

Open Access Repositories in the National Knowledge Resource Consortium (NKRC): An Overview of the Indian Academy of Sciences (IAS)

N. R. Shilpa Rani

Assistant Professor, DoS&R in Library and Information Science, Karnataka State Open University, Karnataka, India
E-mail: shilparani.nr@gmail.com

Abstract - Council of Scientific and Industrial Research (CSIR) and Department of Science and Technology (DST) institutions have merged and formed National Knowledge Resource Consortium (NKRC) to share e-resources among its member libraries. Licensed resources have been subscribing to National Knowledge Resource Consortium. However, NKRC has been supporting open access to research content. In this connection, many member institutes in the consortium have set up open access repositories. The CSIR-Central acts as a centralized institutional facility and harvester. The main aim of this present study is to examine the total items deposited year-wise (2011-2020), subject-wise (8 core areas), the total number of downloads that happened during 2010-2021, and the study also highlighted the top five authors browsed by users during 2010-2021.

Keywords: National Knowledge Resource Consortium (NKRC), Indian Academy of Sciences (IAS), Open Access, Institutional Repositories, E-Journals, E-Books, Library Consortia

I. INTRODUCTION

There are a good number of internationally acclaimed organizations in India that are producing high-quality scholarly research and enhancing the boundaries of knowledge in technological innovation. The success of these institutions will be resulting in a promising research and development activities environment in India that will draw the attention of collaborative research in different areas of study. Modern information and communication technologies are used by these institutions for scholarly information management and dissemination. The open-access revolution influenced the organizations to afford access to their own research, learning, and other related materials to all scholars across the globe. The sharing of knowledge will lead to advanced development in various disciplines. Institutional Repository (IR) platform is playing a vital role in the sharing of knowledge is also called as the digital library. In general, an “institutional repository” can mean a ‘warehouse’, ‘archive’, or even ‘museum’, that collects and organizes the institutions records / artifacts for use and protection falls under the broad definition of the institutional repository. In modern days, an IR is being defined more specifically, but still developing the significance that refers to “the storage and preservation of an organization’s digital information or knowledge assets” (IR, 2021).

II. INSTITUTIONAL REPOSITORIES IN INDIA

In a broad spectrum, repositories have been used to collect and store vital information and artifacts for long time use and safekeeping. The history of the libraries illustrates the importance of repositories used to store manuscripts, clay tablets, and other rare information sources. The influence of ICT has brought tremendous change in the role of IRs. These are emerged to provide access to open access scholarly literature. The main aim of IR’s is to make free access to research content on the internet. The information resources of an IR include - Conference papers, Pre-prints of articles, Teaching materials, Doctoral theses and dissertations, Student projects, Datasets, research projects, Computer software, Works of art, Committee papers, Photographs, and video recordings etc. There are a few open-source digital library software’s used for IRs like- DSpace, Eprints, fedora and greenstone, etc. Commercial digital repository software’s are- Hyperion, Meta Source, Digi Tool, EN Compass, CONTENTdm®, VITAL-VITAL, etc. also being used by many institutions.

In India, there are many institutes that have developed institute repositories to extend scholarly services to their users. Examples of a few institutions are- Indian Institute of Science (IISc), Indian Council of Medical Research (ICMR), Indian Statistical Institute (ISI), Indian Institute of Technology (IITs), laboratories under the Council of scientific and Industrial Research (CSIR), Indian Council Agricultural Research (ICAR), Indian Space Research Organization (ISRO) etc.

III. OPEN ACCESS REPOSITORIES

Open repositories will collect, organize, and provide open access to journal article preprints or reprints, audio/video, digital data, and other media. Open IRs do not offer peer review or editing services, but they may provide access to peer-reviewed and edited documents. Many institutions maintain repositories for the benefit of their own researchers/authors, and it is open to deposits from any researcher/author in a specified subject area. It is pre-condition that, a few funding agencies make it mandate to deposit the articles or data in an open access repository from

the research they fund. A few examples of Open repositories are Directory of Open Access Repositories (OpenDOAR), Repository66.org, Registry of Open Access Repositories (ROAR), arXiv.org, Open Knowledge Repository (World Bank), bioRxiv, Open Science Framework Preprint Repository, PubMedCentral (PMC), Social Science Research Network (SSRN), RePEc (Research Papers in Economics), (OR,2021).

IV. NATIONAL KNOWLEDGE RESOURCE CONSORTIUM-NKRC

The NKRC came into existence in 2009, as a network of libraries and information centers of 26 DST and 43 CSIR institutes. NKRC's origin can be traced when the CSIR has set up the E-Journals Consortium in 2001 to provide access to 1200 odd journals of Elsevier Science to all its users. Over a period, the NKRC is grown in terms of electronic resources and members. Presently, NKRC provides access to 5,000+ electronic journals of all major publishers, standards, patents, citation and bibliographic databases like-ACM, ACS, AIP, ASCE, Annual reviews, ASME, CUP, ASTM, Elsevier, CSIRO, ICE, Emerald, IEEE, IOP, Indianjournals, JCCC, NPG, OSA, OUP, RSC, NOPR, NRC, SciFinder, Sage, Springer, Science/AAAS, Wiley Blackwell, Taylor& Francis, WorldScientific, etc.

Apart from licensed resources, NKRC is also a single point entity that provides access to the huge amount of open access resources to its users. The Consortium visualizes leadership in serving R & D sectors. NISCAIR is managing governance and funding activities. DST and CSIR are funding bodies provide funds for NKRC through NISCAIR. Selected e-resources are negotiated by the coordination committee which includes members from reputed institutes (NKRC, 2021).

V. SCOPE OF THE STUDY

The scope of this study is limited to an open access repository under National Knowledge Resource Consortium (NKRC). It provides an overview of the institutional repository of the Indian Academy of Science, Bengaluru.

VI. OBJECTIVES OF THE STUDY

The objectives of the study are as follows.

1. To examine the year-wise deposit of items to the Indian Academy of Sciences (IAS) Repository.
2. To check the various items deposited to the repository in the year 2011.
3. To observe the various items deposited to the repository in the year 2020.
4. To study the subject - wise deposit to the IAS repository.
5. To assess the download statistics from 2010 to 2021.

VII. INDIAN ACADEMY OF SCIENCES (IAS) REPOSITORY

The Indian Academy of Sciences (IAS) was established as a society in 1934 with the motive to promote the basis of science in the pure and applied areas. As of date IAS has around 1,500+ fellows and it is estimated that all fellows of IAS have published a total number of 100,000 articles so far in various national and international publications. The main aim of the IAS to create the repository to collect, preserve and disseminate publications of the fellows in digital format. It permits the academy members to deposit their scholarly publications, preprints, and postprints, and organizes these publications for easy retrieval. These publications can be accessed by anybody across the globe, but the submission of e-content to this repository is limited to the fellows of the IAS only. EPrints open archive software is being used to deposit and organize publications of the IAS fellows; it meets the terms with the Open Archives Initiative (OAI) framework permitting publications to be easily indexed by indexing services and web search engines.

Key elements of the IAS repository are highlighted as follows.

TABLE I YEAR-WISE DEPOSIT OF ITEMS TO IAS REPOSITORY

Sl. No.	Year of Deposit	Total No. of Items
1	2020	574
2	2019	672
3	2018	713
4	2017	839
5	2016	1590
6	2015	1725
7	2014	1841
8	2013	1891
9	2012	2455
10	2011	3696

Table I depicts the items deposited by fellows of the academy in ten years from 2011 to 2010. Research publications were deposited more during 2011 (3696), followed in the year 2012 (2455). But 2020 (574) and 2019 (672) evidenced a smaller number of items added to the repository.

TABLE II VARIOUS ITEMS DEPOSITED IN THE YEAR OF 2011

Sl. No.	Type of the Item	Total No.
1	Article	3580
2	Book Section	03
3	Conference / workshop item	108
4	Book	02
5	Thesis	01
5	Other	01
Total		3695

A total of 3695 various items are deposited in the repository during 2011. Data in Table II demonstrate the items like-articles, Book Section, Conference / workshop item, Book, Thesis, and others are deposited in the year 2011. Articles (3580) are deposited more compared to other materials.

TABLE III CATEGORY OF ITEMS DEPOSITED IN THE YEAR OF 2020

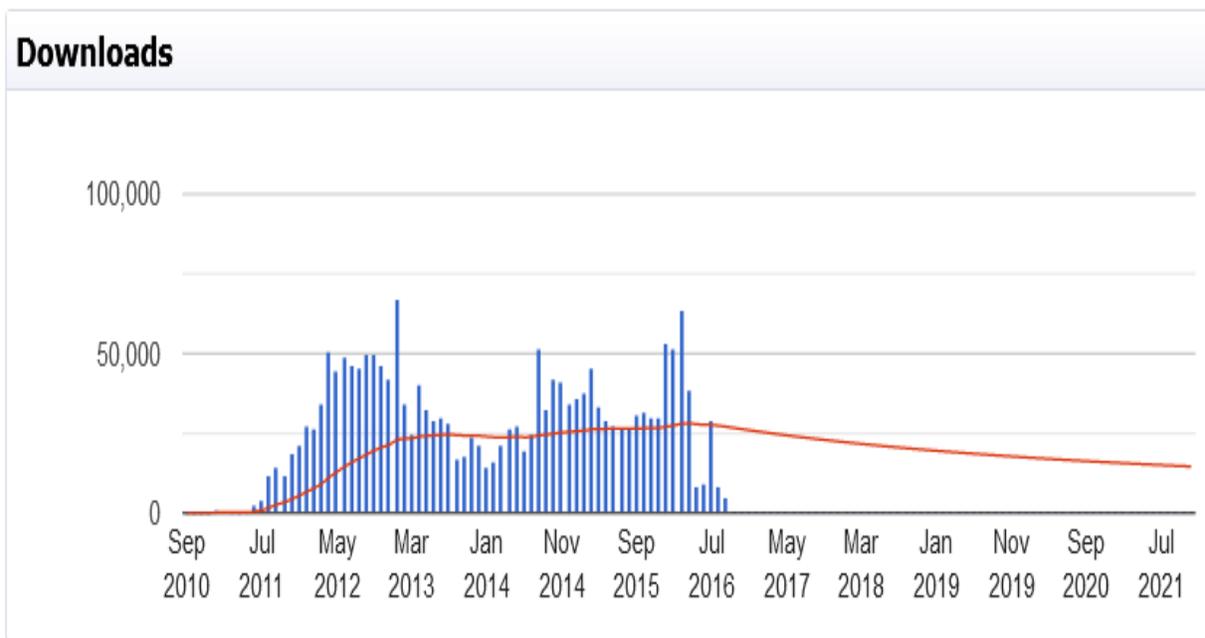
Sl. No.	Type of the Item	Total No.
1	Article	542
2	Book Section	03
3	Conference / workshop item	18
4	Book	01
5	Other	10
Total		574

Table III Illustrates that the total number of different category of items deposited in the year 2020 is 574. A total of 542 articles published in various journals are deposited to the repository. 18 articles of Conference/workshop, 03 book sections, 01 book and 10 other research articles submitted in arXiv.org and to American Physical Society, etc.

TABLE IV DEPOSIT BY SUBJECT-WISE

Sl. No.	Subject	Total No.
1	Animal/Plant Sciences	10756
2	Chemistry	28563
3	Physics	25510
4	General Biology	11540
5	Mathematical Sciences	5392
6	Earth & Planetary Sciences	5978
7	Engineering & Technology	17001
8	Medicine	10046
Total		114782

Table IV highlights a total of 114782 items deposited from core subjects like Animal/Plant Sciences, Chemistry, Physics, General Biology, Mathematical Sciences, Earth & Planetary Sciences, Engineering & Technology, and Medicine. More items were deposited in the area of chemistry (28563) followed by physics (25510).



Source: <http://repository.ias.ac.in/cgi/stats/report>

Fig.1 Download statistics from 2010-2021

Fig.1 highlights the download statistics of various items during 2010-2021. A total of 1,13,108 various items are deposited and 22,60,005 downloads happened during 2010-2021. In that 20% of the downloads are full text and 20% of the downloads are open access items. Banerjee, Ranajit K (55425), Deb, K. (33763), Khush, Gurdev S. (21571), Pal, Sankar K. (19483), Pradeep, T. (18300) are the top five authors browsed by users.

VIII. FINDINGS OF THE STUDY

1. Research publications were deposited more during 2011 (3696) But the year 2020 (574) evidenced a smaller number of items added to the repository.
2. A total of 3695 items like- articles, Book Section, Conference /workshop item, Book, Thesis, and others are deposited in the year of 2011. Out of which, articles (3580) are more compared to other materials.

3. Data of the total number of the various items (574) like-articles, Book Section, Conference/workshop item, Book, Thesis, and others are deposited in the year of 2020 is examined. Compared to 2011 (3695), the number of items deposited to the repository during 2020 (574) is evidenced in a steep fall.
4. A total of 114782 items were deposited in the core areas like- Animal/Plant Sciences, Chemistry, Physics, General Biology, Mathematical Sciences, Earth & Planetary Sciences, Engineering & Technology, and Medicine. But the chemistry (28563) tops the list out of 8 subjects.
5. A total of 2260005 downloads happened during 2010-2021. In that 20%, full text and 20% open access items are downloaded.

IX. CONCLUSION

Institutional Repositories are gaining momentum in the era of the open access revolution. Users are getting more benefits out of open repositories. The evolution of the e-resources consortium created a thirst to access more e-resources at meagre prices and it resulted in enhancing the research output of institutes and providing additional information resources to academic activities. On the other hand, open repositories pave ways to preserve the scholarly output of the organizations to enable information seekers to find scholarly work easily by indexing and arranging it. In this scenario, NKRC has initiated an open repository service to treat the user community with more scholarly resources. Indian Academy of Science as a member institute of NKRC, made its digital content open to everyone across the world,

but it enabled only its fellows to deposit their research work to its repository. Open access to scholarly scientific research is a revolution; it is accelerating R&D activities in all sectors. The basic motive of the Indian Academy of Sciences is indeed an inspiration to all other research institutions to walk in this way.

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ROLE OF GRAM PANCHAYAT LIBRARIES IN PROMOTION OF RURAL DEVELOPMENT PROGRAMS

Smt. Shilpa Rani N R
Assistant Professor
DOS in Library and Information Science
KSOU, Mysore-570006

Dr. K Prakash, Librarian,
KSOU Library, Mysore-570006

Smt. Rashmi B S, Assistant Professor,
DOS in Information Technology, KSOU, Mysore

ABSTRACT

Rural libraries are not just functioning as cultural, socio-economic and educational point, but these are also working as a bridge between information world and people. Any change should start from grass root level to revolutionize the society. Rural areas are roots of any nation since more people lives in villages and many are depending on agriculture to lead life. According to 2011 census report 83.3% population lives in rural areas. Hence, Government is coming up with now and then with new projects and schemes to integrated development of community and the villages. Due to lack of education and lack of awareness about the existing schemes many programs are not completely reached to the mass. Hence, this paper provides an overview of role of Gram Panchayat libraries in promotion of governmental programs, process and strategies in successful publicizing of governmental programs to the rural community.

Key Words:

Rural community, Rural Development, Gram Panchayat Library, Government Programs

1. Introduction

Rural development has assumed global attention especially among the developing nations. It has great significance for a country like India where majority of the population, live in rural areas. The present strategy of rural development in India mainly focuses on poverty alleviation, better livelihood opportunities, provision of basic amenities and infrastructure facilities through innovative programmes of wage and self-employment. Development of rural areas has a bearing on improved agricultural production and related economic activities, availability of natural and financial resources and their development, improvement of service delivery - paving way for improved human development.

Information is the fundamental and inevitable resource for development of any society. Libraries are established disseminate information to people from all walks of life. Establishing libraries in rural areas is a boon and right initiative from government of Karnataka. Rural libraries in India are playing very crucial role in strengthening of social, cultural and economic status in country side. These are catalysts in strengthening and uniting their communities. There are 5766 Gram Panchayats existed in Karnataka and every Gram Panchayat has its library. It helped in marginal improvement of increase in employment opportunities and reading habits of rural community. Gram panchayat libraries consists of governmental programs information kits for rural development. Hence, users of this sort of library can access to all information.

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**INDIAN LIBRARY ASSOCIATION,
DELHI**



EFFECTIVENESS OF NATIONAL DIGITAL LIBRARY INDIA (NDL) PORTAL IN THE FIELD OF EDUCATION AND RESEARCH

Dr. N. R. Shilpa Rani

Assistant Professor,

Department of Library
and Information
Science,

Karnataka State Open
University,

Mukthagangothri,
Mysuru – 570 006

Corresponding Author: Dr. N.R. Shilpa Rani

Web portal is a gateway to search and locate information of in the digital era. Portal is playing a vital role as a hub to link desired contents. A well defined web portal facilitates user to access wide variety of web-enabled information resources. Here, an attempt has been made to create awareness about National Digital Library (NDL) India portal. It attempts to cover major differences between website and portals, diverse learning materials and featured sources available for different category of users. The authors also try to highlight the significant features of NDL portal. Efforts are made to provide an overview of NDL as an online repository of learning e-resource. It provides search facility for different category of users with a single-window and it also highlights the procedures for providing access to e-content.

And

Prof. Lalitha aswath

Professor(R),

Department of Library
and Information
Science,

Jnanabharathi campus,

Banglore University,
Bangaluru – 560 006

Key Words: Portal, Website, E-resources, Information Technology, NDL, Virtual Repository, Digital Library etc.

INTRODUCTION

Portal is a term encompasses an ocean of resources created to serve the users and save their time and guide them to appropriate sources of information in a place. There by encouraging the use of available resources to the maximum (Zala, 2006). 21st century users need a well thought out mechanism to organize, store and access information 24/7 and library portals have become a very useful and handy to provide web enabled information services. In addition, libraries are supplementing their collection with e-resources, which intern demands for a properly designed website to facilitate its maximum usage (NDL, 2019).

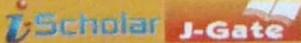
Library portals are playing a crucial role in improving system of education. Major advantages of the library portals are to enhance the formal education system by making information accessible to all sorts of users. Therefore, understanding the need for knowledge management techniques has become increasingly vital in an Academic library system. An academic library portal provides quicker access to wide variety of information through World Wide Web, there by, improves the communication between information creators and users (Letha, 2006). Majority of the libraries use their portals exclusively to provide access to databases to

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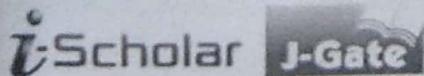
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Awareness of Plagiarism Detection Tools among Faculty Members of Engineering Colleges in Bengaluru

Prathibha S. N.

Research Student,

DoS & R in Library & Information Science

KSOU, Mukthagangotri,

Mysuru

55

Shilpa Rani N.R.

Assistant Professor,

DoS & R in Library & Information Science

KSOU, Mukthagangotri,

Mysuru

Abstract

The study is conducted to examine the awareness of plagiarism detection tools among faculty members of engineering colleges of Bengaluru. The present study describes various aspects of plagiarism such as awareness of plagiarism, use of plagiarism detection software, use of citation styles, and awareness of punishment for plagiarism. The findings reveal that most of the faculty members are aware of plagiarism and its consequences. Majority of 51 (85%) respondents used 'Periodicals/ Journals', for the purpose of writing research paper/ thesis, followed by 54(90.0%) of respondents use Turnitin software for plagiarism detection, 88(88.3%) of the respondents are conscious about Self-plagiarism. The study recommended that, the college library should motivate faculty members to avoid plagiarism by conducting user awareness programs/training programs, workshops, communication skill development programs etc. It helps faculty members to enhance their awareness on plagiarism and encourage them to maintain academic and research integrity.



PROSPECTS OF NLIST PROGRAMME UNDER E-SHODHSINDHU FOR COLLEGE LIBRARIES

Dr. Shilpa Rani N. R.

Assistant Professor, DoS & R in Library and Information Science,
Karnataka State Open University, Mukthagangothri, Mysuru, Karnataka, India

ABSTRACT

ICT influence on library operations brought in revolutionary changes in Libraries. Application of ICT in libraries opened doors in the area of resource sharing to make electronic resources available to users quickly and timely in a very economical way. College library shelves are generally filled with textbooks related to the prescribed syllabus to make students prepare for their semester exams. But, NLIST resources made colleges to have virtual/electronic resources support to both students and faculty for their overall information requirement. In this direction, Introduction of 'National Library and Information Services Infrastructure for Scholarly Content' (NLIST) programme under e-ShodhSindhu consortium as a college component is a cerebral move towards preparing students as e-resources savvy for future educational needs. This article throws light on various benefits of consortia.

Key words: NLIST Programme, Academic library Consortia, ICT, UGC-INFONET, INDEST-AICTE, E-Shodhsindhu, Electronic publishing

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<https://iaeme.com/Home/issue/JLIST?Volume=4&Issue=1>

1. INTRODUCTION

Libraries, especially academic libraries have long formed consortia for the purpose of sharing their physical resources-principally books and journals held by member libraries. Library consortia, does not have any remarkable history but the consortia arrangements started with the concept of resource sharing since long back. In 1990's, new types of library consortia began to flourish that exploited the advances in information technology. The global development of OCLC in USA is a prime example. Consequently, the growth of newer consortium like; Colorado's CARL, Georgia's GALILEO, Illinois's IDAL, Maryland's SAILOR, Missouri's MIRACAL, NEW Zealand's CONZUL, CAUL, MetroNet, North America's CRL, North Carolina's embryonic NCLive, Ohio's OhioLink, Pennsylvania's PALCI, Portland's PORTALS, Texas's TexShare, Virginia's VIVA, Washington's WRLC, CIC in South Asia, CURL in UK, CALIM in Manchester, Concord in British, metroweb in Network etc. came into existence at international level (Consortia,2021).

2. BACKGROUND OF THE STUDY

Libraries are navigating to provide information 24/7 on finger tips of the users instead of their physical presence in the libraries. Private and aided colleges are always in forefront to provide e-resources to their users, but government colleges are not able to stand in the race of providing such services to their users because of financial constraints, technical problems and may be lack of well trained staff. Introduction of NLIST e-resources to government colleges is a boon in current scenario. N-LIST is providing e-resources access in very less price, which, all libraries can afford. NLIST is the first program extending e-resources to colleges in India at national level. A common infrastructure is very essential to share resources among libraries. At this juncture NLIST emerged to serve Under Graduate level institutions with small budget by providing access to more e-resources.

3. E-SHODHSINDHU

E-ShodhSindhu has been initiated on 1st December 2015, at national level after merging of UGC-INFONET Digital Library Consortium, INDEST-AICTE Consortium, and NLIST. Ministry of Education (MoE) has formed e-ShodhSindhu, based on the recommendations of expert committee. It's a very crucial decision taken by MoE on sharing of e-resources by merging three premier consortia to operate at national level. The e-ShodhSindhu will continue to provide current as well as archival access to more than 15,000 core and peer-reviewed journals and a number of bibliographic, citation and factual databases in different disciplines from a large number of publishers and aggregators. Its member institutions are centrally-funded technical institutions, universities and colleges that are covered under 12(B) and 2(f) Sections of the UGC Act (Shilpa&Lalitha, 2016).

4. NATIONAL LIBRARY AND INFORMATION SERVICES INFRASTRUCTURE FOR SCHOLARLY INFORMATION (NLIST) PROGRAMME

NLIST is jointly executed by UGC-INFONET Digital library consortium and INDEST consortium. NLIST was launched on 4th May 2010 at New Delhi by Sri Kapil Sibal, the then Human Resource Development Minister, Government of India (NLIST, 2021). In the initial stage, only 12B/2F status colleges were allowed to register to NLIST program. Now permission is granted to un-aided colleges to avail the services of NLIST program besides 12B / 2F colleges. Increased number of registered colleges shows the growing popularity and usefulness of NLIST program. In 2014 NLIST programme merged under E-shodhsindhu consortium.

5. NEED TO PROMOTE THE NLIST PROGRAMME IN COLLEGE LIBRARIES

- Coverage of e-resources are more and listed e-resources meets the requirements of college libraries
- It is suitable for government and government aided colleges. Particularly, libraries who have inadequate economic resources
- College libraries can enhance their reputation by becoming the members of this consortium.
- It is the best promotional program by e-ShodhSindhu Consortium, INFLIBNET Centre and the INDEST-AICTE Consortium for college level students to access resources related to their subject beyond their text books

6. OBJECTIVES OF THE STUDY

- To know the benefits in terms of electronic resources
- To identify the economic benefits after subscribing to e-resources under NLIST programme
- To recognize e-resources covered under NLIST programme are not only go with the requirements of UG level students but also for PG level students

7. SCOPE OF THE STUDY

This study is confined to the colleges in the Bengaluru city which are registered to NLIST program. 21 Government colleges which are having UG & PG courses have are covered in this survey. List of colleges obtained from the official website of e-ShidhSindhu

8. METHODOLOGY

Primary data collected through using survey method. Questionnaires are distributed to Library staff. Apart from questionnaire, a few library staff and students are consulted informally to collect information which is not solicited in the Questionnaire. Questionnaires distributed to all 21 colleges but 16 completely filled in questionnaires are received, total response rate is 76.19%. Analysis of data is done through MS excel.

9. LIST OF E-RESOURCES UNDER NLIST PROGRAMME

Table -1 provides an overview of e-resources i.e. e-journals, e-books, bibliographic databases, annual reviews, reports etc. could be accessed under NLIST consortium. Vast coverage of resources under this program provides more benefits in terms of financial and e- resources wise. College library users rely more on text books as their academic calendar strictly goes through semester system. Resources available under NLIST program are seldom used i.e. only during writing assignments and if they have project as a part of their curriculum. Faculty members and other staff can use these resources for their teaching and research activities.

Table 1 Electronic journals under NLIST programme

Sl. No.	E-journals (full text)	No. journals +Archive
1	American Institute of Physics	18 full-text journals
2	Institute of Physics	46 journals (including 7 in open access) from Vol.1 onwards
3	Annual Reviews	33 full text journals and archival access is provided for 10 years back issues
4	Cambridge University Press	224 titles with back files for five years
5	Royal Society of Chemistry	29 titles and 10 years back files access)
6	Economic and Political Weekly	1 title and access from 1966
7	Indian Journals	180+ titles and access from 2007
8	Oxford University Press	262 titles 10 years back files access
9	H. W. Wilson	3000+ titles
10	JSTOR	2500+ titles
E-books providers		
11	Oxford University Press	902 electronic books
12	Ebrary Ebook and MyiLibrary-McGraw Hill-ebooks	134000+ titles and 1124 titles
13	EBSCO Host (Net Library)	2800+and 936 titles
14	Cambridge Books Online	1800 titles

15	Oxford Scholarship-e-books	1400+ titles
16	Hindustan Books Agency –e-books	65 titles
17	Institute of South East Asian Studies(ISEAS) Books	382+ titles
18	Sage Knowledge e-books	1000 titles
19	World ebooks Library	33 lakhs title
Bibliographic database		
20	MathSciNet	Data from the first issue in January 1940 to the present. MathSciNet contains over 2 million items and over 700,000 direct links to original articles. Over 80,000 new items are added each year

Above table shows the list of e-journals providers, number of e-journals and back files. Resources listed in the above table are accessible to the registered institutes under NLIST. About 2500 full-text journals and back issues access provided to the users. If a library needs to subscribe individually all the above resources to their libraries have to spend lakhs of amount per annum including for archival issues (only for journals section). Annual budget of libraries in colleges is not so much to fulfill the needs of users through individual subscription only for few selected titles. So, financial crunch is a mother to invent consortium in libraries. Cost effectiveness of e-resources is one of the vital issues in subscription to NLIST consortium.

Table 2 Use of E-journals

E-journals (full text)	UG students (%)	PG Students (%)
American Institute of Physics	31.25	68.75
Institute of Physics	12.5	87.5
Annual Reviews	25	75
Cambridge University Press	0	100
Royal Society of Chemistry	12.5	87.5
Economic and Political Weekly	25	75
Indian Journals	6.25	93.75
Oxford University Press	25	75
H. W. Wilson	25	75
JSTOR	6.25	93.75

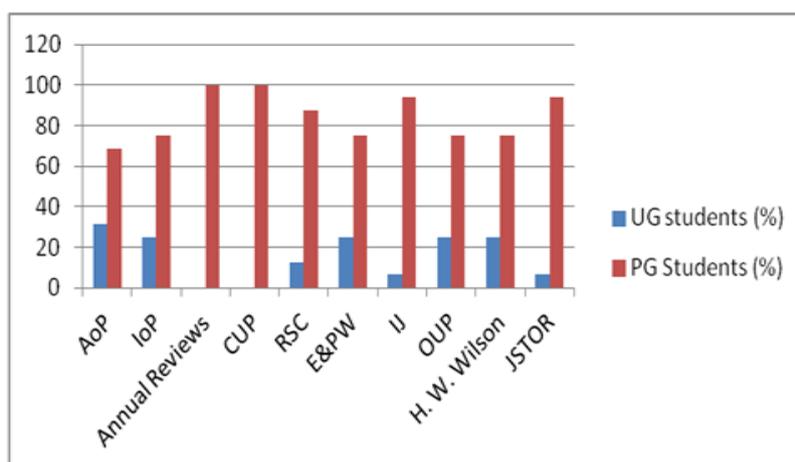


Figure 1 Use of E-journals

Data in table-2 is evident that, PG students have used e-journals for their assignments, class test, term end examinations, and for project work are as follows- Annual Reviews (100.00%), Cambridge University Press (100.00%), Indian Journals (93.75%), JSTOR (93.75%), Royal Society of Chemistry (87.5%), and Institute of Physics (87.5%). UG students have also used American Institute of Physics (31.25%), Economic and Political Weekly (25%), Oxford University Press (25%), H. W. Wilson (25%) for their academic assignments.

Data in table-2 and fig-1 highlights that, e-journals are not only used by UG students but also being used by PG students for their academic assignments. Students of UG and PG are consciously making use of nascent information for their academic growth. It's true that library staff and faculties role is very significant in making users to use of e-journals.

Table 3 Use of e-books and bibliographic database

E-books	UG students (%)	PG Students (%)
Oxford University Press	37.5	62.5
Ebrary Ebook and MyiLibrary-McGraw Hill-ebooks	43.75	56.25
EBSCO Host (Net Library)	31.25	68.75
Cambridge Books Online	56.25	43.75
Oxford Scholarship-e-books	62.5	37.5
Hindustan Books Agency –e-books	43.75	56.25
Institute of South East Asian Studies(ISEAS) Books	37.5	62.5
Sage Knowledge e-books	31.25	68.75
World ebooks Library	56.25	43.75

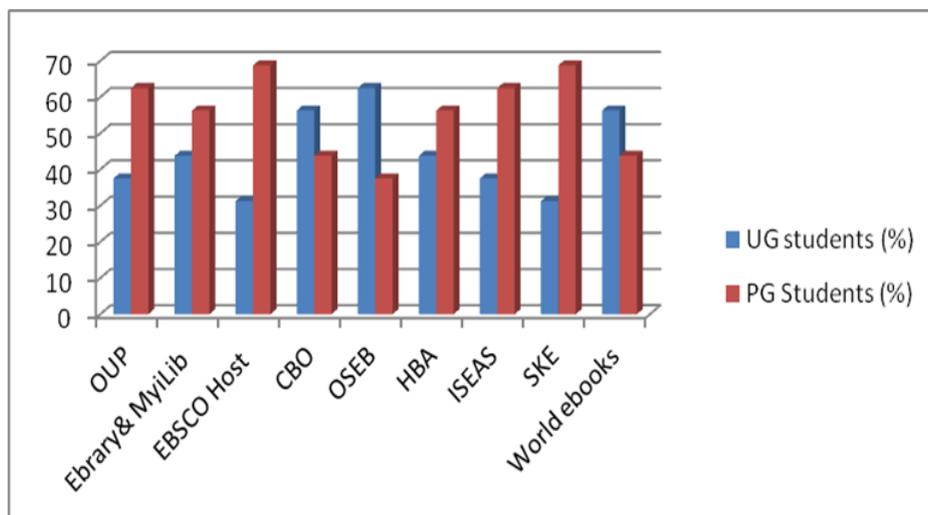


Figure 2 Use of e-books and bibliographic database

UG and PG students are more dependent on text books due to semester examinations. Though, above listed books are complementing with text books of their prescribed syllabi.

Table-3 exhibits that PG students are using EBSCO Host (Net Library) (68.75%), Sage Knowledge e-books (68.75%), Institute of South East Asian Studies (ISEAS) Books (62.5%), Oxford University Press (62.5%), Hindustan Books Agency –e-books (56.25%), Ebrary Ebook and MyiLibrary-McGraw Hill-ebooks (56.25%). Whereas UG students are also using Hindustan Books Agency –e-books (43.75%), Ebrary Ebook and MyiLibrary-McGraw Hill-ebooks (43.75%), d ebooks Library (56.25%), Cambridge Books Online (56.25%), Oxford Scholarship-e-books (62.5%) for their academic activities.

Table 4 Demand for e-resources after joining consortium

Description	Yes	Percentage	No	Percentage
Demand remains the same	5	31.25%	0	0.00%
Decreased	0	0.00%	0	0.00%
Gradually increased	11	68.75%	0	0.00%
Demand print resources	0	0.00%	0	0.00%

Table-4 depicts that 68.75% of respondents have stated that Demand gradually increased e-resources, 31.25 % of respondents opined that demand remains the same after joining consortium. Hence the results show that users are consulting more e-resources over print resources.

Table 5 Problems in accessing e-journals

	SA (%)	A (%)	D (%)	SD (%)
Lack of awareness	25	37.50	31.25	6.25
Lack of guidance & Training	18.75	25	50	6.25
Lack of trained staff	43.75	31.25	00	25
Lack of appropriate resources	37.50	37.50	18.75	6.25
Lack of Internet Facility	25	37.50	31.25	6.25
Problems in remote access	18.75	43.75	31.25	6.25
Problems in Wi-Fi Network	50.00	50.00	00	00
Lack of Time	12.50	43.75	43.75	00

(SA- Strongly Agree, A- Agree, D-Disagree, SD- Strongly disagree)

Table-5: indicates that 37.50% of respondents agree that lack of awareness, Lack of appropriate resources, and lack of Internet Facility is the main hindrance in accessing e-resources. Whereas 43.75% of respondents opined that Problems in remote access, Lack of Time are the problems in accessing e-resources. 18.75% of respondents says that lack of guidance, training, & Problems in remote access are also problems in accessing e-resources.

Table 6 Usage statistics of e-resources-UG&PG

E-resources	UG students	PG Students	Increase in usage
e-journals	15-25%	25-50%	Yes
e-books	15-25%	25-50%	Yes
Bibliographic databases	15-25%	15-25%	No
Reference Sources	< 15%	<15%	No
Statistical Sources	< 15%	<15%	No

Table – 6: presents the usage data of e-resources by UG & PG students. Data presented highlights e-resources usage has been increased gradually. But use of bibliographic databases ETDs, reference sources and statistical sources are less than 25% by UG and PG students. highest number of respondents opined that average usage level is increased due to awareness about e-resources for their academic and research enrichment.

10. FINDINGS OF THE STUDY

- NLIST is very economical, provides more resources in meager budget. NLIST is most suitable for government and government aided colleges, especially libraries who have limited financial resources

- Highest numbers of respondents are PG students in use of e-journals. Whereas, UG students level of e-journals usage is comparatively less.
- Study shows that demand for e-resources is being increased gradually
- It is evident from the results that usage level too increased after subscription to NLIST program
- Need to organize more and more orientation programs to users and for library staff

11. RECOMMENDATIONS

- Vast coverage of NLIST resources suites to Post graduate, universities and research institutions also.
- More and more training and orientation programmes needs to be arranged at regular intervals to provide awareness among user community as well as to library staff.

12. CONCLUSION

E-resources revolution has been started at the national level with the extension of NLIST programme in college libraries. It is a boon to college libraries in present electronic era. Changing needs of users and growing interest towards electronic resources forcing librarians and major players of e-resources to come up with new initiatives. NLIST is a dream child of UGC-INFONET and INDEST-AICTE consortium. This is a first initiative taken by these premier bodies to extent e-resources to college libraries at the national level.

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All correspondence and sending articles, views, Comments, Book reviews, forthcoming professional events, professional achievements and professional problems should be addressed to, **Dr. V. Nireekshana Babu**, Editor, P.S. Telugu University Library, Nampally, Hyderabad - 4, A.P. e-mail: pearl_journal@yahoo.co.in

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A Proposed Model of Consortium for Public Libraries in Karnataka

N.R. Shilpa Rani^{1*}
Lalitha Aswath²

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ABSTRACT

Many consortia initiatives have been taken up in India and booming in the field of academic and R&D institutions. To gain financial benefits and to avoid duplication of resources, libraries are forming homogeneous consortium or joining heterogeneous consortia groups. International, National and regional consortia are playing imperative role in providing e-resources to different kind of users. Degree colleges, universities, health science institutions, technical institutions and R&D institutions are gaining advantages under library consortium. Yet, many public libraries in digital world are providing information services in print format/traditional format only. Hence, this paper will propose a model for 'peoples university' i.e. public libraries and identifies the main thrust areas to share resources and major challenges involved in implementing the same.

Keywords: Public libraries, Consortia, E-publishing, E-resources, E-shodhsindu, Information Communication Technology, Big deal

INTRODUCTION

Library cooperation has history since 1880s, but the consortium reached library literature around 1960s. With the revolution of electronic publishing a second wave in consortia growth has come to light. The online availability of resources and databases through the internet started in the 1990s, because of e-publishing and the early part of 2000 (Horton, 2013). Scholarly electronic publishing promoted creation and distribution of e-resources in academic sector over print resources. New consortia types and pricing models have come in to place to bridge the gap between users and consortia aggregators. For fair use of e-materials, publishers have started to use licenses as legal means of control. Librarians have started to gain new skills in participation of

negotiation process, by availing usage statistics of e-resources through Sushi Counter etc. Librarians realised to understand the difference between used or not at all used materials which are being subscribed under license agreement. It has provided an opportunity to library managers to think in new ways about right to the selection of e-resources. Since librarians are accepting e-resources as a package from consortia negotiation group, they do not have right to select particular titles from the bundle of e-resources. Hence, the usage reports have open up new vistas in the selection and omission of the junk/spam during subscription.

Public libraries have been called 'Peoples University'. Availability of resources in these libraries is general in nature. People from all walks

¹Assistant Professor, DoS in Library and Information Science, KSOU, Mysore, Karnataka, India

²Professor(R), DoS in Library and Information Science, Bangalore University, Bangalore, Karnataka, India

(*Corresponding author) email id: *shilparani.nr@gmail.com, ³drlalitha.aswath@gmail.com

The Dynamism of Ranganathan's Five Laws in the Changing Environment of Librarianship: With Reference to Electronic Resources

Shilpa Rani N.R.

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ABSTRACT

Five laws of library science proposed by Dr. S.R. Ranganathan are the basic foundation to the librarianship. These laws are applicable to all areas of librarianship; understanding of library science is incomplete without the knowledge of five laws. These laws constitute the scientific, empirical, and philosophical basis for library services. Though, these laws emerged in the non-electronic environment and when print resources were in vogue. The advent of ICT changed the perspective of users towards information access and retrieval. Thus, the role of librarian changed drastically in collection building and in providing information services to a different category of users on-demand instantaneously. Subscription of electronic resources helps to reduce the burden of library staff in providing multiple points of access to multiple users simultaneously which saves their time. Hence, e-resources are playing a very significant role in the acceleration of academic, research and development activities. However, the basic motive of five laws has become the guiding principle of librarianship; five laws are interpreted in different contexts to address the user needs and library objectives efficiently. With this backdrop, this study provides a concise overview of usability and significance of electronic resources in the light of S. R. Ranganathan's five laws of library science in present electronic era. Electronic resource variants appropriated are discussed in this paper to know - How to make all e-resources accessible for use? How will every reader get his / her e-information? How to universalize e-resources availability to all categories of users? How to save the time of the user? How to balance the growth and use of vast electronic information resources? Hence, e-resources in the library are significant to provide 'right information to the right user at the right time' principle.

Keywords: Electronic resources, Remote access, S.R. Ranganathan's five laws, Consortium, ICT, ERM tools, World wide web, Social media, Virtual access, ERM tools

INTRODUCTION

Five laws of library science are proposed by Shiyali Ramamrutha Ranganathan in 1931. It's evident that Ranganathan's laws remain relevant from analog to virtual environment of the librarianship. Five laws are flexible and adaptable to all areas of librarianship. They act

as ready reference to handle ocean of information and diverse user groups in the past as well as present.

Libraries have gradually incorporated electronic resources along with printed documents to provide required services to all categories of users to enhance the efficiency of libraries. E-resources

have a lot of beneficial features in comparison with print resources, thus demand for e-resources is gaining momentum among users. Different type of electronic information resources are available for use like - E-journals, E-Books, e-magazines, E-reference sources, e-thesis and dissertations, e-reports, Online Newspapers, e-Bibliographic Databases, e-Data archives, e-Maps etc. e-resources are generally categorized in to two types- **(i)**. Online e-resources: downloadable via the internet and accessed remotely. **(ii)**. Offline e-resources: Downloadable off line and accessible without internet connection.

S.R. RANGANATHAN'S FIVE LAWS OF LIBRARY SCIENCE

Five laws of library science were proposed by S.R. Ranganathan first time in 1928 at a conference of teachers held in the Meenakshi College, Annamalainagar. The Laws appeared in the book form in 1931 (Baban, 2016). Proposed five laws of library science are-

1. Books are for use
2. Every reader his/her book
3. Every book its reader
4. Save the time of the reader
5. Library is a growing organism.

These five laws were introduced to strengthen the role of the library in teaching and learning process. In accordance with the conditions of that time, reading was considered an essential activity that would open up the minds and widened the horizon of understanding. During those days not everyone could own a book so that the role of making provision for books was taken over by the library as an institution. In his book 'Five laws of library science' (1931) Ranganathan prescribes clearly the ways of attracting people / public to the libraries and methods of connecting them to the reading and promoting

to avail the facilities available in the library. Learning through reading enhances an individual's ability to understand the responsibilities, duties and obligations. (Safii, 2019).

During the process of development libraries have undergone lot of transformation in collection development from printed books to e-resources, from physical access to virtual access, from physical space to virtual space etc. similarly, the five laws of library science which were coined in the print world too has undergone lot of changes. Thus, library professionals and researchers have tried to appropriate five laws of library science to changing scenario of libraries and library services.

- i. The first are to appear in 1995 is by Michal Gorman as **Five new laws of librarianship**:
a. Libraries serve humanity. **b.** Respect all forms by which knowledge is communicated. **c.** Use technology intelligently to enhance service. **d.** Protect free access to knowledge. **e.** Honor the past and create the future. He has created five new laws of librarianship as an experiment in analyzing our present situation in the light of Ranganathan's ideas (Gorman, 1998).
- ii. Next transformation can be seen when World Wide Web was invented by Tim Berners-Lee in 1989 to make people share and communicate information. Noruzi inspired by S.R.Ranganathan's laws and shown profound interest and insight in appropriating five laws of LIS to web environment and called them as '**The Five Laws of the Web**' in 2004 - **a.** Web resources are for use. **b.** Every user his or her web resource. **c.** Every web resource its user. **d.** Save the time of the user. **e.** The Web is a growing organism. And he explained clearly the vision of web in the light of changing library environment (Noruzi, 2004).

iii. Then, introduced **'five laws of media'** by **Carol Simpson in 2008**. Simpson formulated five laws of media realizing the changing style of learning and richness of different media and their efficiency in providing various services to users in the library. They are- **a.** Media are for use. **b.** Every patron his information. **c.** Every medium its user. **d.** Save the time of the patron. **e.** The library is a growing organism ("Evolution of five", 2020).

iv. Later in 2015 **'five laws of knowledge'** was **proposed by B. Shadrach**. Shadrach derived five laws of knowledge in the light of Ranganathan's five laws to convey the changing approach of user towards information in the ICT scenario. In his five laws he has emphasized 'knowledge' in the place of 'books'. They are- **a.** Knowledge is for use in all forms. **b.** Every citizen has the right to access all knowledge in all forms. **c.** Every piece of knowledge is for access by all without discrimination of any kind. **d.** Save the time of all of the knowledge seekers. **e.** A library or a knowledge system is one that evolves with time to achieve all of the above laws ("Five laws", 2020).

v. In 2016, when social media made a very big noise and place in instant communication Dr. Achala Munigal appropriated five laws of library science and proposed **'Five laws of social media in libraries'**. Her advocacy is that the social media is providing better, timely and effective services to user on their

fingertips. Libraries are not remaining as brick and stone anymore. She has also highlighted how social media tools are making users to get acquainted with library sources and services. The laws are- **a.** Social Media is for use – (library staff in the library). **b.** Every user his or her Social Tool. **c.** Every Social Tool its user. **d.** Save time of user (user familiarity with the tools) by providing information he or she seeks using the social tool he or she is familiar with. **e.** Social Media is a growing organism, (ever evolving tools and apps). ("Five laws", 2021).

Further, many eminent personalities recognizing the inherent value of five laws of library science, appropriated them in other areas of knowledge too. They are as follows-

- Principles of distance education by Sanjaya Mishra in 1998;
- Five laws of the software library by Mentor Cana in 2003;
- Five laws of children's librarianship by Virginia A. Walter in 2004;
- Five laws of web connectivity by Lennart Björneborn in 2004;
- Five laws of diversity/affirmative action by Tracie D. Hall in 2004.

FIVE LAWS OF ELECTRONIC RESOURCES

Information (in any form) and users (of all levels) are the key concepts of Ranganathan's five laws. These two facets are being replaced with

Dr. S.R. Ranganathan's Five laws	Electronic resources-Five laws	Purpose of Electronic resources-Five laws
Books are for use	Electronic resources for use	How to make all e-resources accessible for use?
Every reader his/ her book	Every reader his/her electronic resource	How every reader will get his / her e-information?
Every book its reader	Every electronic resource its reader	How to make all e-resources available to all categories of users?
Save the time of the reader	Electronic resources save the time of the reader	How to save the time of the user?
Library is a growing organism	Electronic resource is a growing organism	How to balance the growth of electronic information resources?

First law: Electronic resources for use

Implications:

Open access	Vast amount of e-resources are available in the form of mixed media i.e. text, images, audio, video animation etc.
Multi-access-24/7	E-resource can be accessed at multiple points 24/7 round the clock simultaneously.
No geographical barrier	Access to e-resources from any corner of the world
Virtual access	Easy and immediate access without wasting time to reach library for printed copies
Search-ability	Search engines to locate appropriate information, provides hyperlinks to other materials
Readability	E-resources are available to read in the form of .pdf, webpages like .htm, .asp, word file etc.
Ease of use & Access	Simultaneous access and use by multiple users

contemporary developments of LISc. Very purpose of introducing new trends and technologies in LIS field is to serve user community more effectively and efficiently. Thus, applicability of Ranganathan's five laws to electronic resources is being examined to know the efficiency/ effectiveness of laws scientifically.

Discussion: Preservation and storage of print material are one of the most important functions of library management until the revolution of ICT. With the introduction of ICT in library operations, libraries gradually transformed themselves into more of service institutions rather than information storehouses. Hence the implication of S. R. Ranganathan's first law: 'Books Are For Use' focuses attention on - Open Access, Location, Library Hours, Library Building and Furniture, Book Selection Policy, Library Techniques, Publicity, Library Staff, Reference Service to make information accessible

to every reader is now being recognized to remote access, virtual location, 24/7 services, automated techniques, training of library staff in ICT skills, to provide uninterrupted service without any physical barrier.

Discussion: This law advocates the fundamental right of every user to access electronic resource of their choice. Irrespective of the category, all users should get access to all e-resources. It's the responsibility of the library staff to understand the need of a user while subscribing to e-resources and provide timely access. Staff must be trained to provide an effective reference service to access right database/ source. For which user authentication must be done through user ID/ pwd, IP authentication, etc. alongside links should be provided to open access e-resources.

Library staff must get acquainted with web discovery tools, ERM tools and various reference

Second law: Every reader his/her electronic resource

Implications:

Access interface	To search, retrieve, download, export and navigation facility
Resource sharing/consortium	For shared access to vast amount of e-resources
selection of e-resource	Based on Demand driven, pick and choose and evidence based acquisition
Establishment of library system	Integration with discovery services and WEBOPAC
Trained staff	Skilled staff to guide library users to e-resources
ERM tools	CORAL, EBSCONET-EBSCO, 360 resource manager- ProQuest, Meridian, Verde-Exlibris, CUFTS etc.
Reference service	E-mail, Question point, Inforocket, Ask A Librarian, Chat, messages, All Experts and Britanica, etc.
Access authentication	User ID/Pwd, IP authentication
Open access resources	Links to open access resources
ICT infrastructure	Establishment of well-equipped computer laboratory for uninterrupted access to e-resources

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Third law: Every electronic resource its reader

Implications:

Selection of e-resource	Demand driven, Evidence based, perpetual
Indexing of resources	Subject-wise, Author-wise, content, and date-wise etc.
Open access & Appropriate arrangement	For easy and quick accessibility
Reference links	Links to subscribed and other open access additional resources
Publicity and Extension services	Library web, user Induction, tutorials, video films on e-resources, WEBOPAC, posters, resource guide, social media, display boards, etc.
Search engines	To find right content

services available in order to provide effective information services to users. For which, appropriate, balanced collection development is necessary. It is the institution's basic responsibility to provide with state-of-the-art ICT infrastructure within the campus and well trained staff to provide technical assistance to address access issues.

Intentional / non-intentional book misplacing, page tear, stealing, long queue for book reservation, etc. were the hitches in the implementation of second law of library science i.e. 'every reader his/her book'. Use of e-resources eliminates such problems involved in the use of traditional resources of information and now due to the introduction of e-resources second law will be fulfilled by providing uninterrupted access to e-resources to every reader.

Discussion: Focus of the third law is on

'Electronic resource'. It advocates library staff effort in organizing proper connection between the user and resources. Right arrangement of information and creating appropriate awareness to the existence of information will link user with the available resources. Thus, very principle of this law understandably leads to bring in more viable practices to *make every electronic resource have its reader* by practicing fair selection policy, user oriented indexing techniques, links to subscribed e-resources and other open access resources etc. selection of useful materials and proper links to those will help users to fetch right materials, hence librarian should study the needs of user to serve them with the right material. User must be kept informed of e-resources available in the library and instant updates ought to be provided on newly added resources. List of subscribed e-resources can be e-mailed regularly and social media may be used very effectively to keep users.

Forth law: Electronic resource save the time of the reader

Implications:

Open access	Make provision for- speedy access, Quicker to browse, extract, download and integrate information into other material and to reference or cross-search between diverse publications
RSS feeds	RSS feeds benefit users to receive timely updates
Search interface	For accurate search and retrieval. WEBOPAC, Boolean search, federated searching etc.
Remote access	For off-campus access. Through- EZproxy, RemoteXs
Access authentication	Through- IP based/ User ID & password
Trained staff	To address issues quickly through virtual troubleshooting via. E-mail, phone etc.
Self-explanatory tools	Like- FAQ, user guide and tutorials, links to other resources etc.
User orientation	User advisory and user education regarding existing collection and access procedures at regular intervals

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Wide ranges of electronic resources are available for subscription may be through consortium or individual subscription. Publishers are offering multiple pricing models to purchase e-resources which many a times filled with junk materials. Users may not be able to figure out the way to retrieve right content for their use out of this e-resource bundles. Hence, librarian should consider the potential users while subscribing to specific e-resources and ensure that every user can access to required material easily and quickly. User feedback and usage statistics on subscribed e-resources needs to be examined at regular intervals to make decision on the continuation or discontinuation of subscriptions.

Discussion: Present day library users expect quicker, easier and 24/7 remote access to information unlike traditional library users. And e-resources have flexible and user friendly features like- access without any geographical boundaries, 24/7 access, easy search and retrieval, etc.

This law advocates that 'Time of the user is precious'. Thus in order to save the time of the user, policies and procedures are formulated in library by keeping users in view to provide access to e-resources quickly. FAQs, Ask librarian, user manual, user orientation, timely support from technical team etc., services are being designed to ensure users to get accurate information at the right time.

Fifth law: Electronic resource is a growing organism

Implications:

Selection and acquisition of e-resources	Demand driven, Evidence based, perpetual
Preservation and archival policy	Portico, CLOCKSS, LOCKSS, etc.
Digitization	Digitization of rare materials,
IT infrastructure	Well-equipped e-resources lab
Trained staff	For proper organization of resources
Usage statistics	To build right collection/ balanced collection
ERM tools	To track the selection, acquisition, access, licensing, usage, maintenance, evaluation, retention and de-selection of a library's e-resources. Ex- CORAL, EBSCONET-EBSCO, 360 resource manager- ProQuest, Meridian, Verde-Exlibris, CUFTS etc.

Plenty of open access e-resources are available in various subject fields like- DOAJ, DOAB, Shodhganga, arXiv.org, SSRN, open DOAR, data.gov.in, e-PG Pathshala, SWAYAM, TEDx, etc. librarian's responsibility is to make users aware of all the resources.

Discussion: Libraries are no more store house of books but serving as knowledge hubs. Information explosion and application of technology brought in drastic changes in the landscape of library profession. The features of information resources and user needs are changing continuously. To cope up with the user needs and information resources, libraries are being upgraded in terms of collection development, preservation and archival facilities, IT infrastructure and digitization policy are being framed as per the changing time and needs. Selection and acquisition of resources should be based on usefulness, demand driven and evidence based to avoid junk/ irrelevant resources. Various tools are available for electronic resources management, preservation and archiving and traditional anxiety of expanding library building / space for the growing collection is of no consequence. Library staff skills are to be upgraded continuously to handle e-resources in better possible way. Majority of present generation users are tech savvy and most of them are able to handle problems on their own with the help of IT tools. Therefore library staff required to learn to cope

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up with digital preservation tools and the users of digital/virtual era.

CONCLUSION

Ranganathan's five laws are one stop solution to many issues in librarianship like- Ever growing user needs, information explosion, budget, space, etc. Basic principle of five laws is to 'unite users with information'. Hence, five laws of electronic resources –are helpful to evaluate how services can be rendered to users accurately and effectively in order to save their time by building balanced collection development. Librarian needs to get acquainted with new tools and techniques to handle electronic libraries in the days to come.

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