2000	1465	12.3
	2000-2010	10147	85.2
	2010-Present	153	1.2
Total		11901	100

Continent Wise Distribution of E-Prints in E-LIS

There are six major continents in the world viz. Africa, America North and Central, South America, Asia, Europe, Oceania and Antarctica. The continent wise distribution of E-prints in E-LIS as on 15.05.2011 is shown in Table -.3

Table 3: Continent wise distribution of E-prints in E-LIS (28-06-06)

Sr. No.	Content	No. of E-prints	%
1	Africa	63	0.9
2	North & Central America	1538	24
3	America-South America	803	12.4
4	Asia	845	13.1
5	Europe	3106	48.2
6	Oceania	85	1.3
7	Antarctica	-	-
Total		6440	100.00

It has been observed that Europe dominates in the number of e-prints included in E-LIS i.e, 3106 (48.2%). It is closely followed by others group i.e., 1538 (24%) e-prints from North and Central America are included. Only 845 (13.1%) e-prints from Asia are included.

Country Wise Distribution of E-Prints in E-LIS in Asia

Total 845 e-prints from Asia are included in E-LIS accessed on 15.5.2011. The country wise distribution shows that the maximum e-prints are from India i.e. 383(45.3%) followed by Indonesia i.e. 77(6.35%) and by China i.e. 70 (8.2%). The details are shown in Table- 4

Table 4: Country wise ASIA distribution of E-prints in E-LIS (15.05.2011)

S.N.	Country	No. of E-prints	%
1	Bangladesh	8	0.9
2	China	70	8.2
3	India	383	45.3
4	Indonesia	77	9.1
5	Iran	37	4.3
6	Israel	13	1.5
7	Japan	33	4
8	Kuwait	33	4
9	Lebanon	2	0.2
10	Malaysia	35	4.14
11	Nepal	6	0.7
12	Pakistan	33	4
13	Philippines	21	2.4
14	Singapore	43	5
15	South Korea	2	0.2

16	Sri Lanka	17	2
17	Taiwan	12	1.4
18	Thailand	17	2
19	UAE	2	0.2
20	Vietnam	1	0.1
Total		845	100

Indian Contribution in E-LIS

It has been observed that Indian authors are contributing to E-LIS generously. In Asia continent, India is the most dominant country in the contribution of e-prints to E-LIS. The contribution of Indian authors to E-LIS has been studied in detail during the project. Total 639 E-prints are contributed by Indian authors to E-LIS.

Table 5: Indian contribution in E-LIS articles

Sr. No.	**Authorship Pattern**	**No. of Articles**	**%**
1	Single author	325	50.8
2	Double author	181	28.4
3	Three author	83	12.9
4	Four author	49	7.6
5	Institutional author	1	0.15
Total		639	100

The authorship pattern of Indian contributors to E-LIS has been shown in Table No. 5. It has been observed that Single Authorship pattern is dominant with. 325 (50.8%) e-prints followed by Joint authorship i.e. 181 (28.4%), only one example of Institutional authorship is observed.

Total Number of Indian Contributors

It is observed from Table- 6, that total 1133 Indian authors contributed 639 articles in E-LIS. There are 325 (50.86%) E-prints by single authorship, 181(28.33%) with two authors, 83 (12.98%) e-prints by three authors with only one (0.16) institutional authorship

Table 6: Total Number of Indian Contributors

S.N.	Authorship	No. of E-prints	%
1	Single author	325	50.86
2	Double author	181	28.33
3	Three author	83	12.98
4	Four author	49	7.67
5	Institutional author	1	0.16
Total		639	100

Ranking of Indian Authors

It has been observed from analysis, that the maximum articles contributed to LIS from Indian authors is by Sridhar, M. S. i.e. 104 articles, followed by Raman Nair, R. at second position with 93 articles, closely followed by Kalyane, V. L. at third position with 74 articles. The ranked list of Top 20 Indian Authors is reported in Table-7,

Table 7: Ranked List of Indian Authors

Rank	Name of Author	No. of Article
I	Sridhar, M. S.	104
II	Raman Nair, R.	93
III	Kalyane, V. L	74
IV	Vijai Kumar	42
V	Kademani, B. S.	34
VI	Prakasan, E. R and Vijayakumar, J. K.	25
VII	Sen, B. K and Das, Anup Kumar	22
VIII	Anil Sagar	18
IX	Angadi, Mallikarjun	17
X	Koganuramath, M.M.	15
XI	Anil Kumar , Rajasekharan , K.	14
XII	Vimal Kumar, Nafala, K. M. Franci, A. T , Ghosh, Maitrayee	11
XIII	Murthy, T. A. V., Ghosh, T. B.	10
IVX	Hirwade Mangala, Dutta Bidyarthi, Swarn, T.	9
XV	Chandra Harish, Vijayakumar, Manju, Salokhe, Gauri, Lalit Mohan, Jange Suresh	8
XVI	Keizer, Johannes, Nazim, Mohammad, Nikose, S.M.	7
XVII	Savanur, Kiran, Lihitkar Shalini, Chaudhuri, Sabuj Kumar, Devarai, Rajashekhar S., Singhal, Madhuresh, Sreenivasulu, V.	6
XVIII	Kalyane, S. V., Khan, M. T. M., Kadam, S. N, Dutta, Chaitali, Maharana, Bulu, Hirwade, Anil, Hussain, K. H., Pradip, Joshi, Surwase, Ganesh	5
XIX	Basimalla, Solomon, Raju, Sangam, S. L., Chakravarty, Rupak, Chaurasia, Kamal Kumar, Sreekumar, G., Swain, Dillip K	4
XX	Prasanna, T.S., Kademani, A. B., Ghosh, S. B, Saraf, Sanjiv Panda, K. C., Sewa Singh, Majumder, Krishnapada; Manouselis, Nikos; Lewison, Grant, Abraham, Thomas ,Gaderao, C. R., Katz, Stephen, Ramesh, L. S. R. C. V.,Ravindran Asari, K., Sini, Ma,rgherita, Tiew, Wai Sin, Upadhye, R.P.,Vasishta, Seema	3

Conclusion

E-LIS is an outstanding example of global cooperation, which is reflected in one of the strengths of LIS. Academic and research communities should realize this fact and should submit their research works to open access archives so that their work can be widely accessed throughout the world. E-LIS is the world's largest archive for LIS. It is a disciplinary archive dedicated to the subject Library and Information Science and it is a step towards redefining open access.

References

Suber, Peter. A very brief introduction to Open Access. <http://www.earlham.edu/~peters/fos/brief.htm>(Accessed on 11.5.2011)

Budapest Open Access Initiative (2002) <http://www.soros.org/openaccess/read.html> (Accessed on 11.5.2011)

E-LIS, E-prints in Library & Information Science. <http://eprints.rclis.org> (Accessed on 13.5.2011)

Peset, Fernanda and Ferrer-Sapena, Antonia, E-LIS: Central Repository on Library and Information Science**,** <http://creativecommons.org/publicdomain/mark/1.0/> (Accessed on 15.05.2011)

Hirwade Mangala and Mahajan Kartika. E-LIS: A Step towards redefining Open Access, <eprints.rclis.org/bitstream/10760/7874/1/8E15862A.pdf> (accessed on 15.5.11)

Tsunami Research Output in India and Sri Lanka: a Scientometric Analysis

Balasubramani, R.[1], Siriwaradana, A.S.[2] and Ranasinghe, W.M.T.D.[3]

Tsunami research in India, Sri Lanka, over the years 2005–2011 is analysed and compared with that in USA and Japan. Its growth, rank and global publications share, citation impact, share of international collaborative papers, contribution of major collaborative partner countries, and patterns of research communication in most productive journals. Tsunami research in India and Sri Lanka are analyzed based on papers abstracted in ISI Science Citation Index, Social Science Citation Index and Arts and Humanities Index. There were 3,624 publications all over the world; of which Indian has published 318 and Sri Lanka 88 papers in all, and these were published in more than 499 scholarly journals.

Keywords: *Tsunami, Scientometrics, Citations, India, Sri Lanka*

Introduction

The present study pointing out of analyzing the research output performance of Tsunami in India and Sri Lanka. Tsunami is a series of waves usually generated by movement of the seafloor. These movements are caused by different types of geophysical phenomena such as earthquakes, landslides, volcanic eruptions, slumps and meteorites. But 90% of the Tsunamis are initiated with earthquakes. They all repress a enormous mass of water, which become special waves, the ratio between the water depth and the length of these waves is very small. They move at a speed equals to the square root of the product of gravity (9,8m/s/s) and the depth of the water. Because they lose energy reciprocally related to their length, they can travel with high speed over long distances without losing much energy. Therefore, the tsunami reaches the coast with a destructive and devastating force.

Literature Analysis

Karki and Garg (1997) attempts quantitative assessment of alkaloid chemistry (a subgroup of organic chemistry) research in India as viewed through Chemical Abstracts, focusing on world

[1] Dr. Balasubramani, R., Assistant Librarian, Department of Library and Information Science, Bharathidasan University, India

[2] Siriwaradana, A.S., Acting Librarian, Rajarata University of Sri Lanka, Sri Lanka

[3] Ranasinghe, W.M.T.D, Asst. Libraian, University of Kelaniya, Sri Lanka
tharangad@kln.ac.lk

versus citations of India's work. Fish research in India has been examined by Jayashree and Arunachalam (2000), about 460 papers, roughly 5.5% of the world output, came from India every year, of which 82% are journal articles. About 61% of publications are contributed by government laboratories in low impact and low visibility journals and academic institutions in journals of medium impact. Arunachalam and Gunasekaran (2002) undertaken diabetes research in India and China, during 1990–1999, indexed in PubMed, Science Citation Index (SCI) and Biochemistry and Biophysics Citation Index (BBCI). They identified institutions carrying out diabetes research, and these two countries account for 26% of the prevalence of diabetes, they contribute less than 2% of the world's research. Gunasekaran (2006) explored Chemical science research in India, data collected from Chemistry Citation Index in 2002. Roughly, 4.5% of the global R&D output in chemical sciences was contributed by Indian in 2002, about 16% of the papers had international collaboration.

Objectives

The main objective of this study is to present the growth of scientific output in the field of Tsunami research over the period of 2005-2011 using Scientometric analysis. In particular, the study focuses on the following objectives:

- To study the relative research effort in Tsunami by the scientists of the two countries
- To study the publications productivity and impact of leading institutions and authors of India and Sri Lanka,
- To find out the impact made by the research in Tsunami by the two countries using surrogate measures;
- To study the pattern of co-authorship of the two countries.
- To study the patterns of research communication in most productive journals of the two countries

Methodology

The data for the study has been sourced out from ISI Science Citation Index – Expanded edition of Web of Knowledge database. The study analyses literature growth trends, examines research activities in different higher education and research institutions across India and Sri Lanka. The study also identifies the active institutions in India and Sri Lanka, which published the productive Tsunami research.

The data contains all types of documents published during 2005 to 2011.The analysis is explored to reveal:

(1) Number of works published on the Tsunami,

(2) the top rated journals used to publish this research work and their position

(3) The top publishing research institutions of India and Sri Lanka.

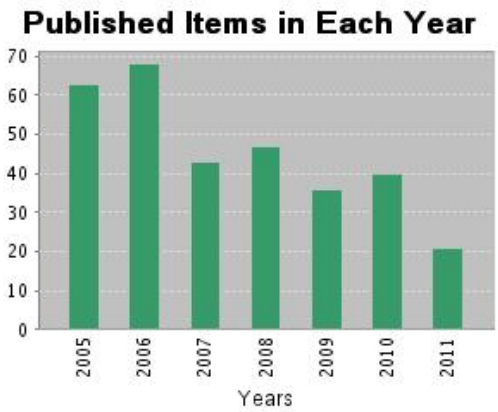
Results and Discussion

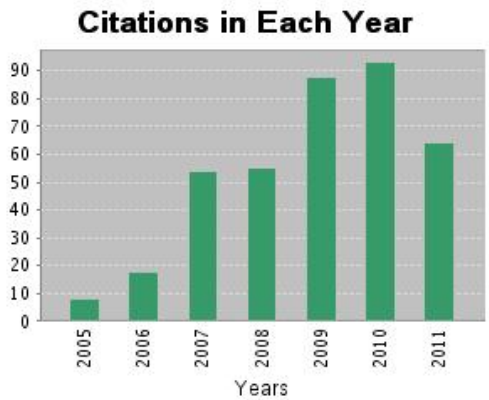
Table 1: Publication Output, Citations of Different Countries in Tsunami Research, 1999-2011

Year	India		Sri Lanka		Japan	USA	World
	TP	TC	TP	TC			
1999	---	---	---	---	13	29	78
2000	---	---	---	---	23	29	106
2001	---	---	---	---	12	23	80
2002	---	---	---	---	11	33	79
2003	---	---	---	---	17	53	114
2004	---	---	---	---	12	48	113
2005	63	715	10	42	24	96	492
2006	68	348	20	103	46	29	501
2007	43	207	10	48	48	122	421
2008	47	192	16	68	41	147	462
2009	36	68	17	34	54	118	497
2010	40	32	12	13	42	109	469
2011	21	0	3	0	20	41	198
Total	318		88		363	877	3610

The productivity of Publication of four countries involved in Tsunami during 1999-2011 is given in Fig. 1. The US is the undoubted leader, followed by Japan, India, and Sri Lanka .Among these countries, the US topped the list with 877 publications, followed by Japan (363), India (318), and Sri Lanka (88). India Ranked 3rd and Sri Lanka ranked 15th in terms of publications output during 1999-2011.

India





Sri Lanka

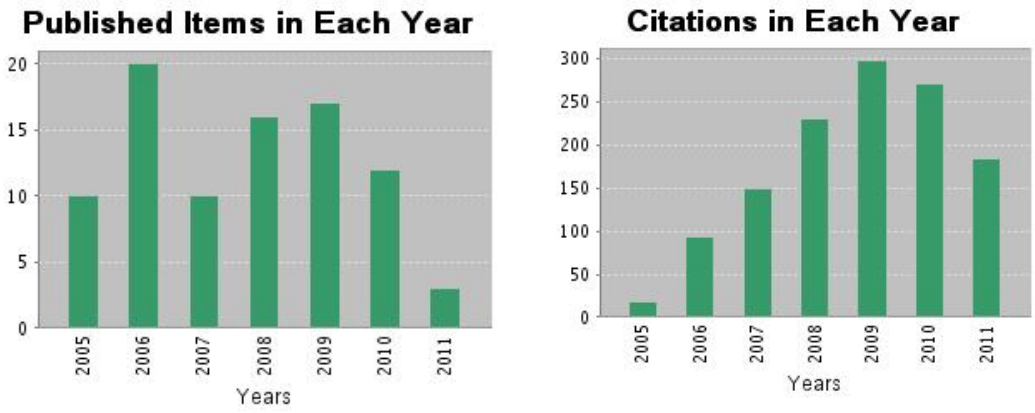


Figure 1: Graph showing the trend in Tsunami research publication and citations in India and Sri Lanka

The publication of India and Sri Lanka researchers involved in Tsunami during 2005-2011 is given in Fig. 1. During these 7 years (2005-2011), India produced 318 publications with highest 68 publications, in 2006; average number of publications per year was 45. Sri Lanka produced 88 papers with highest 20 papers, 2006; average number of publication per year was 12.

Table 2: Productivity & Impact of 10 Most Productive Indian and Sri Lankan authors on Tsunami, 1999-2011

S.No	India - Authors	Recs	TLCS	TGCS	Sri Lanka - Authors	Recs	TLCS	TGCS
1	Dimri VP	7	4	7	Wijetunge JJ	6	3	8
2	Kurian NP	7	12	18	Dahdouh-Guebas F	5	1	60
3	Jain SK	6	14	19	Jayatissa LP	5	1	60
4	Jambulingam P	6	8	31	Koedam N	4	1	59
5	Murthy MVR	6	2	4	Kunii O	4	2	18
6	Murty CVR	6	14	20	Perera C	4	1	20
7	Murty TS	6	4	5	Sumathipala A	4	3	18
8	Rai DC	6	14	20	Abeysinghe N	3	0	6
9	Rajendran CP	6	13	131	Fernando S	3	1	21
10	Srinivasalu S	6	20	40	Konradsen F	3	0	22

Among the prominent authors contributing to Tsunami research in India and Sri Lanka, 10 Indians and Sri Lanka were identified as most productivity and they have published more than 3 papers

during 2005 -2011. Of these 10 Most Productivity Indian authors are Dimri VP and Kurian NP with 7 papers, Jain, SK, Jambulingam P, Murthy MVR, Murty CVR, Rai DC, Rajendran CP, and Srinivasalu with 6 papers. Most Productivity Sri Lankan authors are Wijetunge JJ topped the list with 6 papers and other Sri Lankan authors are below 5 papers.

Table 3: Productivity & Impact of 10 Major Indian & Sri Lankan Institutions on Tsunami, 1999-2011

S.No	**Indian - Institution**	TP	LCS	TCS	**Sri Lanka Institution**	TP	LCS	TCS
1	Indian Institute Technology	22	30	163	University Peradeniya	11	9	32
2	National Geophys Res Inst	19	36	67	University Ruhuna	6	2	73
3	National Inst Oceanog	16	24	67	Int Water Management Inst	5	0	39
4	Anna University	9	30	60	University Copenhagen	4	0	31
5	Ctr Earth Sci Studies	7	23	139	University Moratuwa	4	4	18
6	MS Swaminathan Res Fdn	6	22	140	Anti Malaria Campaign Head Off	3	0	22
7	Univ Madras	6	13	32	Kenya Marine & Fisheries Res Inst	3	1	55
8	Natl Inst Ocean Technol	5	27	66	University Colombo	3	3	20
9	Vector Control Res Ctr	5	6	27	Columbia University	2	0	3
10	Annamalai Univ	4	13	89	Ctr Conservat & Res	2	0	2

Table 3 provides data on the contribution made by Indian and Sri Lanka institutions. Indian Institute of technology, tops the list (for India) with 22 papers which were cited 193 times. National Geophysics Research Institute (19 Papers) , National Institute Ocean graphic (16 Papers) and Anna University (9 Papers) , have also published moderately in this field. No other Indian laboratory has published more than 22 papers during 2005–2011. The University Peradeniya leads the field in Sri Lanka with 11 papers during 2005–2011, followed by University Ruhuna (6 papers), and Institute of Water Management Institute(5 Papers).

Table 4: Research Communication in High Productive Journals

#	**Indian author Published - Journal**	**TP**	**TLCS**	**TGCS**	**Sri Lankan Author Published Journal**	**Recs**	**TLCS**	**TGCS**
1	CURRENT SCIENCE	74	136	252	DISASTERS	4	1	16
2	JOURNAL OF THE GEOLOGICAL SOCIETY OF INDIA	20	21	29	INTERNATIONAL REVIEW OF PSYCHIATRY	4	1	8
3	MARINE GEODESY	12	3	8	AQUATIC CONSERVATION-MARINE AND FRESHWATER ECOSYSTEMS	3	2	10
4	INTERNATIONAL JOURNAL OF	10	6	25	EARTHQUAKE SPECTRA	3	0	20

	REMOTE SENSING							
5	EARTHQUAKE SPECTRA	9	0	15	EMERGENCY MEDICINE AUSTRALASIA	3	3	12
6	INDIAN JOURNAL OF MARINE SCIENCES	8	4	6	JOURNAL OF THE NATIONAL SCIENCE FOUNDATION OF SRI LANKA	3	0	0
7	INTERNATIONAL REVIEW OF PSYCHIATRY	8	7	43	MALARIA JOURNAL	3	0	24
8	ENVIRONMENTAL MONITORING AND ASSESSMENT	7	6	10	BMC PSYCHIATRY	2	0	15
9	JOURNAL OF ENVIRONMENTAL MANAGEMENT	7	10	26	CIVIL ENGINEERING AND ENVIRONMENTAL SYSTEMS	2	1	2
10	ENVIRONMENTAL GEOLOGY	6	14	26	COASTAL ENGINEERING JOURNAL	2	0	6

Table 4 gives the list of top 10 productive journals preferred by the Indian and Sri Lankan scientists for publication. These 10 top journals together contributed 153 papers, which constitute 48.11 per cent of the total Indian publications output and Sri Lankan researchers contributed 29 papers, which constitute 32.95 percent of the total Sri Lankan publication output in Tsunami during 2005-2011.

Table 5: Extent of international collaboration in the field of Tsunami cells

#	**India Collaboration - Country**	**Recs**	**TLCS**	**TGCS**	**Srilanka Collaboration Country**	**Recs**	**TLCS**
1	USA	**23**	43	297	USA	15	2
2	Canada	**13**	7	18	UK	12	5
3	UK	**10**	20	138	Japan	11	7
4	Japan	**9**	39	262	Australia	9	3
5	Malaysia	**8**	20	142	Denmark	6	0
6	Belgium	**7**	8	67	Belgium	5	1
7	Indonesia	**7**	21	234	France	4	1
8	Denmark	**4**	20	128	Kenya	4	1
9	France	**4**	1	5	India	3	1

The extent of international collaboration as seen from coauthored papers is presented in Table 5. India has collaborated often with USA (23), Canada (13) and UK (10). Sri Lanka researchers have co-authored papers with mainly researchers from USA (15), UK (12) and Japan (11). Overall, the share of papers resulting from international collaboration is much less for India and Sri Lanka than all other countries considered here.

Conclusion

In India a total of 318 papers were published in the field of Tsunami during the seven year period 2005-2011. There were only 391 publications produced from India, which is approximately 8.08 percentage of the world output. In Sri Lanka 88 papers were published, which is approximately 2.43 percentage of the world output. Out of top 10 journals where Indian research output is published, Current Science and Journal of the geological society of India are India-based journals, rest of the journals are international. It reflects the tendency of the authors to publish in top journals having high impact factor and wide circulation. Compared to the share of Tsunami publications, Sri Lanka's publications output is very small as compared to USA, Japan and India. Sri Lanka has to substantially increase its investments in R&D and train much more scientists to work in Tsunami area. International collaboration can also be substantially increased to boost the output and enhance the quality of research.

References

Karki., M. M. S. and Garg, K. C. (1997). Bibliometrics of Alkaloid Chemistry Research in India, *Journal of Chemical Information and Computer Sciences.* 1997(37), 157-161.

Jayashree B., and Arunachalam, S. (2000). Mapping fish research in India. Current Science, 79(5), 613-620.

Arunachalam., S. and Gunasekaran., S. *(2002)* Diabetes research in India and China today: From literature-based mapping to health-care Policy, *Current Science*, 82(9), 1086-1097.

Mohan, S., Gupta, B. M., & Dhawan, S. M., (2003). Materials Science Research and Development in India: A Scientometric Analysis of International Collaborative Output. *DESIDOC Bulletin of Information Technology*, 23(2), 11-23.

Gunasekaran, S., Batcha, M. S., and Sivaraman, P. (2006). Mapping chemical science research in India: A bibliometric study. *Annals of Library and Information Studies*. 53, 83-95.

Kademani, B. S., Kumar, Vijai., Sagar, Anil & Kumar, Anil. (2006). World literature on thorium research: A scientometric study based on Science Citation Index. *Scientometrics, 69(2)* 347–364.

http://www.tsunami.civil.tohoku.ac.jp/hokusai2/main/eng/about_tsunami.html

PART 7

Copyright and Intellectual Property Rights in the Knowledge Society

Session Chair – Dr. Mangala Hirawade

Assistant Professor, RTM Nagpur University, India

Trends in Patenting Activity in India

Hirwade, Anil W.[1] and Hirwade, Mangala, Anil[2]

Patenting activity in India has grown significantly in recent years. The administrative measures taken by the Indian government have helped strengthen the country's IP infrastructure. The paper analyses the trends in patenting activity in India during 2006-2010. It focuses on year wise analysis of patents filed, examined and granted. India is rapidly becoming a hub for research and development activities for the industrial sectors particularly relating to Information Technology, Drugs and Pharmaceutical, Space Research, Biotechnology and several other emerging fields. The study traces the trends of patenting in these fields and also focuses on the scientific productivity of Industrial organizations, Research and Development sectors and Universities in India in terms of producing patents.

Keywords: *Patenting Activity; India; Patents*

Introduction

Intellectual property (IP) refers to creations of the mind. Inventions, literary and artistic works, and symbols, names, images, and designs used in commerce. The Intellectual Property is an asset and as such, it can be bought, sold, mortgaged, licensed, exchanged or gratuitously given away like any other form of the property. By acquiring a legal right over the property, the creator of the Intellectual Property seeks to ensure that he has exclusive right over it and that the property can be put to use by others only with his/her consent. Ownership of IPR is a source of national wealth and mark of an economic leadership in the context of global market scenario. Intellectual Property is divided into two categories.

Industrial Property: which includes Patents (Inventions), Trademark, (Goods and services), Industrial Design, Geographical Indications, Protection of life forms, Traditional knowledge, Domain names, Protection of Integrated circuits and Digital copyright and

[1] Dr. Hirwade, Anil, W., Library In-charge, National Institute of Intellectual Property Management, India
hirwade2004@indiatimes.com

[2] Dr. Hirwade, Mangala, Anil, Assistant Professor, Department of Library & Information Science, RTM Nagpur University, India
hmangala@rediffmail.com

Copyright and Neighbouring Law: which includes Writing, Musical works, Dramatic works, Audiovisual works, Paintings and Drawings, Sculptures, Photographic works, Architectural works, Sound recordings, Performance of musicians, actors and singers and Broadcasts.

IPR system in India

The Intellectual Property Rights (IPR) system in India during the last decade has made considerable progress not only with amendments to its existing laws such as The Patents (Amendment) Act 2005, Trademarks Act 1999, The Designs Act 2000 and Indian Copyright Act 1957 as amended by Copyright (Amendment) Act 1999, but also by introducing new laws dealing with Geographical Indications 1999, Protection of Plant Varieties and Farmers Protection Rights 2001, The Biological Diversity Act 2002 and The Semiconductor Integrated Circuits Layout Design Act 2000.

The office of the Controller General of Patents, Designs & Trade Marks (CGPDTM) comes under the Department of Industrial Policy and Promotion, Ministry of Commerce and Industry. Of late, the office of the controller General has also been known as Intellectual Property Office (IPO). The Office of the Controller General of Patents, Designs and Trade Marks (CGPDTM) is responsible for the administration of Patents Act, 1970 with its offices located at Mumbai, Delhi, Kolkata and Chennai.

The Patent Information System (PIS) and National Institute of Intellectual Property Management (NIIPM) located at Nagpur are also under the superintendence of CGPDTM. PIS maintains a comprehensive collection of patent specification and patent related literature on a worldwide basis to meet the needs for technological information, of various users in R&D establishments, Government Organizations, Industries, Business, Inventors and other users enabling them to take the informed business decisions.

National Institute of Intellectual Property Management (NIIPM) as a national centre of excellence for training, management, research, education in the field of Intellectual Property related issues, caters to the training of Examiners of Patents and Designs, Trademarks and Geographical Indications, IP professionals, IP Managers in the country, imparting basic education to user community, government functionaries and the stake holders involved in creation, commercialization and management of intellectual property rights. The institute will facilitate research on IP related issues including preparation of study reports and policy analysis of relevance to Government. These activities are not addressed to any other agency in the country at present.

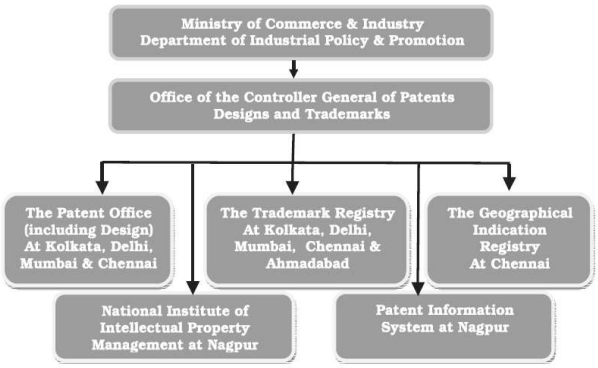


Figure-1: Organization Chart of Patent Office

Copyright Registry is situated at New Delhi and is under the control of Ministry of Human Resources Development.

Patents

Patent is an exclusive right granted for an invention, which is a product or a process that provides, in general, a new way of doing something, or offers a new technical solution to a problem. A patent provides protection for the invention to the owner of the patent. The protection is granted for a limited period, generally 20 years. Patents provide incentives to individuals by offering them recognition for their creativity and material reward for their marketable inventions. These incentives encourage innovation, which assures that the quality of human life is continuously enhanced. All patent owners are obliged, in return for patent protection, to publicly disclose information on their invention in order to enrich the total body of technical knowledge in the world. Such an ever-increasing body of public knowledge promotes further creativity and innovation in others. In this way, patents provide not only protection for the owner but valuable information and inspiration for future generations of researchers and inventors. Patents signify the Research activity in a nation.

Membership of international treaties

India is member of the following treaties governing patents:

- Convention establishing World Intellectual Property Organization (WIPO)
- Trips Agreement under the World Trade Organization.
- Paris Convention for the protection of Industrial Property with effect from December 7, 1998.
- Patent Cooperation Treaty (PCT) with effective from December 7, 1998.

Patent filing procedure

Patent application in India may be filed through Convention Route or through Patent Cooperation Treaty filing route

Convention Route

A patent application in India may be filed through one of the four patent offices in India. The Head Office of Patents is at Kolkata with branches at Mumbai, Chennai and Delhi. The branches deal with the patent applications originating within their respective territorial jurisdiction. This is the Convention Route. An inventor or any other person/company assigned by the inventor can apply for and obtain a patent over an invention. The inventor may make a patent application, either alone or jointly with another, or his/their assignee. Further, in case of a deceased inventor, a legal representative may apply on behalf of the deceased inventor or his assignee.

Patent Cooperation Treaty (PCT) Filing Route for an Inventor Resident in India

PCT is an international patent law treaty. It provides a unified procedure for filing patent applications to protect inventions in each of its Contracting States (Countries). A patent application filed under the PCT is called an International application or a PCT application. The PCT application may generally be filed with the national patent office of the Contracting State of which the applicant is a national or resident. The patent offices in the contracting states of the PCT act as receiving offices for the PCT applications. Hence, nationals and residents of India are entitled to file PCT applications at any of the four national Patent Offices of India. Alternatively, the PCT application may also be filed with the International Bureau of World Intellectual Property Organization (WIPO) in Geneva. When a PCT application is filed in one of the contracting states of the PCT, this is legally in effect equivalent to filing in all the contracting states of the PCT.

An international application has two phases: an international phase and a national phase. The first phase is the international phase in which patent protection is pending under a single patent application filed with the patent office of a contracting state of the PCT. The second phase is the national phase which follows the international phase. In the national phase, the international application is extended to contracting states chosen by the applicant. This is done by filing necessary documents with the patent offices of the chosen contracting states separately. Patent rights are obtained in a particular contracting state only by entering the national phase in that particular contracting state corresponding to the PCT application.

Patent grant procedure

India notified the Patents (Amendment) Rules 2006, bringing in changes to provide transparency, decentralization of the functioning of patent offices and simplify the procedures making them user-friendly. As per the changes notified under the Patents (Amendment) Rules, 2006, patent applications are now to be mandatory published within one month after expiry of the statutory period of 18 months. In case of request for an early publication, the application is to be published within one month from the date of request. This step will introduce an element of certainty regarding the date of publication, which was hitherto not available. Further, with a view to enforcing transparency and ensuring time bound disposal of patent applications, definitive time frames have been prescribed for various activities by the patent offices. A patent application now has to be referred to an examiner within one month of a request for its examination and the controller will be required to take a decision within one month of its submission, adding that the first examination report must be issued in six months of the date of request for examination of a patent. e-filing of patent applications is also possible now through the webpage http://ipindiaonline.gov.in/on_line

Trends in patenting activity in India

A detailed analysis of patenting activity during 2006-2010 has been studied and trends are drawn. The data has been collected from the official document i.e. Annual Reports of the Office of Controller General of Patents Designs and Trademarks.

Patent Applications Filed

Table-1 shows year-wise patent applications filed in India for the period 2006 to 2010. The number of applications for patents filed in 2007-2008 was 35218 compared to 28940 applications in 2006-07 representing an increase of about 22% in the filing. During 2008-2009, 36812 patent applications have been filed. This trend of filing is about 5% increase as compared to previous year. During 2009-10, 34287 patent applications have been filed. This trend of filing is about 6.8% decrease as compared to previous year.

Table1: Trends in Patent Applications (2006-2010)

Year	**2006-2007**	**2007-2008**	**2008-2009**	**2009-2010**	**Total**
Filed	28940	35218	36812	34287	135257
Examined	14119	11751	10296	6069	42235
Granted	7539	15316	16061	6168	45084

During 2006-07, a total number of 14119 applications were examined and 7539 were granted. Due to amendment of the Patents Act in 2002, mandatory publication under Section 11A was introduced

with effect from 20th May 2003 and the publication was however delayed due to non-availability of digitized documents required for publication. A digitization drive was carried out from 2006-09 resulting publication on about 1,20,000 patent applications during the period. As a result, the applications examined and matured for grant during previous years could be granted during 2007-08 and 2008-09 and subsequently 15316 and 16061 patents were granted. About 55 examiners left the organization during 2004-09 and 47 examiners were promoted. No recruitment took place during this period. This explains the comparative low figure of examination and grant during 2009-10.

Patent Applications filed under various fields of Inventions

Table-2 shows details of Patent Applications filed under various fields of Inventions during 2006-2010.

Table 2: Number of Patent Applications filed under various fields of Inventions (2006-2010)

Field	2006 2007	2007 2008	2008 2009	2009 2010	Total
Chemical	6354	6375	5884	6014	24627
Drug	3239	4267	3672	3070	14248
Food	1223	233	340	276	2072
Electrical	2371	2210	2319	2376	9276
Mechanical	5536	6424	6360	6775	25095
Computer/ Electronics	5822	4842	7063	7646	25373
Bio-technology	2774	1950	1844	1303	7871
Biomedical	---	---	1174	710	1884
Bio-chemistry	---	---	878	217	1095
Bioinformatics	---	---	64	235	299
Physics	---	---	1668	1364	3032
Civil	---	---	411	440	851
Textiles	---	---	439	356	795
Metallurgy/ Material Science	---	---	579	353	932
Agriculture	---	---	88	146	234
Polymer Science	---	---	1083	897	1980
Veterinary	---	---	0	0	0
Any Other	---	---	0	1224	1224
General	1621	7110	2946	885	12562
Total	28940	35218	36812	34287	135257

It is observed that in 2006-07 highest number of patents was filed under Chemical section followed by Computer/Electronics and Mechanical section followed by Chemical section and Computer/Electronics. In 2007-08, the highest numbers of Patents were under Mechanical field of Invention. The trend observed is maximum patent filing is under Computer/Electronics during 2008-2009 and 2009-2010, followed by Mechanical and Chemical section. The year 2008-2009 recorded highest number of patent application filed during the period of 2006-2010. A steady growth in number of application was noticed from 2006 to 2009 but the number of application decreased during the period 2009-2010.

Patent Applications granted under various fields of Inventions

Table- 3, shows details of Patent Applications granted under various fields of Inventions during 2006-2010. The trend observed is maximum patents were granted in Mechanical field followed by Chemical field. The trend of granting the patents were same as the filing of application i.e. there was a steady growth in the number of patent granted from 2006 to 2009 but the number of patent granted decreased during the period 2009-2010.

Table- 3: Number of Patent Applications granted under various fields of Inventions (2006-2010)

Field	**2006-2007**	**2007-2008**	**2008-2009**	**2009-2010**	**Total**
Chemical	1989	2662	2376	1420	8447
Drug	798	905	1207	530	3440
Food	244	154	97	72	567
Electrical	787	1067	1140	404	3398
Mechanical	2526	3503	3242	1024	10295
Computer/ Electronics	237	1357	1913	1195	4702
Biotechnology	89	341	1157	449	2036
Biomedical	---	138	263	69	470
Biochemistry	---	1149	1785	194	3128
Bioinformatics	---	0	0	0	0
Physics	---	328	486	200	1014
Civil	---	287	103	48	438
Textiles	---	249	223	65	537
Metallurgy/ Material Science	---	228	321	102	651
Agriculture	---	53	20	6	79
Polymer Science	---	286	410	100	796
Veterinary	---	14	0	0	14
Any Other	---	227	0	17	244
General	869	2368	1318	273	4828
Total	7539	15316	16061	6168	45084

State-wise Patent Applications through Convention Route

Table- 4, shows details of state wise analysis of patent applications filed through Convention Route during 2006-2010. It is observed that Maharashtra dominates the filing of patent application in all the reported years i.e. 2006 to 2010. During 2006-2007 Delhi with 1310 patents followed Maharastra. During the year 2007-2008 Karnataka followed Maharastra with 814 patents followed by Delhi with 812 patents. During the year 2008-2009 again Karnataka followed Maharastra with 872 patents followed by Delhi with 702 patents. During 2009-2010 Delhi followed Maharastra with 868 patents followed by Tamil Nadu with 813 patents.

Table 4: State-wise Patent Applications through Convention Route

State	**2006-2007**	**2007- 2008**	**2008-2009**	**2009-2010**
Maharashtra	1607	1936	1990	2286
Karnataka	596	814	872	755
Delhi	1310	812	702	868
Andhra Pradesh	385	414	411	553
West Bengal	244	303	358	364
Gujarat	337	286	295	319
Uttar Pradesh	205	161	115	321
Kerala	128	123	107	166
Haryana	93	123	126	144
Jharkhand	131	85	112	94
Madhya Pradesh	33	50	51	37
Punjab	74	44	61	75
Rajasthan	44	36	40	55
Chandigarh	23	33	27	28
Uttarakhand	17	25	29	67
Bihar	14	21	10	16
Assam	14	16	15	23
Chattisgarh	17	15	10	02
Himachal Pradesh	10	15	10	---
Tamil Nadu	09	---	---	813
Pondicherry	---	---	---	06
Goa	---	---	---	05

Patent Applications through PCT Route

The decreasing trend in filing patent applications through conventional route denotes the increase in filing through PCT route.

Table-5: Country Wise Analysis of Patent Applications through PCT Route

Country	2006-2007	2007-2008	2008-2009	2009-2010
USA	6955	8606	9013	8087
Germany	1933	2441	2774	2582
Japan	1409	1806	2259	2386
Switzerland	1077	1327	1422	1287
Netherlands	1073	1293	1524	1281
France	999	1224	1396	1198
United Kingdom	881	990	1084	910
Sweden	837	1001	1057	710
Republic of Korea	647	698	581	636
Finland	477	499	426	453
Italy	417	519	494	465
Australia	390	404	367	287
Canada	347	416	344	399
Israel	275	339	366	292
Belgium	259	352	340	304
Denmark	238	302	397	298
Republic of China	184	263	308	468
Spain	115	155	157	150
Austria	115	157	169	140
Norway	94	108	117	95

In 2006-07, Majority of foreign applications were filed through the PCT National phase route. The number of such applications filed in 2006-07 was 19768. In 2007-08, it was 23,891 about 21% higher as compared with the previous year total of 19,768. A total number of 25,706 were filed in 2008-09 which is about 7.6% higher as compared to previous year. In 2009-10, the trend changed with 8.85% less than previous year and applications filed were 23431. Table- 5, shows country-wise analysis of patent application filed through PCT route. It has been observed that the United States of America leads in filing the applications during all the reported period from 2006 to 2010.

Major Indian Applicants for Patents from Pharmaceutical Industry

The domestic Pharma industry is performing significantly better than the other industries. A total number of 522 patents were filed by the top 10 Indian applicant for patent from Pharmaceutical Industry during the year 2008-2009. Dr. Reddy's Laboratories with 147 patent filled during 2008-2009 ranked first followed by Ranbaxy Laboratories Ltd with 101 patents. The details are appended in Table-6.

Table 6: Top 10 Indian applicants for Patent from Pharmaceutical Industry (2008-2009)

Sr. No.	Name of the Indian Applicant	Applications filed
1	Dr. Reddy's Laboratories	147
2	Ranbaxy Laboratories Ltd	101
3	Avesthagen Limited	66
4	Cadila Healthcare Ltd	57
5	Matrix Laboratories Ltd	54
6	Orchid Chemicals & Pharmaceutical Ltd.	22
7	Aurobindo Pharma Ltd	22
8	Jubilant Organosys Ltd	19
9	Ind-Swift Laboratories Ltd	19
10	Panacea Biotech Ltd	15

During the year 2009-2010 merely 144 patents were filed by top ten Indian applicant from Pharma Industries, which was 3 patent less than the number of patent filled alone by Dr Reddy's Laboratories during 2008-2009. However during the year 2009-2010 Dr Reddy's Laboratories could not find place in top 10 applicants. Ranbaxy Laboratories Ltd leads with 37 patents, followed by Wockhard Research Centre with 33 patents. The details are appended in Table-7.

Table7: Top 10 Indian applicants for Patent from Pharmaceutical Industry (2009-2010)

Sr. No.	Name of the Indian Applicant	Applications filed
1	Ranbaxy Laboratories Ltd.	37
2	Wockhard Research Centre	33
3	Cipla Ltd .	21
4	Hetero Research Foundation	11
5	Sulur, Subramaniam Vanangamudi	11
6	Concept Medical Research Private Ltd.	10
7	Rubicon Research Pvt. Ltd.	08
8	Stempeutics Research Pvt. Ltd.	08
9	Envision Scientific Pvt. Ltd.	07
10	Sun Pharma Advanced Research Company	07

Major Indian Applicants for Patents from Institute and Industries

During the year 2008-2009, Indian Institute of Technology ranks at the top from Institute and Industries with 91 patents followed by Amity University with 33 patents and Indian Institute of Science with 31 patents. The details under this section are appended in Table – 8.

Table 8: Top 10 Indian applicants for patents from Institutes and Universities (2008-2009)

Sr. No.	Name of the Indian Applicant	Applications filed
1	Indian Institute of technology	91
2	Amity University	33
3	Indian Institute of Science	31
4	Central Institute for Research on Cotton	12
5	National Institute of Pharmaceutical Education and Research	08
6	National Institute of Immunology	07
7	University of Delhi	07
8	S N Bose National Centre for B.S.	07
9	Thiagarajar College of Engineering	06
10	Punjab Agricultural University	05

During the year 2009-2010 the trend is maintained and all the three top ranks are maintained by Indian Institute of Technology with 109 patents, followed by Amity University with 81 patents and Indian Institute of Science with 45 patents. However the trend is maintained with increase in number of patents. The details of top 10 Indian applicants from Institute & Universities during 2009-2010 are appended in Table – 9.

Table9: Top 10 Indian applicants for patents from Institutes and Universities (2009-2010)

Sr. No.	Name of the Indian Applicant	Applications filed
1	Indian Institute of technology	109
2	Amity University	81
3	Indian Institute of Science	45
4	Serum Institute of India Ltd	12
5	The Energy and Resources Institute	07
6	Institute of Life Sciences	06
7	Dalmia Institute of Scientific & Ind. Research	04
8	Jadavpur University	04
9	Krishna Institute of Medical Sciences	04
10	Manipal Institute of Technology	04

Major Indian Applicants for Patents from Scientific, Research and Development Organizations

The number of patents obtained and applied is positively related to gross domestic product. Higher the GDP results in higher number of patents obtained and applied. The results also show that there is a positive relationship between the patents and R& D expenditure and I P index. The R& D expenditure will lead to the marginal increase in the patents obtained and applied. During the year 2008-2009, Council of Scientific & Industrial Research topped the list with 165 patent applications followed by Bharat Heavy Electrical Ltd with 119 patent applications. Indian space Research Organisation with 11 patent application fins place in top ten applicants. The details are appended in Table-10.

Table 10: Top 10 Indian Applicants from Scientific & Research & Development Organizations (2008-2009)

Sr. No.	Name of the Indian Applicant	Applications filed
1	Council of Scientific & Industrial Research	165
2	Bharat Heavy Electrical Ltd	119
3	Tata Steel	65
4	Indian Council of Agricultural Research	35
5	Steel Authority of India Limited	31
6	Lupin Limited	30
7	Imylan Development Centre	17
8	Apex Labs Pvt. Ltd	13
9	Rubicon Research Pvt. Ltd.	12
10	Indian Space Research Organisation	11

During the year 2008-2009, Council of Scientific & Industrial Research topped the list with 162 patent applications followed by Defence Research & Development Organization with 80 patent applications. The details are appended in Table-11.

Table 11: Top 10 Indian Applicants from Scientific & Research & Development Organizations (2009-2010)

Sr. No.	Name of the Indian Applicant	Applications filed
1	Council of Scientific & Industrial Research	162
2	Defence Research & Development Organisation	80
3	Indian Council of Agricultural Research	55
4	Indian Space Research Organisation	17
5	Central Institute of Fisheries Technology	13
6	National Institute of Pharma. Institute and Research	10
7	Centre for Development of Advanced Computing	07
8	National Institute of Immunology	07
9	Indian Council of Medical Research	06
10	Society for Applied Microwave Electronics Engineering & Research	06

Major Indian Applicant in the field of Information Technology

During the year 2008-2009 the Information Technology field is dominated by Samsung India Software Operation with 205 patents followed by Infosys Technologies Ltd with 81 patents and Tata Elxsi Ltd with 14 patents. The details are appended in Table-12.

Table 12: Top Five Indian applicants in the field of Information Technology (2008-2009)

Sr. No.	Name of Companies	Applications filed
1	Samsung India Software Operations	205
2	Infosys Technologies Ltd	81
3	Tata Elxsi Ltd	14
4	Tata Consultancy Services	11
5	Rajendra Kumar Khare	05

During the year 2009-2010 the Information Technology field was dominated by Infosys Technologies Ltd with 23 patents followed by LG Soft India Pvt. Ltd with 7 patent applications. Samsung India Software Operation Pvt. Ltd. moved to 5th place with merely 6 patent applications. The details are appended in Table-13.

Table 13: Top 5 Major Indian applicants for patents in the field of Information Technology (2009-2010)

Sr. No.	Name of Companies	Applications filed
1	Infosys Technologies Ltd	23
2	LG Soft India Pvt. Ltd	07
3	Centre for Development of Advanced Computing (C-DAC)	06
4	Newgen Software Technologies Ltd	06
5	Samsung India Software Operations	06

Conclusions

During the past four years, the number of patent applications filed with the IPO has increased threefold. This has been primarily due to multinational companies setting up and expanding their markets in India. The global economic recession, however, has slowed down the growth of patent application filings in India.

Patenting activity in India has grown significantly in recent years. The administrative measures taken by the Indian government have helped strengthen the country's IP infrastructure. IP awareness is improving, which is evident from the growing number of patent filings and IP litigations. Since patent life cycle spans 20 years, it is clear that Indian corporations need to formulate their patenting strategy carefully to stay competitive. This will entail creating more innovations, protecting all innovations with the relevant form of IP, respecting others' IP and extracting value from own IP through licensing, commercialization and enforcement.

References

Balwant Rawat, Patenting Landscape in India (2009). Viewed on 6 June 2011 <http://www.ipfrontline.com/aboutsource.aspx?editorid=1011>

Controller General of Patents, Designs, Trademarks and Geographical Indication Govt. of India, Ministry of Commerce and Industry, Department of Industrial Policy and Promotion. (2006-2007) Annual Report, Mumbai. Viewed 10 June 2011. < http://ipindia.gov.in/cgpdtm/AnnualReport_English_2006-2007.pdf>

Controller General of Patents, Designs, Trademarks and Geographical Indication Govt. of India, Ministry of Commerce and Industry, Department of Industrial Policy and Promotion. (2007-2008) Annual Report, Mumbai. Viewed 9 June 2011. < http://ipindia.gov.in/cgpdtm/AnnualReport_English_2007-2008.pdf>

Controller General of Patents, Designs, Trademarks and Geographical Indication Govt. of India, Ministry of Commerce and Industry, Department of Industrial Policy and Promotion.

(2008-2009) Annual Report, Mumbai. Viewed 9 June 2011. < http://ipindia.gov.in/cgpdtm/AnnualReport_English_2008-2009.pdf>

Controller General of Patents, Designs, Trademarks and Geographical Indication Govt. of India, Ministry of Commerce and Industry, Department of Industrial Policy and Promotion. (2009-2010) Annual Report, Mumbai. Viewed 9 June 2011. < http://ipindia.gov.in/cgpdtm/AnnualReport_English_2009-2010.pdf>

Patents in India: Laws, Procedures, Registering and Challenging Patents. Viewed on 8 June 2011. <http://madaan.com/patents.html>

Research Productivity of Sri Lankan Universities (during 1999-2010) based on the ISI WoS database: a Scientometric Study

Pratheepan, T.[1]

Scientometric profile is significant because it gives an insight into the research and development of a particular country, institution and scientist. Scientometrics points out the stronger and weaker areas of research and helps researchers to contribute more. The role of academic librarians in promoting R&D activities helps in contributing towards enriching the knowledge society. This study helps the librarians of Sri Lankan universities to improve the quality of their institution in terms of research productivity nationally and worldwide. In this study, by using Web of Science as database, the research outcomes of Sri Lankan universities were compared with each other. The result of this study shows the ranking of the studied universities and most prolific scientists in terms of scientometrics indicators.

Key words: *Sri Lankan Universities, Scientometrc study, h-index, Web of Science, Ranking, Citation count.*

Introduction

Research productivity and citation rankings have become major indicators of the scientific worth of country as well as University and determine to a large extent the career of individual scientist. Scientific Products of each country which are indexed in international indexes indicate scientific activities of that country at international level. Therefore, it has always been crucial for the research administrators to consider these conditions in order to evaluate their scientific activities.

Generally, there are five major measuring techniques to be used to evaluating research productivity by information scientist. Such as 1.Librametrics 2.Bibliometrics 3.Informetrics 4.Scientometrics, 5.Webometrics.

Quantitative and qualitative study of scientific communications, called, Scientometrics. This Scientometric profile is significant because it gives an insight into the research and development of a particular country, institution and scientist. Scientometrics points out the stronger and weaker areas of research and helps researchers to contribute more. The role of academic librarians in promoting R&D activities helps in contributing towards enriching the knowledge society.

[1] Pratheepan, T., Department of Library & Information Science, University of Madras, India
pratheepan12345@gmail.com

Research Problem

Scientometric profile is an indicator of the scientific activity of a country. It reflects the strengths and weaknesses of research and development in a discipline. Many studies have been reported on this area of research.As no study has been conducted on the analysis of the scientific productivity in Sri Lanka by citation index *ISI WoS* during 1999-2010,it was decided to undertake the ranking of Sri Lanka universities and scientist for a period of 12 years. Also this intends study to assess the quantum and quality of scientific output in Sri Lankan Universities too.

Objectives

This study attempts to:

- quantify the research output of Sri Lankan universities.
- rank most prolific scientist in Sri Lankan Universities
- determine the rank of the Sri Lankan Universities in terms of *h.index* .

Scope and coverage

The scope and coverage of this research are as follows:

- Subject areas: *Science and Social Science.*
- Source: *ISI WoS* produced by *Thomson Reuters* for information in the sciences, social sciences, arts, and humanities.*(SCIE,SSCI,A&HCI))*
- Period: The study period includes twelve years , i.*e.*, 1999- 2010.
- Publication Form: Only journal articles and conference proceedings
- Language: All languages

Limitation

This study does not include the informal publications and others that are not covered by *ISI WoS* for the period form 1999-2010.

Justification

- This study has been drawn inputs from multidisciplinary database - *ISI WoS* to ensure authentic and comprehensive results.
- Such a study will stimulate useful discussions among scientists about future research directions.
- The Sri Lankan Universities contribution to research productivity for nation development.
- Journals & conference proceedings being the major and nascent carrier of scientific communication, its contents have been only chosen.

Definitions

The definitions of the key terms used in this research are listed below:

- *h- index,* has been adopted to assess the research output of Sri Lankan Universities as these are accepted as the basic indicators of research productivity of an institution of Scientist. It was developed by J.E. Hirsch and published in *Proceedings of the National Academy of Sciences of the United States of America* 102 (46): 16569-16572 November 15 2005.
- The h-index is based on a list of publications ranked in descending order by the Times Cited. The value of h is equal to the number of papers (N) in the list that have N or more citations.
- *ISI WoS*:- It is world first largest citation database with good coverage. Eugene Garfield is the father of citation indexing. In the early 1960s, he introduced the first citation index for papers published in scientific journals, starting with *Science Citation Index (SCI)*.Subsequently .the concept was expanded in *Social Sciences (SSCI)* and *Arts and Humanities Citation Index (AHCI).* They were originally published by the Institute of Scientific Information, and were then acquired by *Thomson ISI;* now the company is called *Thomson Reuters. Web of Science* consists of seven databases containing information gathered from ten thousands of peer reviewed & high impact journals, number of conference proceedings, and more.

Means and Methods

STEP - 1 The *WoS* electronic database was used to compile a citation history of papers published by Sri Lankan Universities for the period,1999 – 2010. The citation counts are totalled from *Science Citation Index Expanded(SCIE)*, *Social Science Citation Index(SSCI)* The search was carried out for records published for the chosen period of 12 years (i.e. 1999–2010).

STEP – 2 The search was carried out for 15 Sri Lankan Universities to assess total productivity and citation analysis. To identify scientists from each University refine search for "authors' was used. Same process was repeated for each University. The use of advanced search (Boolean search strategy) in which used the 'field tag for address' search for each Universities. eg. University of Colombo or Colombo University .

STEP – 3 Based on the analysis ranked list for Universities and scientists were prepared in terms of index.

STEP – 4 The results of the above said analysis, Steps 1-3, are presented in detail with inferences and interpretations in the following.

Ranking of Universities

- The higher education system in Sri Lanka being one of the prime in the world, the responsibility rests on the Government to devise policies with a view to improve the quality of higher education in the country. The Government of Sri Lanka is responsible for arranging, allocating and distributing financial resources required by the Research Institutions and Universities to empowering their research productivity.
- True to the mission of the Government, the Universities in Sri Lanka are progressive and productive with an overall development in terms of infrastructure, student and faculty strength, research project, funding and scientific productivity, etc. Now there are 15 Universities in Sri Lanka. The Government has also been empowered by providing grant to maintain a particular standard conductive to the educational strength of the country.
- Fair raking of scientist by means of scientometric indices has recently received much attention. The most classic index of scientific impact is the total number of citations. It is a straightforward metric of total impact. but this number needs to be considered with great caution. It does not distinguish between scientist with a low productivity of high-impact papers and scientist with a high productivity of low – impact papers, it overly emphasizes fortuitous high-impact papers when a researcher has an otherwise low – impact career, and it strongly depends on the field of research and the length of the scientist's career. Many alternatives have been proposed. The most publicized recent alternative is the h-index Hirsch (2005).
- This study attempts to analyse the research productivity and performance of Sri Lankan Universities and most prolific Scientist from Universities in Sri Lanka, spanning from 1999 – 2010. Based on the h-index the Universities and scientists have been ranked.

Findings

Out of the total Sri Lankan research productivity of 3,370 - 2,442 (72.46%) are the output of Sri Lankan Universities.

According to table 1&2 (see annexure)

- University of Peradeniya is found to be the predominant University in terms of research productivity and citation pattern in Sri Lanka during 1999-2010.
- University of Colombo and University of Kelaniya rank second and third respectively. There is no publication by University of Visual and Performing Arts.
- There is no citation gained by Uva Wellasa University for its publications.
- In terms of scientometric indicator h-index, University of Colombo and University of Peradeniya are ranked first in Sri Lankan Universities.

- University of Kelaniya and University of Ruhuna are ranked second and third respectively.
- According to quantum of publications RATNASOORIYA, WD with 66 papers, is considering as the most prolific author in Sri Lanka.
- However, according to qualitative indicator-index, SHERIFF, MHR is ranked first in Sri Lanka in the field of Science. He/She is associated with University of Colombo.
- The top 30 ranked list of Scientists in Sri Lanka, 14 authors are affiliated to University of Peradeniya, 7 authors are affiliated to University of Colombo, 5 authors from University of Kelaniya, 2 authors affiliated to University of Jaffna and 1 author each from University of Sri Jeyewardenepura and University of Ruhuna in terms of h-index.

Conclusion and Recommendations

There is a definite need to compile an inventory of scientific literature produced by a University and individual scientists on different subjects comprehensively. Such an inventory if analyzed appropriately will be an invaluable tool in the formulation of strategic directions for research and development.

The scientific research productivity of Sri Lankan Universities and scientists of universities have been analysed and ranked by adopting quantitative and qualitative indicators. This study has enabled to map the relative position of each of the universities and scientists from Sri Lankan Universities under assessment.

The analysis of research productivity in Sri Lanka since 1999-2010 has thrown some light on how the field has evolved. This research will be brought to the attention and benefit of the Sri Lankan researcher as well as institutions. It will stimulate Universities of Sri Lanka to redefine their research policies, programmes and priorities.

The study will provide research policymakers with a more complete picture of innovation capability in the research field, and help them to make better decisions. In addition, it will stimulate useful discussions among scientists and research managers, government and funding agencies about future research direction.

One of the important constituents for improvement of research and development in Sri Lanka is the initiative for academic and governance reforms in Universities and higher education institutions.

Research and development activities primarily depend upon financial allocation. Therefore, funds raised from other national and global agencies, play an important role in aiding research and development.

The universities with adequate resources, healthy practices and innovative academic plans and programmes are marching forward in the research performance. The effect of these R&D efforts will be reflected in the scientific productivity in the forthcoming years which will elevate each of these academic institutions' ranking order to a higher position.

More detailed metrics should be researched to determine the strength of these highly ranked universities in terms of disciplines/authors etc.

However, periodic assessment of strengths and weaknesses would only motivate the institutions to move up in its quality and quantum of research contribution nationally and internationally. A comprehensive study including all the non-academic and academic institutions in the country for such an analysis, to map the relative positions of each of the institutions and scientists, will reflect a better perspective of the country's academic and research performance.

References

Alex De Vissener (2010). An Index to measure to scientist's specific impact. *Journal of the American Society for Information Science and Technology*. 61,319-328.

Cheng,Y. and Liu, N. (2008). Tracking the Development of China's Top Universities Using Scientometric Indicators, 1997–2005 *Frontiers of Education in China*. 3 , 415-428

Ganguli, R. (2008). A Scientometric Analysis of Recent Aerospace Research. Current Science 95, 1670-1677.

Glänzel, W. (2010). The Role of the h-index and the Characteristic Scores and Scales in Testing the Tail Properties of Scientometric Distributions. Scientometrics 83, 697-709.

Hirsch, J.E. (2005). An Index to Quantify an individual's scientific research output. In Proceedings of the National Academy of Science, 102 (46), (2005) : 16569 - 16572.

Liu, J.and Shu, S. (1995). Statistical Analysis of Astronomical Papers of China During 1986-1990. Scientometrics 32 ,237-45.

Mahbuba, D. and Rousseau, R. (2010). Scientific Research in the Indian Subcontinent: Selected trends and indicators 1973-2007 comparing Bangladesh, Pakistan and Sri Lanka with India, the local giant. *Scientometrics*, 84, 403-420.

Pethiyagoda, U. (2005). Research Productivity in Sri Lanka. *Journal of National Science Foundation, Sri Lanka*, 33, 1-2.

Senthilkumaran, P. and Amudhavalli,A. (2004). Publication Profile on Spices Research in India. In Proceedings of 22nd Annual Convention and Conference on *"Digital Information Exchange: Pathways to Build Global Information Societ"*. Madras:IIT: 193-199.

Wickremasinghe Seetha I. (2008). "Evaluating Research Productivity: A case study of the rice scientists in India and Sri Lanka." *Journal of National Science Foundation, Sri Lanka* 36, 59-60.

Zheng,Y.(2011) Scientometric Analysis of Physics (1979-2008). A Quantitative Description of Scientific Impact. Science China Physics, *Mechanics and Astronomy* 54, 176-182.

Annexure

Table 1: Ranking & Performance of Universities

Universities	Publication	Citation count	A.C.P.A	A.C.P.Y	Citing Articles	Without Self citation	h.index	Rank
Peradeniya	926	5757	6.22	479.8	5119	4594	**30**	**1**
Colombo	555	3910	7.05	325.8	3187	2979	**30**	**1**
Kelaniya	274	1746	6.37	145.5	1634	1533	**20**	**2**
Ruhuna	201	1136	5.65	94.67	933	867	**17**	**3**
Jayewardenepura	161	1019	6.33	84.91	934	873	**15**	**4**
Jaffna	60	800	13.33	66.67	695	661	**11**	**5**
Moratuwa	130	455	3.5	37.91	434	388	**10**	**6**
Open	48	240	5	20	226	207	**9**	**7**
Eastern	23	100	4.35	9.09	91	80	**5**	**8**
Sabaragamuwa	20	70	3.5	7.78	67	61	**4**	**9**
S.Eastern	8	15	1.88	3.75	13	11	**3**	**10**
Wayamba	16	30	1.88	3.33	29	25	**3**	**10**
Rajarata	18	27	1.5	3	25	24	**2**	**11**
Uva Wellassa	2							**NA**
Visual & Perf. Arts								**NA**
Total	**2442**	**15305**	**66.56**	**1282**	**13387**	**12303**		

Note - A.C.P.A – Average Citation per article, A.C.P.Y – Average citation per year -Nil records

Table 2: Top 30 scientists in Sri Lanka

Author	Publications	No. of times Cited	A.C.P.A	h.index	**Rank**	University
1.Sheriff, MHR	28	479	17.11	11	**1**	Colombo
2.Ratnasooriya,WD	66	239	3.62	10	**2**	Colombo
3.Dissanayake, MAKL	22	283	12.86	9	**3**	Peradeneya
4.Wijayagunawardane,MPB	17	179	10.53	9	**3**	Peradeneya
5.Ekanayake,JB	13	364	28	9	**3**	Peradeneya
6.De Silva, HJ	40	322	8.05	9	**3**	Kelaniya
7.Perera, J	12	392	32.67	8	**4**	Colombo
8.Rajapakse, RPVJ	34	163	4.79	8	**4**	Peradeneya
9.Careem,MA	12	181	15.08	8	**4**	Peradeneya
10.Karunaweera, ND	24	162	6.75	7	**5**	Colombo
11.Wijesundera, RLC	23	88	3.83	7	**5**	Colombo
12.De Silva, D	10	194	19.4	7	**5**	Colombo
13.Tilakaratne, WM	26	143	5.5	7	**5**	Peradeneya
14.Samaranayake,LP	19	131	6.89	7	**5**	Peradeneya
15.Karunaratne,SHPP	16	151	9.44	7	**5**	Peradeneya
16.Gunatilleke,CVS	11	153	13.91	7	**5**	Peradeneya
17.Horadagoda,W	11	206	18.73	7	**5**	Peradeneya
18.Thabrew, MI	13	95	7.31	7	**5**	Kelaniya
19.Dharmasiri, MG	16	126	7.88	6	**6**	Colombo
20.Rajapakse, RMG	19	85	4.47	6	**6**	Peradeneya
21.Dawson,AH	16	163	10.19	6	**6**	Peradeneya
22.Konrasen,F	14	216	15.43	6	**6**	Peradeneya
23.Ellepola,ANB	10	73	7.3	6	**6**	Peradeneya
24.Singhakumara, BMP	8	88	11	6	**6**	Jayewardenepura
25.Pathmeswaran, A	17	131	7.71	6	**6**	Kelaniya
26.De Silva, NR	12	309	25.75	6	**6**	Kelaniya
27.Gunatilake, SB	10	139	13.9	6	**6**	Kelaniya
28.Ravirajan, P	8	496	62	6	**6**	Jaffna
29.Nelson, J	7	496	70.86	6	**6**	Jaffna
30.Weerasinghe, S	6	189	31.5	6	**6**	Ruhuna

*Intellectual Property Rights**

Khaparde, Vaishali[1]

Introduction

21st century is often called as the century of Knowledge; it is indeed the century of mind. In this century Intellectual Property is a powerful driver of economic growth. Hence it is essential to protect the Intellectual assets of our country. The nation's development will not be possible without protecting these assets.

Intellectual property refers to creations of the mind: inventions; literary and artistic works; symbols, names and images (WIPO, 2004). Intellectual property is divided into three categories:

1. Industrial Property: which include patents for inventions, Trademarks, (goods and Services), Industrial designs and geographical indications (WIPO, 2004).
2. Copyright includes literary works such as novels, poems, plays, films Musical works, Artistic works. Such as drawing, paintings, photographs, sculptures, architectural designs. Rights related to copyright include those of performing artists in their performances, producers of phonogram, and those of Broadcasters in Radio and television programs (WIPO, 2004).
3. Emerging forms: includes protection of life, Traditional knowledge, and Digital library.

Patent

A patent is an intellectual property right relating to inventions and is the grant of exclusive right, for limited period, provided by the government to the patentee, in exchange of full disclosure of his invention, for excluding others for making, using, selling, importing the patented product or process producing that product for those purposes (WIPO, 2004). The purpose of this system is to encourage inventions by promoting their protection and utilization so as to contribute to the development of industries, which in turn, contributes to the promotion of technological innovation and to the transfer and dissemination of technology. Under the system, Patents ensure property rights (legal title) for the invention for which patent has been granted, which may be extremely valuable to an individual or a company. One should make the fullest possible use of the patent system and the benefits it provides. Patent right is territorial in nature and a patent obtained in one

[1] Dr Khaparde, Vaishali, Associate Professor & Head, Dept. of Library & Information Science, Dr Babasaheb Ambedkar Marathwada University, Aurangabad
vaishali_khaparde@rediffmail.com

*This paper is largely based on WIPO Intellectual Property Handbook (2004)

country is not enforceable in other country. The inventors / their assignes are required to file separate patent applications in different countries for obtaining the patent in those countries. Patent is legal document given to the inventor not to enjoy monopoly of his novel product but to exclude from making selling , using distributing his invention. The main goal of patent is to encourage inventors to advance the existing state of technology by awarding them a monopoly right to benefit from their invention .Hence it is said "Patent is an award for the inventor and a reward for the investor".

The protection is granted for a limited period generally 20 years. To keep the patent in force, Renewal fee is to be paid every year. If the renewal fee is not paid within the prescribed time, the right may cease.

Trademark

A trademark is any word, name, symbol or device capable of distinguishing services of one person from those of others. Trademark includes a brand name, sign, signature, numeral, packaging, shape of goods, colour combination. Trade mark is a visual symbol used in relation to any goods or Services to indicate some kind of trade connection between the goods and services and the person using the mark (WIPO, 2004).

The basic purpose of a trademark is to indicate the sources of origin of goods. A trademark perform three functions

- It identifies the product and its origin.
- It guarantees its unchanged quality.
- It helps in advertisement of the product.

The term of a registered trademark shall be for a period of ten years but may be renewed from time to time for an unlimited period by payment of the renewal fees.

Industrial Design

An Industrial design is the ornamental or aesthetic aspect of an article. Design right is a intellectual property right which applies to a original non common place designs of the shape or configuration of articles. Design as per the Indian act means the features of shape, configuration, pattern, ornament applied to any. Article – whether in two dimensional or three dimensional or in both forms. An article means any article of manufacture and any substance artificial or partly artificial and partly natural; and includes any part of an article capable of being made and sold separately.

The total term of a registered design is 15 years. Initially the right is granted for a period of 10 years, which can be extended, by another 5 years by paying some fee.

Earlier patent and Design Act, 1911 was repelled by India's Design Act, 2000 which was enacted to consolidate and amend the law relating to protection of design and to comply with the articles 25 and 26 of TRIPS agreement.

Geographical Indications:

A geographical indication is a sign used on goods that have a specific geographic origin and possess qualities on a reputation that are due to that place of origin. Thus G1 points to a specific place or region of production that determines quality of the product. Geographical Indicator are source identifiers, indicators of quality and are as valuable to producers from particular regions as are trademarks. G1 is granted to a product that are manufactured in a specific geographical location i.e. a city, town or a locality. It is a kind of certification that the product possesses certain qualities and characteristics owing to its specific origin. Assam tea, Basmati rice, Lucknow chikan work are some popular Indian products that have GI. Recently "Tirupati Laddoo" that is served as Prasad in the Venkateshwara Temple in Andra-Pradesh has been assigned the GI. It can be noted as a consequence that in no other part of the world that particular "laddoo" be manufactured & sold under the same name.

Protection of Geographical Indications

Geographical indications are understood by consumers to denote the origin and the quality of Products. Many of them have acquired valuable reputations which, if not adequately protected, may be misrepresented by dishonest commercial operators. False use of geographical indications by unauthorized trades for example "Darjeeling" for tea that was not grown in the tea gardens of Darjeeling is detrimental to consumers and legitimate producers. Hence it needs protection under the act. Geographical Indications are protected in accordance with national laws; to prevent from misusing geographical indications the government of India has passed "The Geographical Indications of Good (Registration and Protection) Act, 1999". A Geographical indication is registered for a period of 10 years and can be renewed from time to time.

Copy Right

Copy right provides exclusive rights to the authors for their literary work (Books, movies, Songs, Computer software, Databases, sound recordings) and artistic works (Such as painting, Sculpture drawing, architectural work). The main objective of such protection is to encourage and reward creative work. Copyright protects the form of ideas and not the ideas itself.

The duration of protection of copyright works is much longer than in the case of industrial property; normally, it is authors or creator's lifetime plus at least 50 years. It is limited to the boundaries of the country concerned. For cinematographic films, records, photographs, works of governments

International agencies the term is 60 years. From the beginning of the calendar year following the year in which the work was published. For broadcasting, the term is 25 years from, the beginning of the calendar year in which the broadcast was made.

The role of copyright in development at the national level, is to encourage creativeness; promote tertiary industry (Books, entertainment, records, films etc) promote the activities of the media. (Radio, television, cinema, press) while at the International level, it is to facilitate cultural exchanges; achieve integration in international relations. Copyright gives protection for the expression of an idea and not for the idea itself. For example many authors write text books on a subject covering various aspects. Even though the topics covered by the author are being covered in several books by different authors, each author will have a copyright on the book written by him/her provided the book is not a copy of some other book published earlier.
Copyright as provided by the Indian copyright Act, 1957 is also valid in the Country abroad as India is the member of Berne Convention, an International treaty on copyright.

It is noted that while protection, intellectual property is becoming increasingly acceptable in both the developed and the developing countries, some states in Asia and Africa have still not adhered to any international copyright convention. However some of these states have domestic copyright laws. This could be due to lack of information, professional expertise, and absence of motivation. Such non adherence could result in financial losses to governments and to copyright owners.

Traditional Knowledge

Traditional knowledge was treated as knowledge in the public domains and so it did not qualify for patent. Several traditional plants and related knowledge in India have been allegedly falsely patented by the US patent office including Neem and Turmeric. Traditional knowledge cannot be patented if documented under the TRIPS agreement of WTO. That is why Neem and Turmeric products when patented by the US patent office were revoked once India proved that these were the products of Indian traditional knowledge. The current IPR system cannot protect traditional knowledge. A *"sui generic*" or alternative law, is therefore necessary to protect traditional knowledge. The development of database on traditional knowledge would help patent examiner to discover relevant prior art so as to improve examination of patent application and prevent the grant of patents.

Traditional Knowledge Digital Library (TKDL)

As the first chairman of SCIT of WIPO (Geneva), Mashelkar strongly advocated that traditional knowledge be treated at par with industrial property systems, which led to the creation of Traditional Knowledge Digital Library (TKDL).He Fought successfully in changing the International Patent Classification System to include the Indian traditional knowledge, which is a breakthrough for the entire developing world. In June 2006, the Cabinet took the decision to entrust the responsibility of providing access to TKDL for international patent offices to CSIR. As a member of the prestigious International IPR Commission set up by UK Government (2001) played a crucial role in making recommendations, which balance the rights of the poor. This has made a major impact on international thinking on IPR and development.

Since time immemorial, India has possessed a rich traditional knowledge of ways and means practiced to treat diseases afflicting people. This knowledge has generally been passed down by word of mouth from generation to generation. A part of this, knowledge has been described in ancient classical and other literature, often inaccessible to the common man and even when accessible rarely understood. Documentation of this existing knowledge, available in public domain, on various traditional systems of medicine has become imperative to safeguard the sovereignty of this traditional knowledge and to protect it from being misappropriated in the form of patents on non-original innovations, and which has been a matter of national concern. India fought successfully for the revocation of turmeric and basmati patents granted by United States Patent and Trademark office (USPTO) and Neem patent granted by European Patent Office (EPO). As a sequel to this , in 1999, the Department of Ayurveda, Yoga & naturopathy, Unani, Siddha and Homoeopathy-(AYUSH), erstwhile Department of Indian System of Medicine and Homoeopathy (ISM&H) constituted an inter-disciplinary Task force, for creating an approach paper on establishing a Traditional Knowledge Digital Library (TKDL).

The project TKDL was initiated in the year 2001.TKDL provides information on traditional knowledge existing in the country, in languages and format understandable by patent examiners at international Patent Offices (IPOs), so as to prevent the grant of wrong patents. TKDL thus, acts as a bridge between the traditional knowledge information existing in local languages and the patent examiners at IPOs.

TKDL is a collaborative project between Council of Scientific and Industrial Research (CSIR), Ministry of Science and Technology and Department of AYUSH, Ministry of Health and Family Welfare, and is being implemented at CSIR. An inter-disciplinary team of Traditional Medicine

(Ayurveda, Unani, Siddha and Yoga) experts, patent examiner, IT experts, scientists and technical officers are involved in creation of TKDL for Indian systems of Medicine.

The project TKDL involves documentation of the traditional knowledge available in public domain in the form of existing literature related to Ayurveda, Unani, Siddha and Yoga, in digitized format in five international languages which are English, German, French, Japanese and Spanish. Traditional Knowledge Resource Classification (TKDL), an innovative structured classification system for the purpose of systematic arrangement dissemination and retrieval has been evolved for about 25,000 subgroups. A recent study examined randomly selected 762 US patents which were granted under AGIK35/78 and other IPC classes, having a direct relationship with medicinal plants in terms of their full text.

World Intellectual Property Organization (WIPO)

The world property Organization (WIPO) a United Nations (UN) specialized agency was established in 1970, dedicated to the promotion of innovation and creativity for the economic social and cultural development throughout the world. WIPO currently as on September 1, 2010 has 190 member states. WIPO's headquarters is in Geneva, Switzerland. As part of the United Nations, WIPO exists as a forum for its member states to create and harmonize rules and practices to protect intellectual property rights.

Challenges to IPR & Role of WIPO

The origins of the world Intellectual Property Organization (WIPO) date back to March 1883, when with the formulation of the Paris Convention for the Protection of Industrial Property, the first major international treaty came into force in 1884. It set up an International Bureau not only to help, organize meetings of the initial 14 member states, but also to perform the necessary administrative tasks. Then in September 1886, with the adoption of the initial copyright treaty, the Berne Convention for the Protection of Literary and Artistic Works, it also had an International Bureau for its administrative work. In 1893, these two bureaux merged to form an international organization called BIRPI (the French acronym for Bureaux Internationaux reunis pour la protection de la propriete Intellectuelle) –the United International Bureaux for the protection of Intellectual Property. This small organization with an initial staff of seven, was headquartered in Berne, the capital of Switzerland, till it shifted in 1960 to Geneva to be nearer the European headquarters of the United nations, as also of the other international organizations. Ten years later, in 1970 BIRPI became WIPO, with the coming into effect of the Convention Establishing the world Intellectual Property Organization, signed in Stockholm on July 14, 1967.

The Structural System of Indian Intellectual Property Organization

The Indian Patent Office started its journey in the year 1956. At that time, the Indian patent system was governed by the Act VI of 1856 on protection of inventions based on the British patent law 1852. Certain exclusive privileges were granted to inventors of new manufacturers for a period of 14 years at that time. However, the Indian patent system has come a long way since then.

The Indian patent system is committed to achieve professional excellence, reliability, thoroughness, consistency, transparency, fairness and timeliness in providing product and services of highest quality to the utmost satisfaction of the users ensuring that the rights granted are commensurate with the contribution made in the field of science and technology. The following are the main objectives of the Indian patent system-

- To retain confidentiality of the inventions until made public.
- To provide search and examination report maintaining the prescribed time lines and legalities.
- To ensure timely grant of Quality Patents
- To make information dissemination system transparent, faster and easier

The Indian Ministry of Commerce & Industry under the Dept of Industrial Policy & Promotion is looking after the IP System in India followed by CGPDTM (Controller General of Patent, Design and Trade Mark). The Main offices of the IPR are located at the five metropolitan cities i.e. Kolkata, Delhi, Mumbai, Chennai & Ahmedabad. The Patent administrative office is located in Kolkata, Delhi, Mumbai, and Chennai. Whereas the main office of GI Registry in Chennai and NIIPM is the National Institute for Intellectual Property Management is a Central Government Organization under the Ministry of Commerce & Industry engaged in conducting Training / Awareness programs relating to Intellectual Property Rights (IPR) i.e. Patents, Designs, Trademarks & Geographical Indications and the Patent Information System office in Nagpur.

References

Right to Information Act 2005 Patents

Right to Information Act 2005 Designs

Right to Information Act 2005 Trademarks

Right to Information Act 2005 Geographical Indication

Right to Information Act 2005 NIIPM

Halpern, Sheldon; Shipley, David E. B. & Abrams,. (1992). Howard Copyright : cases and materials West Publishing, Minn.

Libecap, Gary D. (1993). Contracting for property rights Cambridge University Press.

Alikhan S and Mashelkar R . (2004). Intellectual Property and Competitive Strategies in the 21st Century , Kluwer Law International , Newyork.

World Intellectual property Organization (WIPO). (2003). WIPO Publication No. 400(E).

Author Index

Name of the author, Page number